Making Forestry Work for the Poor

Assessment of the Contribution of Forestry to Poverty Alleviation in Asia and the Pacific

FAO FIAT PANIS

Asia Forest Network

APFNet

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The **Food and Agriculture Organization of the United Nations (FAO)** leads international efforts to defeat hunger by helping countries improve agriculture, forestry and fisheries practices and ensuring good nutrition for all. FAO is also a leading source of knowledge and information on agriculture, forestry and fisheries, and acts as a neutral forum where all nations meet as equals to negotiate agreements and debate policy. FAO's mission in forestry is to enhance human well-being through support to member countries in the sustainable management of the world's trees and forests.

The **Asia Forest Network (AFN)** is dedicated to supporting the role of communities in protection and sustainable use of Asia's natural forests. Five strategies serve as guidepost in its development approach: Regional Exchanges, Country Working Groups, Development of Field Methods, Cross-Visits, and the Documentation of Case Studies. These strategies facilitate creative synergies for enhancing the quality of local governance and collaborative agreements. They also create national and regional awareness of what communities, support organizations, local governments, and working groups are achieving in natural resource management.

The establishment of the **Asia-Pacific Network for Sustainable Forest Management and Rehabilitation (APFNet)**, proposed by China and co-sponsored by Australia and the United State, was agreed by the 15th APEC Economic Leaders' Meeting in September 2007 in Sydney. APFNet was formally launched in 2008. As an open regional organization, APFNet aims to promote and improve sustainable forest management and rehabilitation in Asia and the Pacific, in collaboration with all international/regional forest initiatives and processes. Its programs and activities are carried out under its four pillars, i.e., capacity building, information sharing, supporting regional policy dialogues and demonstration projects.

ISBN

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Foreword

Since the launch of the Millennium Development Goals (MDGs) over a decade ago, concerted efforts have been made around the world to improve the contribution of different economic sectors to poverty eradication. In the Asia-Pacific region, the forestry sector is of great importance in this respect due to the elevated rates of poverty prevalent in highly forested areas. Obstacles to reducing poverty through forestry are, however, many: forests areas are often far from markets and poor people frequently lack marketing knowledge, financial capital and/or networks necessary to reap benefits from forest related activities. Unstable land and resource tenure also continue to hamper efforts to improve prospects for rural people and authorities have often been reluctant to devolve rights to the local level.

As economic growth in the Asia-Pacific region continues apace, efforts to ensure that the poorest are not left behind must be redoubled. Rates of poverty remain unacceptably high in significant areas of many countries in the region and, although jobs in forestry do result from economic expansion, environmental degradation and social upheaval are common side effects. Health and safety issues may also arise, while the so called 'trickle down' effect may never materialise. More recently, payments for ecosystem services, especially climate change related payment mechanisms, have attracted much attention in forestry, but debate remains in relation to their potential impacts on poverty.

With the 2015 target for achieving the MDGs—including halving poverty—just around the corner, FAO, with support from the Asia-Pacific Network for Sustainable Forest Management and Forest Rehabilitation (APFNet) and the Asia Forest Network (AFN), embarked upon a project entitled: "Making forestry work for the poor: Adapting forest policies to poverty alleviation strategies in Asia and the Pacific." The project aimed to assess the extent to which poverty has been reduced through forestry activities in the region and to strengthen capacities to tackle poverty within the sector.

This publication represents a key output of the project and includes eleven reports respectively outlining the contribution of forestry to poverty alleviation in Bhutan, Cambodia, China, India, Indonesia, Lao PDR, Nepal, Papua New Guinea, Philippines, Thailand and Viet Nam. The reports draw particular attention to the need for genuine allocation of rights to local levels, combined with measures to support forest management and livelihood development. Without such concessions, poverty reduction and sustainable forest management goals may remain elusive.

A few countries in the region have made great strides in forest management in recent years and investments are already paying dividends in terms of poverty reduction, income generation, environmental rehabilitation and forest products production. It is the hope of the partners involved in producing this publication that efforts to share the benefits of economic growth in eradicating poverty and promoting sustainable forest management will proliferate and secure a leading role for the forestry sector in attaining the MDGs.

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Acronyms and Abbreviations

AAC	Annual Allowable Cut
ACAP	Annapurna Conservation Area Project
AFN	Asia Forest Network
ALRO	Agricultural Land Reform Office
APFNet	Asia-Pacific Network for Sustainable Forest Management and Rehabilitation
BAPPENAS	*Bandan Perencanaan Pembangunan Nasional*; National Planning Development Agency
BPL	Below the Poverty Line
CADT /CALT	Certificate of Ancestral Domains Title; Certificate of Ancestral Land Title
CAFMSC	Conservation Area Forest Management Sub-committee
CAMC	Conservation Area Management Committee
CBE/CBET	Community-based Ecotourism
CBFM	Community-based Forest Management
CBFMA	Community-based Forest Management Agreement
CCFP	Conversion Croplands to Forests Program
CCT	Conditional Cash Transfer
CD	Community Development
CDM	Clean Development Mechanism
CDRI	Cambodia Development Research Institute
CF	Community Forest
CFFES	Compensation Fund for the Forest's Environmental Services
CFMG	Community Forestry Management Group
CFTR	Collective Forest Tenure Reform
CFUG	Community Forest User Group
CLASP	Community Livelihood Assistance and Special Project
CPR	Common Property Resources
CPRC	Chronic Poverty Research Center
CR	Cambodian Riel
CSES	Cambodia Socio-economic Survey
DENR	Department of Environment and Natural Resources
DFO	District Forest Office
DNPWC	Department of National Parks and Wildlife Conservation
DoFPS	Department of Forests and Park Services
DOF	Department of Forests; Department of Forestry
ELC	Economic Land Concession
FA	Forestry Administration
FAO	Food and Agriculture Organization
FC	Forest Cover
FCO	Forestry Cooperation Organization
FDI	Foreign Direct Investment
FEDRC	China National Forestry Economics and Development Research Center
FES	Forest Environmental Services

FLA	Forest Land Allocation
FMA	Forest Management Agreement
FMB	Forest Management Bureau
FMP	Forest Management Plan
FMU	Forest Management Unit
FRA	Forests Rights Act; Forest Resource Assessment
FS	Forest Strategy
FSC	Forest Stewardship Council
FSI	Forest Survey of India
FYP	Five Year Plan
GDP	Gross Domestic Product
GERHAN	*Gerakan Nasional Rehabilitasi Hutan dan Lahan*; National Movement for Forest and Land Rehabilitation
GNH	Gross National Happiness
GoL	Government of Lao PDR
GoN	Government of Nepal
GoPNG	Government of Papua New Guinea
GVA	Gross Value Added
Ha	Hectare
HCR	Head Count Ratio
HDI	Human Development Index
HH	Household
HKM	*Hutan Kemasyarakatan*; Government Program on Community Forestry in State Forestland
HLFFDP	Hills Leasehold Forestry and Forage Development Project
HPH	*Hak Pengusahaan Hutan*; Logging Forest Concession
HPHH	*Hak Pemungutan Hasil Hutan*; Forest Product Harvesting Permit
HTI	*Hutan Tanaman Industri*; Industrial Timber Plantation
IDR	Indonesian Rupiah
IFMA	Integrated Forest Management Agreement
ILG	Incorporated Land Group
IPRA	Indigenous Peoples Rights Act
JFM	Joint Forest Management
JFMC	Joint Forest Management Committee
KARN-WS	KhaoAng Rue Nai Wildlife Sanctuary
LAK	Lao Kip
LF	Leasehold Forestry
LFA	Local Forest Area
LFLP	Leasehold Forestry and Livestock Program
LFP	Forestry Program
LFUG	Leasehold Forest Users Group
LGU	Local Government Unit
LMA	Logging and Marketing Agreement
MARD	Ministry of Agriculture and Rural Development

MDG	Millennium Development Goal
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
5MHRP	Five Million Hectare Reforestation Programme
MoAF	Ministry of Agriculture and Forest
MoE	Ministry of Environment
MoEF	Ministry of Environment and Forests
MoF	Ministry of Forestry
MOP	Ministry of Planning
MRPP	Merang REDD Pilot Project
MTDP	Medium Term Development Plan
MTDS	Medium Term Development Strategy
MTPDP	Medium Term Philippine Development Plan
NAFRI	National Agriculture and Forestry Research Institute
NBCA	National Biodiversity Conservation Area; Conservation Forest
NFI	National Forest Inventory
NFP	National Forest Policy; National Forest Program
NFPP	Natural Forest Protection Program
NGO	Nongovernment Organization
NGP	National Greening Program
NGPES	National Growth and Poverty Eradication Strategy
NKFP	National Key Forestry Program
NPRS	National Poverty Reduction Strategy
NPSC	National Poverty-stricken County
NR	Nepalese Rupee
NRDCL	Natural Resources Development Corporation Ltd.
NRF	National Reform Federation
NSB	National Statistical Bureau
NSDP	National Strategic Development Plan
NSEDP	National Socio-economic Development Plan
NT2	Nam Theun 2
Nu	Bhutanese Ngultrum
NWFP	Non-wood Forest Product
ODA	Official Development Assistance
OP	Operational Plan
PAMB	Protected Area Management Board
PAR	Poverty Analysis Report
PD	Presidential Decree
PEI	Poverty – Environment Initiative
PES	Payment for Environmental Services
PHBM	*Pengelolaan Hutan Sumberdaya Bersama Masyarakat*; Collaborative Forest Resource Management Program (Perhutani)
PhP	Philippine Peso
PNG	Papua New Guinea
PNGDSP	Papua New Guinea Development Strategic Plan

PNGFA	Papua New Guinea Forestry Administration
PNGFIA	Papua New Guinea Forest Industries Association
PO	People's Organization
PRI	Panchayati Raj Institution
PSDHBM	*Pengelolaan Sumber Daya Hutan Berbasis Masyarakat*; District Regulation on Community-based Forest Management (Wonosobo)
PSFMS	Participatory Sustainable Forest Management System
RA	Republic Act
REDD	Reducing Emissions from Deforestation and Forest Degradation
RFD	Royal Forestry Department
RGC	Royal Government of Cambodia
RGoB	Royal Government of Bhutan
RMB	Renminbi
RNR	Renewable Natural Resources
RPJMN	*Rencana Pembangunan Jangka Menengah Nasional*; Medium-Term Development Plan
RPJPN	*Rencana Pembangunan Jangka Panjang Nasional*; Long-Term Development Plan
RUPES	Rewarding the Upland Poor for Environmental Services
SABL	Special Agriculture Business Lease
SC	Scheduled Caste
SCPAVBT	Sandification Control Program for Areas in the Vicinity of Beijing and Tianjin
SFA	State Forestry Administration
SFD	State Forest Department/Division
SFM	Sustainable Forest Management
SMFE	Small and Medium Forest Enterprise
SNPK	*Strategi Nasional Penanggulangan Kemiskinan*; National Poverty Reduction Strategy
SSFE	Small-scale Forestry Enterprise
ST	Scheduled Tribe
SUFORD	Sustainable Forestry for Rural Development
TCN	Timber Corporation of Nepal
TLA	Timber License Agreement
TP	Timber Permit
TRP	Timber Rights Purchase
US$	United States Dollar
VDC	Village Development Committee
VDF	Village Development Fund
VDP	Village Development Plan
VND	Vietnamese Dong
VSS	*Van Samrakshan Samiti*
WMPA	Watershed Management and Protection Authority

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Overview

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Introduction

Poverty poses a major challenge for developing countries and contributing to poverty alleviation has been a crucial issue for the Asia-Pacific forestry sector over the last decade. Achievements have, however, often fallen short of expectations. The high incidence of poverty in forested areas, the high dependence of the poor on forest resources and the vast areas of forestland under state control demand an enhanced role for forestry in poverty eradication and a redoubling and re-strategizing of efforts in the forestry sector as the 2015 target for the Millennium Development Goals (MDGs), particularly MDG 1 of halving the number of people living in absolute poverty, draws closer.

This regional study implemented by the Food and Agriculture Organization Regional Office for Asia and the Pacific, in partnership with Asia Forest Network (AFN) with the support of Asia-Pacific Network for Sustainable Forest Management and Rehabilitation (APFNet), aims to document the extent to which different activities and factors in forestry have been effective in reducing poverty, as well as to identify the opportunities and threats to future efforts given existing initiatives and the outlook for the region's forestry sector. The study forms part of FAO's APFNet-funded project, "Making forestry work for the poor: Adapting forest policies to poverty alleviation strategies in Asia and the Pacific", which is aimed at assisting forestry agencies in contributing to national poverty alleviation goals.

This overview chapter provides background information on the study and summarises key themes drawn from the country reports and other relevant studies.

Scope and Organization of the Study

The study covers 11 countries in Asia and the Pacific region: Bhutan, Cambodia, China, India, Indonesia, Lao PDR, Nepal, Papua New Guinea, Philippines, Thailand and Viet Nam. The contribution of forests and forestry to poverty alleviation was assessed in terms of three broad areas of forestry:

(i) **Community forestry.** This broadly refers to local forest management modalities, categorised in the country reports into subsistence use of forest resources and the allocation (devolution) of forest lands and management or access rights to local people or communities.

(ii) **Commercial and industrial forestry.** Commercial forestry involves forest-related activities done at the local level that are involved in the markets, such as the collection, processing and sale of non-wood forest products (NWFPs) for commercial purposes as opposed to traditional or subsistence use; use of small wood and production of handicrafts and furniture; and outgrower schemes or contract farming. Industrial forestry, on the other hand, involves larger-scale operations for logging and the primary production of timber, growing timber (plantations) and processing (sawmill operation), and manufacture of wood products (sawnwood, panels, pulp and paper) and furniture.

(iii) **Payments for environmental services (PES) and carbon payments.** PES includes rewards, compensation or market mechanisms for the provision of environmental services, such as landscape beauty, watershed regulation, biodiversity conservation, and carbon sequestration and storage.

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The country studies were conducted from January to August 2011. National assessments of forestry policy and trends in relation to poverty, and status and trends in the contribution of forestry to poverty alleviation were carried out through literature review, supplemented by interviews with in-country experts in forestry departments and civil society organizations. Case studies based on fieldwork in selected sites served to improve understanding of poverty in and near forest areas and to determine the extent to which forestry initiatives or projects have—or have not—contributed to alleviating poverty. The case studies are intended as qualitative descriptions rather than large-scale, quantitative assessments.

A regional workshop in Chiang Mai, Thailand on 7–8 March 2011 provided an opportunity to plan the country assessments. Following the completion of the country studies, each of the authors presented his/her work to national stakeholders from the forestry departments and other government agencies, civil society organizations and other stakeholders to disseminate findings, present recommendations, bring key issues to national policy-makers' attention and explore how to feed results into government policy and development planning. Results of the studies were communicated more broadly at an event organized during the Second Asia Pacific Forestry Week (APFW) on 9 November in Beijing, China.

Organization of the Country Reports

Each of the country reports comprises six sections as follows:

Section 1. Overview of forest resources, poverty situation, and economic development

Section 2. The national policy context including the national poverty reduction strategy and forest-related policies

Section 3. Past and current poverty-related impacts of forestry initiatives under three broad categories: (i) community forestry, (ii) commercial and industrial forestry, and (iii) PES and carbon payments

Section 4. Case studies exploring forestry-poverty situations in and around forest areas, including the perceptions and experiences of different stakeholders

Section 5. The outlook for poverty alleviation and forestry in the coming years

Section 6. Recommendations for improving the contribution of forestry to poverty alleviation

Poverty, Poverty Alleviation and Forests

Over the decades, the understanding of poverty has broadened to consider its complexity and multiple dimensions. Poverty is defined as "pronounced deprivation in wellbeing", which is related to lack of income, low levels of education and health, vulnerability and exposure to risks, lack of opportunity to be heard and powerlessness (World Bank 2000).

With regard to income, the international poverty standard was adjusted to US$ 1.25 per person per day in 2008, but many countries have set their own national poverty thresholds based on their respective estimates of the minimum income needed to meet a person's daily food and non-food needs as shown in Table 1. Poverty rates in these countries increase significantly if the US$1.25-threshold is used. Using their respective national poverty standards, China, India, Indonesia, Thailand and Viet Nam have made significant reductions in their poverty rates. China, Indonesia, Thailand and Viet Nam also posted early achievement of their MDG 1 targets. On the other hand, Bhutan, Cambodia, India, Lao PDR, Nepal, PNG, and the Philippines need to redouble efforts in the next two to three years to meet their targets by 2015.

Table 1: Status of Poverty Reduction in Asia-Pacific Countries*

	Year	Poverty rate (%)	MDG target Poverty rate (%) (2015)	National poverty line (US$ per capita per day)	US$1.25 per day poverty**	
					Earliest	Latest
Bhutan	2004	31.7	15	0.82 (2007)	- - - -	26.2 (03)
	2007	23.2				
Cambodia	1993-94	39	19.5[1]	0.61 (2007)	48.6 (94)	28.3 (07)
	2004	34.7				
	2007	30.1				
China	1978	30.7	4.8[2]	0.42 (2000)[3] 0.98 (2011)[3]	60.2 (90)	15.9 (05)
	1990	9.6[2]				
	2009	3.6				
India	1990	37.5[4]	18.75[4]	0.26 (rural) 0.39 (urban) (2004–05)	49.4 (94)	41.6 (05)
	2004-05	27.5				
	1990	47.8[5]	23.9	0.44[6] 0.56[6]		
	2004-2005	37.2[5]				
	2009-2010	29.8[6]				
Indonesia	1990	20.6	10.03	1.0	54.3 (90)	18.7 (09)
	2008	5.9				
	2010	13.33	8–10[7]	1.50		
Lao PDR	1993	46.0	24[8]	(No official poverty line)	55.7 (92)	33.9 (08)
	2003	33.5				
	2008	27.6				
Nepal	1989	42	21	0.45[9]	68.4 (96)	55.1 (04)
	2005	31				
	2010	25.4				
	1990	33.5[10]	17	1.0		
	2005	24.1[10]				
PNG	1996	30	27	0.38	- - - -	35.8 (96)
Philippines	1991	45.3[11]	16.6	1.06 (2009)	30.7 (91)	22.6 (06)
	2000	33.0[11]				
	2006	32.9[11]				
Thailand	1990	33.69	16.84	1.719	5.5 (92)	0.4 (04)
	2000	20.98				
	2008	8.95				
Viet Nam	1993	58	7.6–8.6	0.83 (urban areas), 0.67 (rural areas) (2011–2015)	63.7 (93)	13.1 (08)
	2004	24.1				
	2010	10.6				

*Sources: *Country reports; ** UNESCAP, ADB and UNDP n.d.; 1 http://www.mop.gov.kh/Default.aspx?tabid=156; 2 http://www.un.org/chinese/millenniumgoals/china08/1_1.html; 3 http://news.xinhuanet.com/herald/2011-12/12/c_131295645.htm; 4 http://www.economywatch.com/millennium-development-goals.html; 5 New poverty estimates adopting the Tendulkar Committee poverty line. Central Statistical Organization, Ministry of Statistics and Programme Implementation. (2011). Millennium Development Goals: India Country Report 2011. Government of India. Retrieved from http://undp.org.in/sites/default/files/MDG_India_2011.pdf; 6 Planning Commission, Government of India. (2012). Press Note on Poverty Estimates, 2009-10. 7 New target set for 2014; 8 http://www.undplao.org/mdgs/factsheet/MDG%20fact%20sheet%20Eng%20final.pdf; 9 http://thepovertyline.net/?p=343; 10 http://www.undp.org.np/mdg/; 11http://www.neda.gov.ph/econreports_dbs/MDGs/4thProgress2010/Presentation%20on%204th%20MDG%20Progress%20Report%20%28Cayetano%20Paderanga%29.pdf;*

Aside from income and consumption, other dimensions of poverty have been incorporated in the national poverty reduction strategies (NPRS) and development plans of some of the focal countries. Adopting a rights-based approach, the NPRS of Indonesia characterizes poverty as a situation in which people are unable to exercise their rights, including the right to resource access and right to land. India's

rights-based approach to poverty reduction has led to the legislation of certain rights, including forest rights that give tribal communities and traditional forest dwellers ownership rights over forest lands that they have been cultivating and community rights over forest resources. The NRPS of Nepal defines poverty according to three main categories: income poverty, human poverty and social exclusion.

As a strategy for poverty alleviation, forests have been credited with the capacity to bring about poverty mitigation by keeping the poor from becoming poorer, and poverty avoidance by preventing those at or above the poverty line from dropping below the line by serving as sources of subsistence, seasonal gap fillers, saving accounts or safety nets. Forests may also support permanent poverty elimination through savings, investments, accumulation and asset creation (Sunderlin, Angelsen and Wunder 2003).

With this framework in mind, the extent to which forest-based strategies can contribute to poverty alleviation needs to consider what forests and forestry can realistically do and what they cannot do, as well as under what conditions they may exacerbate existing poverty or create poverty anew. RECOFTC (2009) suggested that "even under perfect conditions, the role of forests and forestry with respect to poverty reduction will largely remain a mitigation function rather than a significant driver of long-term socio-economic advancement as compared to other sectors". Further, considering that the benefits millions of poor people derive from forests and forestry are inadequate for them to permanently escape poverty and provide for long-term socio-economic advancement, forests and forestry are considered by the authors to be "a 'safety net' at best and a 'poverty trap' at worst" (Ibid.).

The challenge for forestry is, therefore, to prove its worth to poverty alleviation efforts and to find ways around the obstacles that have impeded progress to date. To assist these efforts, the following sections summarise the integration of poverty-related goals into forestry policies, plans and activities and of the extent to which different areas of forestry have contributed to poverty alleviation across the region.

Poverty Alleviation and Forestry Sector Policies and Plans

The commitment of Asia-Pacific governments to meet the Millennium Development Goals, particularly MDG 1 of halving extreme poverty by 2015, enjoined the various sectors, including the forestry sector, to contribute to national poverty reduction goals and encouraged the adoption of poverty-related measures in national forestry policies, plans and programmes. In recent years, the objective of poverty alleviation has been incorporated in forest management plans or reaffirmed where already included. However, despite broad acknowledgements of the importance of forests for poverty alleviation and rural development, the forestry sector still lacks integration in national development plans and is not positioned at the forefront of poverty reduction strategies.

For most countries, achieving high economic growth rates remain the primary strategy for poverty alleviation by way of generating resources for pro-poor programmes and driving job creation. In some countries, the forestry sector is seen as a major source of income, particularly in relation to logging and large-scale commercial forestry. The sector's GDP share in many countries is, however, diminishingly small and declining. This in part reflects a lack of reporting of forestry sector contribution to GDP and, by association, limited contribution to poverty alleviation through government programmes and job creation. Thus, the indirect contribution of forestry to the livelihoods of millions of the poor living in and near forests is likely to be highly limited, while direct benefits are also commonly considered to be small or negative.

Medium- and long-term government development plans in Papua New Guinea are directed at the exploitation of the country's natural resources, including forests, which are recognized as making a huge contribution to the national economy and to rural development. The government has gained control over about 80% of the country's timber resources mainly for commercial timber harvesting. Papua New Guinea's forest policy, however, lacks focus on reducing poverty in rural areas, although it does seek to promote rural development and effective participation of forest owners in the forest industry in order to improve their wellbeing.

Although poverty alleviation is included in the goals of forestry policies of some countries, this objective is often marginalized in favour of other forestry sector priorities or may be incompatible or in conflict with other forest management objectives, such as revenue generation through timber production, plantation establishment, biodiversity conservation and climate change mitigation. Indonesia's forest policy and management framework continues to prioritize large-scale commercial timber production and processing for national economic growth, "with less consideration for sustainability and ecological and social values" (Leimona et. al. 2009). Nevertheless, for the first time, the Ministry of Forestry included the development of communities in and around forests in its 2004-2009 strategic priorities, which reflects the recent recognition by the MoF of its responsibility in addressing poverty in and near forests (Kayoi et al. 2006).

Poverty alleviation is gaining attention in forest management agenda, but lack of coherence in addressing the livelihood needs of the poor while pursuing economic and ecological objectives has meant that poverty is often left unaddressed. In Lao PDR and Cambodia, foreign investment has been channeled into land concessions for commercial crop production in forest areas, with major implications for the poor. Lao PDR adopted commercial plantation development as the main strategy to increase national forest cover, eliminate shifting cultivation and support rural development. However, although the National Growth and Poverty Eradication Strategy (NGPES) recognizes the importance of productive forests for rural livelihoods, the government's promotion of large-scale industrial plantation development as the only means to eliminating shifting cultivation, on which millions of poor depend, threatens to displace the poor both physically and economically.

Under Lao PDR's Forestry Strategy to 2020 (FS2020), which serves as an important guide for the development of the country's forestry sector, poverty alleviation is positioned at the forefront of the sector's multiple objectives. Targets include improving the quality of forest resources by natural regeneration and tree planting for protection and livelihood support; providing a sustainable flow of forest products for domestic consumption and household income regeneration; preserving species and habitats; and conserving environmental values in relation to soil, water and climate. However, the amendment of the forestry law has reiterated centralized management of forest resources, with the removal of the declared poverty alleviation objective from the priorities and, instead, the inclusion of the following provision: "The State shall not grant any individual or organization lease or concession of natural forests to undertake logging and harvesting of NTFPs" (Yasmi, Broadhead, Enters and Genge 2010).

In Nepal, on the other hand, the potential of community forestry as a viable means for poverty reduction has been recognized and community forestry is identified in the 10th government plan as a strategy to address rural poverty (Nepal country report, this volume). In accordance with this, the poverty reduction agenda of Nepal's Forest Policy 2000 identified pro-poor actions, such as giving priority to community members below the poverty line in the allocation of leasehold forests and in providing employment in forest-related work. Another measure supportive of poverty alleviation in forest areas is the allocation of a proportion of the income of community forest users groups from forests to their poorest members. In general, Nepal's forestry policy has for several decades "maintained a strong balance between production, protection, conservation and social benefits – employment, income and poverty alleviation, and in particular, devolution to communities and the private sector" (Ibid.).

Similarly, Bhutan's 10th five-year plan recognizes that the renewable natural resources sector has the highest potential to contribute to poverty alleviation objectives, and includes the establishment of community forestry and expansion of commercial harvesting of NWFPs among its pro-poor measures (Bhutan country report, this volume).

Poverty Alleviation in Forestry Sector Programmes

Government policy initiatives aimed at reducing poverty in the rural areas can only be realized through programmes and actions that impact upon livelihoods at the local level. Poverty reduction programmes undertaken by the forestry departments in the region have shown mixed results and outcomes have often been modest.

Following the huge flooding that took place in the Yangtze River in 1998, the Chinese government carried out major forestry programmes, such as the Natural Forest Protection Programme (NFPP), Conversion of Cropland to Forest Programme (CCFP) and the Sandification Control Programme for the Vicinity of Beijing and Tianjin (SCPVT), to improve environmental conditions in major watersheds with the accompanying objective of supporting rural livelihood improvement. The commercial logging ban or reduced harvesting quotas enforced in 17 provinces through NFPP resulted in considerable economic costs among some forest-dependent communities owing to the failure of NFPP to provide new jobs (TEEB 2010). While acknowledging immediate losses of jobs and income, other studies noted the positive impacts on the total household incomes from all sources as a number of the workers engaged in alternative off-farm employment (Mullan, Kontoleon, Swansons and Zang 2008). In Yunnan Province, the re-employment opportunities provided by the government (e.g, in tourism) to displaced workers and the availability of alternative energy sources helped mitigate the negative impacts of NFPP (Leefers 2005). Under the CCFP, also known as the "Grain for Green" programme, huge investments were made in large-scale re-greening of degraded crop land in the rural areas. The CCFP, which was also designed to reduce rural poverty and increase household income, may be considered a form of payment for environmental services (PES), in which farmers were provided grain and cash subsidies in return for afforesting areas affected by soil erosion and desertification. Similar to the NFPP, while the CCFP programme made positive contributions to the incomes of millions of rural households as the subsidies received exceeded the profits from sloping cropland cultivation, there were also those who suffered income losses.

In Lao PDR, an assessment of the Sustainable Forestry and Rural Development project (SUFORD) conducted in November 2010 reported that village development grants provided following the development of forest management plans have had minimal impacts on community livelihoods in participating villages owing to the small amount of the grant given to villages and the lack of technical support (Lao PDR country report, this volume). Additionally, community income from log sales has been very limited and insufficient to fund village development projects. Other constraining factors include the small share of revenue from timber sales accruing to communities, high logging costs and overharvesting of areas designated for participatory forest management that resulted in low stocking densities, lack of remaining commercial species and low growth rates.

To contribute to the Philippine government's poverty alleviation and hunger mitigation goals, the Department of Environment and Natural Resources (DENR) initiated the Community Livelihood Assistance Special Programme (CLASP) in 2001 and the Upland Development Programme (UDP) in 2009 (Philippine country report, this volume). However, these livelihood programmes failed to ensure the sustainability of the livelihood activities or community enterprises that were supported. Not all CLASP-supported enterprises developed the capacity for viability and sustainability. Likewise, the awarding of 32,300 contracts to undertake reforestation and agroforestry during the first year of UDP implementation did not allow adequate time for monitoring and provision of technical assistance to the farmers. Besides providing farmers or people's organizations access to capital and inputs for livelihood activities or enterprises, developing their organizational and technical capacity is critical to ensuring the economic and social sustainability of their livelihood activities and enterprises.

The Contribution of Community Forestry to Poverty Alleviation

Community forestry is "potentially a crucial institutional vehicle for assuring and improving the delivery of livelihood benefits from forests" (Sunderlin 2004). The roles of NWFPs, lands for crop production, fuelwood and, to a limited extent, timber in supporting the livelihoods of millions of people living in and near forests are often considered the main contribution of forests and forestry to poverty alleviation at the community level. These contributions have, however, only generally been limited to poverty mitigation (through direct consumption and sale of forests products to generate income for subsistence needs) and poverty avoidance (through acting as a safety net in times of hardship for households close to the poverty line).

Past efforts to address poverty through community forestry have focused on strengthening local people's tenure and management or access rights over forest resources. A range of community forestry modalities exist across the Asia-Pacific region varying in terms of approach, tenure and benefit-sharing arrangements, scope of rights and duration. In most cases, the government retains ownership of the forest land with only management or access rights awarded to individuals or community groups. Among the focal countries, India, Nepal and the Philippines have progressed furthest in their community forestry programmes while China and Viet Nam have adopted strategies involving allocation of forest lands to individuals and households rather than communities (Yasmi, Broadhead, Enters and Genge 2010).

Apart from a few successful cases, community forestry has neither lifted a large number of forest-dependent poor from poverty nor progressed significantly in advancing the forest tenure and rights of local communities, owing to a number of inter-related challenges and constraints summarized in the following sections.

Weak Legal Framework for Community Forestry

Community forestry in most of the countries included in this study is based on laws, decrees and activities related to government initiatives, but its legal status often remains weak in the face of more established laws related to forest industries and forest conservation. Legal uncertainties and policy inconsistencies hinder effective implementation and expansion of community forestry. Policy reforms over the past decade that sought to broaden local participation in forest management and increase local benefits from forests are mostly incomplete, reflecting governments' weak support and lack of commitment to making community forestry work. In Thailand, the lack of ratification of the Community Forestry Bill following its passage through Parliament in 2007 means that there is no formal policy on community forestry. Although there are government initiatives that provide a legal basis for participatory forestry, the absence of a law recognizing the management rights of communities heightens their level of insecurity (Fisher 2011).

Box 1: Impacts of the legal recognition of the rights of indigenous peoples or ethnic minorities

In recent decades, countries including Cambodia, Indonesia, India, and the Philippines have enacted laws to restore or recognize the rights of indigenous communities or ethnic minorities to lands and resources they have long been utilizing. While these policies fill in gaps in the legal frameworks for the recognition of the rights of indigenous peoples to forests and forest lands, implementation has been limited or poor.

In Cambodia, the government adopted the policy, Development of Indigenous Peoples and the Registration and Use of the Indigenous Peoples' Community Land in Cambodia. However, the objectives say little about the rights of indigenous peoples while being heavily oriented toward serving government interests over indigenous peoples' forests and lands. Further, despite the recognition of indigenous communities' rights to collective ownership of the land under the Cambodian Land Law of 2001, economic land concessions have been established on areas being used by rural and indigenous communities for small-scale agriculture and harvesting of NWFPs, without complying with the legal requirements on the conduct of public consultations and environmental and social impact assessments (RECOFTC, ASFN and SDC 2010). Poor implementation of the law intensifies indigenous peoples' lack of security of tenure and poses a challenge to promoting community forestry.

Under the Indigenous Peoples Rights Act of 2007 in the Philippines, the government has been issuing ancestral domain titles covering forest lands to indigenous communities. However, the government retains control over the harvesting and marketing of timber and some NWFPs even where ancestral domain plans have already been prepared. Although the ancestral domain title and plan are envisioned as instruments to empower indigenous peoples, these are not being used effectively to strengthen local access to and control over forest resources. The question of commercial or traditional scale of resource utilization needs clarification given that many indigenous peoples have adopted the practice of selling forest products, although now, in increasing quantities.

In India, the 2006 Forest Rights Act (FRA) recognizes the rights of scheduled tribes and other traditional forest-dwelling communities over forest land including management rights. Based on the initial years of FRA implementation, the opportunity for strengthening the economic and social security of these forest-dwelling groups is likely to have the most impacts where the groups have access to information about the law and are well-organised, where the bureaucracy is supportive and allows the FRA process to take its course based on the specific contexts of the communities, where civil society groups are assisting in building the capacities of communities, and where powerful castes and classes within the communities do not block the access of less powerful groups to the benefits of FRA (Kothari, Pathak and Bose 2011).

In Papua New Guinea, while 98% of the forests and 97% of the lands are recognized by law to be owned by the people, government-led processes of allocating forests for industrial timber concessions have largely divested the customary landowners of their rights to their forests.

Lack of Tenure Security and Unclear Rights

Owing to policy conflicts and legal uncertainties, tenure security is fragile in many cases and resource rights are unclear or limited. Most tenure systems maintain state ownership over forestlands while providing management or access rights or benefit-sharing arrangements. Though community forestry allows some re-distribution of forest lands and resources among local communities, including the poor, use rights are often restricted to NWFPs. Forest tenure systems afford varying degrees of security—or insecurity—to local communities. Community forestry in Cambodia has been supported mainly by national and international nongovernment organizations (NGOs). Communities' access to forest resources is limited in terms of coverage, duration and forest quality and, while economic land concessions are valid for 99 years, community forest management rights are good for only 15 years without guarantee of compensation for the communities if the state reclaims the lands for other uses. In India, JFM provides management and use rights to forest resources without clear provisions regarding long-term use of forest land. In both cases, lack of sufficient rights at the local level restricts the development of effective partnerships with local communities.

Allocation of Degraded Forest Without Adequate Capacity Building or Investment

The primary objective of community forestry programmes initiated in the 1970s and 1980s was improving degraded forest areas, and not necessarily alleviating poverty in and around forests. As such, it was mostly degraded forests that were designated for local communities, in a trend that Banerjee referred to as providing "little trees for little people" (Warner 2007). Even with the subsequent inclusion of poverty alleviation as an objective, however, this has largely remained the pattern in many areas. The allocation of degraded forests has meant little or no immediate economic benefits for communities and necessitated much effort to achieve an economic return. Although timber rights have occasionally been transferred, timber revenue in many areas has been minimal given the small number of harvestable trees and lack of investment in forest development.

Lack of capital investment and support at the local level for community forest management, productive enterprises and value addition and marketing is in many cases preventing communities from improving their productivity and efficiency, engaging in commercial development of forest products and generating adequate and equitable economic benefits. In the Philippines, despite the national government's adoption of community-based forest management (CBFM) as the strategy for forest management and the issuance of an executive order mandating the DENR to allocate sufficient funds for CBFM implementation pending the enactment of a new forestry law, the DENR has not been channeling adequate funds for the regular budget line item for CBFM (CBFM Strategic Plan 2008-2017).

Lack of Support for NWFP Development and Marketing and Limitations of NWFPs in Poverty Alleviation

NWFPs are a lifeline for millions of rural poor in the Asia-Pacific region. Case studies from Bhutan, Cambodia and India undertaken as part of this study reflect the situation in many other areas. NWFPs are, however, mostly harvested and sold in raw form and subsequent benefits from value addition therefore accrue to others outside the forest-dependent communities. NWFPs are also, in general, seasonally available and are open to unsustainable extraction, particularly when commercialized without effective local regulation in relation to sustainable management. Complicated harvesting and marketing regulations can entail additional costs and further curtail benefits to communities.

These constraints underlie the characterization of NWFPs as a "safety net" at best and a "poverty trap" at worst. Indeed, these two roles indicate two sides of the same coin: "The characteristics that make them attractive to the poor also limit their potential for generating increased income" (Sunderlin, Angelsen and Wunder 2003). According to a recent review, NWFPs sustain subsistence livelihoods, serving as seasonal gap fillers and safety nets in times of hardships, but they "have not been able to make a major contribution to poverty reduction" (RECOFTC 2009). Angelsen and Wunder (2003) provided three main reasons for the limited contribution of NWFPs to poverty reduction:

1. low returns from most NWFP activities, with natural forests being economically inferior production environments;
2. remote location and poorly developed infrastructure, leading to difficulties in market access; and
3. monopsonies and exploitative market chains that prevail in the trade of some forest products, leading to manipulations and lack of transparency in the marketing process.

The safety net-poverty trap roles of NWFPs raise the questions of whether or not supporting related development can prevent escape from poverty and if the support for off-farm employment, for example, can make better sense in terms of poverty alleviation. The main challenge has been stated as "preserving the role of forests as safety nets in locations where they are more than dead-end poverty traps and where other forms of social insurance cannot take their place" (Sunderlin, Angelsen and Wunder 2003). Otherwise, there remains some potential for poverty alleviation through commercialization of NWFPs with support from community development projects as described in the next section.

Inequitable sharing of Benefits from Forests

At the local level, capture of benefits from forests by better-off community members is a major obstacle in poverty reduction. In Nepal, although a number of community forest user groups (CFUGs) are generating income, poverty elimination is only being seen in the few cases where the CFUGs support targeted pro-poor and locally planned activities. A number of CFUGs have invested substantial portions of their funds in infrastructure development projects that have primarily serviced non-poor households. Although the guidelines require that a proportion of income from community forests be used for the poorest CFUG members, stricter monitoring of the groups' compliance with the guidelines is necessary.

The Contribution of Commercial and Industrial Forestry to Poverty Alleviation

Weighing the Benefits and Costs of Industrial Forestry and Large-scale Commercial Forestry for Local Communities

Industrial and large-scale commercial forestry operations can generate considerable short-term gains for economies in terms of domestic production, foreign exchange earnings and employment. These gains

are, however, "not considered at the forefront in strategies to alleviate rural poverty" (Hansen, Durst, Mahanty and Ebregt 2007). Engagement of the poor in logging, large-scale plantation development and industrial wood processing is limited due to lack of capital and technical knowhow and weak legal rights. As such, the poor generally only benefit through labouring jobs that may be both dangerous and poorly paid.

The direct and indirect links between industrial and large-scale commercial forestry and poverty alleviation may include the trickling-down of benefits resulting from improved local infrastructure and social services, local employment and expanded economic opportunities. In many sites, however, industrial forestry has a weak track record in reducing poverty, with scant proof of its impact in lifting a large number of the poor in their areas of operation out of poverty (Mayers 2006, WB 2006). Actual economic and social benefits therefore need to be weighed against the costs created for the poor, such as loss of rights and access to natural resources allocated for industrial and commercial forestry. Similarly, the opening of roads leading to remote forest communities for the needs of logging operations has both positive and negative impacts. Improved access to remote areas, although allowing local communities to reach markets and social services in urban centers, leaves formerly isolated forest areas open to unregulated exploitation and conversion. Populations may also be exposed to trafficking, and ailments and diseases against which they have limited resistance.

In some cases, national governments have made efforts to transfer a proportion of forestry revenues to local governments as a means of sharing benefits from industrial forestry and compensating communities affected by logging and plantations development. In Indonesia, the forest revenue-sharing scheme was revised to increase the flow of funding from timber royalties and other fees to local governments, including those in timber-producing districts. Actual impacts on the livelihoods and welfare of the poor are, however, highly dependent on the extent to which local governments prioritize poverty reduction programmes and pro-poor development projects and whether or not these benefits are actually reaching the poorest of the poor. In Papua New Guinea, revenues from logging make a substantial contribution to the national treasury but budgets allocated to affected communities for the delivery of social services and infrastructure development are not substantial enough to make a significant contribution to poverty reduction (Papua country report, this volume).

Similarly, in some countries legal mandates for forestry companies to contribute to community development allow a proportion of timber revenues to be channeled to local communities. Actual benefits for the poor largely depend on the scope of mandated obligations, on company commitment to these obligations and to associated corporate social responsibility (CSR) programmes, and on the effectiveness of government monitoring and accountability measures. In Papua New Guinea, logging companies are viewed as a proxy of the national government in supporting rural development, given the lack of government capacity to deliver basic services in remote areas. This critical role of logging companies often goes unfulfilled, however, due to low government enforcement capacity and the lack of effective monitoring mechanisms and accountability measures, including penalties for non-compliance. While there are responsible companies that do invest in education, health and livelihood programmes, the maintenance and sustained operation of schools, health centers and other facilities and services is not guaranteed after logging operations cease. As such, there is a responsibility of governments to assist in maintenance as part of their commitment to rural development.

Timber royalties paid to forest owners constitute a direct economic benefit from industrial logging. In Papua New Guinea, however, the share provided to landowners is typically small (3–5%) and in many cases, benefits accrue to only a few clan members (Papua New Guinea country report, this volume). Landowners commonly lack the capacity to properly manage the timber royalties or invest in long-term enterprises and, from the point of view of Forestry Administration personnel, providing support to communities to engage in productive investment is not their responsibility or area of expertise. As such, royalty payments tend to result in mere short-term benefits, lasting only while logging operations are ongoing, while the costs of logging persist into the long term.

While industrial forestry does create some local jobs, the number of opportunities is generally inadequate

to absorb the large number of people who lose access to resources as a result of logging or lose the entire forest resource base, where forests are converted. Additionally, employment in industrial timber plantation development is cyclical with labour demand centred on periods of plantation establishment and harvest. Local opposition to logging projects or plantation development and lack of skills among local communities may also persuade companies to import labour. Besides denying local communities direct benefits, this practice creates additional competition for remaining resources as people strive to maintain a living from the land. Where mechanization is used extensively, the number of jobs is often fewer and skill level requirements are higher, effectively excluding the poor. Wage rates, working conditions, job security and insurance availability may also fail to match the risks workers face and compliance with legal standards is often overlooked. Furthermore, job security can be threatened by challenges that beset the timber industry, such as depletion of forest resources, rising costs of essential machinery, opposition to forest industries and conflicts over lands and forests, which can lead to disruptions or scaling-down of operations and closure of companies, as in the case of Indonesia's ongoing forestry industry "crisis".

In recent years, the impacts of the establishment of large land concessions in forest areas and local productive lands in Lao PDR and Cambodia have been mostly negative - creating and exacerbating, rather than reducing, poverty. In Lao PDR, impacts have included partial or complete loss of access to government lands beyond private or communal lands, and loss of private lands and resettlement outside of concession areas (Hanssen 2007). Consequently, many may lose access to the entire spectrum of livelihood resources: upland rice, grazing land, NWFPs, wildlife, construction materials, and traditional medicines. Negative socio-economic impacts of investments for rubber plantations in southern Lao PDR have similarly included reduced landholdings and household income, and associated food insecurity (Leonard 2008 in Lao PDR country report, this volume).

In many areas where industrial forestry operations have ignored social and environmental considerations, forestry has aggravated poverty or created poverty anew. Logging and plantation development has led to degradation and loss of local access to forest resources and the wood and non-wood products they support as well as physical and economic displacement of local populations left with insufficient compensation, provision of jobs or support for alternative livelihoods.

Community-based or Small-scale Forestry Enterprises: Opportunities and Challenges

Small and medium forestry enterprises (SMFEs), including enterprises at the community level, play a major role in the livelihoods of the poor, although unlike large-scale production and processing operations their contribution to the national economy is largely informal and hidden. In India, SMFEs comprise the bulk of the commercial forest products processing, employing millions of poor, including women and disadvantaged groups. About 80% of the forest industries in Indonesia are small and medium-sized, dominating furniture and handicraft-making industries (NRM 2000 in WB 2006). In China, activities such as under-forest cultivation, wildlife farming and domestication, forest product processing and bio-energy development are creating jobs for local farmers and are a means for many to escape poverty.

SMFEs offer more potential for poverty reduction than large forestry industries (MacQueen 2008) although compared to the latter, SMFEs are seldom the priority of forestry sector or economic development policies. Local benefits from SMFEs include employment and income generation, profit-sharing, capital accumulation, expansion of infrastructure and services, improved forest management, political and cultural empowerment and securing local communities' resource rights (Donovan et. al. 2006). There are, however, also risks that constrain the potential of SMFEs to reduce poverty, including exploitative practices that are difficult to check; low social and environmental standards associated with informal operations; insecure tenure; low profitability; and unsustainable resource use and depletion (MacQueen 2006). SMFEs may also have limitations in providing secure and long-term employment.

In Viet Nam, SMFEs engaged in the processing of forest products have developed rapidly in recent

years and have contributed to national export earnings while creating jobs for thousands of workers. In some communes, many enterprises are, however, connected to illegal logging and place low priority on environmental and social responsibility concerns, such as pollution control and fair employment conditions. While the furniture industry in Papua New Guinea is creating jobs for local people, most businesses are foreign-owned and often adopt exploitative approaches.

In addition to the above-mentioned risks, the following challenges must be addressed in developing viable and sustainable forest-based enterprises, especially in areas with high wood and NWFP production potential: insecure resource ownership and access rights, weak social stability and cohesion, weak bargaining power, lack of skills and technological capacity, lack of capital, poor market connectivity, lack of awareness of administrative procedures, and remoteness and poor infrastructure (Grouwels 2009).

The range of commercial activities engaged in by SMFEs includes developing and commercializing NWFPs, engaging in small-scale timber production and processing, and smallholder tree farming as described in the following sections.

Commercialization of NWFPs

Millions of poor people in the Asia-Pacific region depend on the sale of NWFPs. NWFPs are sold mostly as raw materials and through intermediaries. In combination with support for sustained resource management, training in improved processing, value addition and marketing support for community enterprise development can directly improve rural livelihoods and reduce poverty.

A number of recent forestry-related efforts by NGOs and government agencies to reduce rural poverty have focused on the development and commercialization of NWFPs. Most NWFP enterprises, however, "struggle to advance beyond the start-up stage of business development, exhibiting low levels of output, productivity, value added and profit" (Grouwels 2009). Community organizations in many cases lack the skills to engage in commercial activities: thus, capacity building is important. Additionally, as NWFPs are prone to over-exploitation and rapid depletion when commercialized, part of the challenge is to ensure the sustainable management of the NWFPs through regulated extraction and regeneration – including domestication, if possible – to safeguard the resource base and increase long-term productivity.

Governments in several countries including Bhutan and Indonesia acknowledge that little attention has been paid to NWFPs compared to timber resources in terms of policies and investment. Recognizing the potential of NWFPs in alleviating rural poverty, they have formalized plans to develop and commercialize NWFPs as a priority for poverty reduction. Translating the plans into action involves measures such as simplifying regulations on the harvesting and NWFP marketing strategies as a part of comprehensive investment programmes to support SMFEs in producing, processing and marketing NWFPs.

Development of community-based timber production

Several community forestry programmes allow opportunities for households or community groups to engage in community-based commercial timber production. However, the degraded or logged-over conditions of forests allocated to households or communities as well as complex bureaucratic regulations surrounding timber harvesting and elite capture of timber revenues have limited the contribution of timber to the incomes of the poor. Timber rights given to forest owners and people's organizations in Viet Nam and the Philippines have been effectively canceled by logging bans. Timber revenues available to villages participating in the SUFORD project in Lao PDR, in which timber harvesting is intended as a strategy to increase household income, are generally minimal due to the low timber volumes remaining in designated forest areas and the limited proportion of revenue from timber sales allocated to villages. Although CFUGs in Nepal can harvest and sell timber from designated forests, CFUGs lack the capacity and resources to effectively engage in timber production for broader commercial purposes, and incomes from timber tend to be largely captured by better-off households.

Smallholder tree farming

Engaging in smallholder tree farms—through growing trees on private lands, out-grower or contract farming schemes or company-community partnerships—presents an opportunity for local communities to generate income from timber production and even accumulate assets to escape poverty. Smallholder tree farms and home gardens are becoming important sources of wood for processing companies in some countries including Indonesia, Philippines and Thailand. The potential of these activities and the arrangements involved in generating economic returns for the poor vary as reflected in cases related in the country reports.

In Indonesia, studies show that although agroforestry has economic and environmental advantages over agri-industrial plantations, government support tends to favor the latter. The Hutan Tanaman Rakyat (HTR) community timber plantation programme was launched by the government in 2007 to establish 5.4 million hectares of pulpwood plantations on community lands by 2016 and, in doing so, help narrow the timber supply-and-demand gap. Nevertheless, despite accompanying incentives, the scheme failed to generate participation among community groups and individual smallholders due to low economic viability for smallholders, unclear land and allocation processes and limited tenure incentives, among other reasons (Obidzinski and Dermawan 2010; Schneck 2009; Barr and Stafford 2007). Similarly, low economic returns from community-company partnerships initiated in Java in 2000 to plant trees for pulp production also accounted for the low acceptance among some communities and low renewal rates after one rotation (Maturana et. al. 2005).

In one case in Viet Nam (Viet Nam country report, this volume), contract farming with the state enterprise, Hoa Binh Forestry One-member Ltd., became the main source of income for the villagers of Mong Hoa commune. The company gave 10–20 hectares of forest land to landless villagers for them to replant along with low-interest credit for the acquisition of necessary materials. Government programmes funded development roads to reduce the cost of transporting timber products. Villagers' positive experiences during the first seven-year rotation encouraged them to renew their contracts with the company for a second cycle.

The Philippine report (this volume) includes a case study showing that tree farming in private lands can be profitable for farmers in Northern Mindanao, where the climate is favorable and where small- and large-scale processing industries are a legacy of the logging industry. In contrast, another study on the island of Leyte found that financial returns to tree farmers are generally low as a result of low yields, poor market access and lack of market knowledge (Herbohn et. al. 2007).

Contract tree farming has become a major source of raw materials for pulp manufacturers in Thailand. Rules requiring farmers to possess land rights to qualify for subsidies and to have reliable sources of income to cover the period before trees reach maturity have, however, excluded poor households from participating in an initiative supported by the Forest Industry Organization to promote small-scale tree planting. Given these rules and other strict management conditions, many farmers abandoned tree farming and turned to rubber or annual crops (Thailand country report, this volume).

Certification

Certification of forest products provides access to markets, particularly international markets for forest products from well-managed private tree farms or community forests. The Bhutan country report (this volume) reported on lemon grass distillation and export as an established NWFP enterprise/industry effective in creating local employment. Processing is located in the villages in which raw materials are harvested, and certification creates an opportunity for local entrepreneurs to increase their profit while creating more labour opportunities for seasonal workers.

Community enterprises and smallholder farmers, however, usually lack awareness of the certification process and have insufficient capacity to comply with requirements or resources to cover the costs involved. To make certification work for the poor, certification costs need to be reduced and capacity-building is necessary to increase the quality and quantity of finished products. It is important to analyze

the pros and cons of accessing local, domestic and international markets in relation to the capacity of the SMFE. High-end domestic markets and international markets may pay more but they may also require greater seed capital inputs, more sustained production and higher quality of finished products.

The Contribution of Payments for Environmental Services and Carbon Payments

While payment or market schemes for forest environmental services are incipient in most Asia-Pacific countries, China and Viet Nam have been moving ahead in adopting 'eco-compensation' schemes and a national PES policy, respectively. PES schemes are viewed as a potential source of funds to support rural incomes and livelihoods, and to improve infrastructure and social services in communities sustaining the forests that provide the services. In most cases, it is still too early to determine to what extent PES initiatives are contributing to poverty alleviation, although some initial indication of benefits, risks and concerns can be gleaned from early project interventions.

Ecotourism

Ecotourism offers economic opportunities for local communities living near protected areas and scenic or culture-rich forest landscapes, although benefits to the poor may be limited. All too often, revenue from tourism tends to be captured by the owners of accommodation and restaurant facilities, tour services and souvenir shops, while jobs for the poor may be few. Ecotourism, therefore, faces the challenge of extending benefits to rural areas and ensuring that local communities and the poor receive fair benefits in return for their efforts to contribute to forest protection.

For ecotourism to contribute to poverty alleviation, greater participation of the poor in economic activities is necessary. This may be through community-based initiatives to manage ecotourism sites where benefits are equitably shared; employment in local businesses providing services to tourists; or through community enterprises producing goods and services for tourists. Building local capacity to engage in ecotourism management activities and ecotourism-related enterprises has been supported on many occasions by NGOs, government agencies and development organizations as a means of developing alternative livelihood opportunities for the poor living in or near protected areas.

In China, forest ecotourism is creating employment among rural farmers in several provinces. Forest parks and various forest-related tourism activities have been drawing visitors in increasing numbers in recent years and opportunities for generating local employment are expanding. In Fujian province, for example, in 2008, about 358 "forest homes" were set up by individual farmers, offering various forest-related activities to visitors and creating 3,100 jobs (China country report, this volume).

In Kerala, India (India country report, this volume), an ecotourism initiative developed under JFM has allowed the members of a Kadar tribe to benefit from the scenic landscape of the Athirapally waterfalls and its surrounding forest. The tribal group was previously displaced from their forest by the construction of a large reservoir and sidelined from jobs in timber plantations that encroached into their settlement area. For the non-farming Kadar tribe members, eco-tourism has provided alternative livelihoods and a market for the NWFPs they produce. With support for capacity building and participatory planning provided by the JFM programme, the tribe assumed much of the management of the tourism area, including the administration of funds from visitors' fees. The bulk of the funds are used for the improvement of the tourism area, infrastructure development and livelihood support. At least one member of each household works in one activity or another associated with the ecotourism project. Apart from the economic benefits for tribe members, the ecotourism initiative has contributed to reducing illegal forest activities and improving forest conservation.

In many parts of Asia, the culture has enriched the landscape through generations of land use practices that have maintained landscape stability and water quality. Nurturing cultural integrity, which contributes to this stability, while adapting to social and economic changes and engaging with other

cultures is a major challenge. Culture is much more than traditional performances and crafts sold to tourists. It involves unseen relationships and deeper systems through which communities have managed themselves and their surroundings and through which associated learning can be shared and passed on. Balancing the sociocultural and environmental sustainability of ecotourism with economic viability should form the basis upon which ecotourism activities are planned and developed.

Watershed-related Services

Markets for watershed-related forest services, such as erosion control, water flow regulation and water quality maintenance, are yet to be developed in most Asia-Pacific countries. In Bhutan, Indonesia, Lao PDR, Philippines and Viet Nam pilot initiatives have been established. Associated with hydroelectric power generation or urban water supply, these PES initiatives involve transfer of payments levied on electricity consumers and downstream water users to upstream communities for their efforts in managing forests and stabilizing land use.

In the case of the Nam Theum (NT2) Hydroelectric Project in Lao PDR, payments to upstream communities were in the form of support for livelihood improvements e.g., livestock vaccinations; inputs to support crop production; contributions to savings funds; education related support, such as funds to pay teachers or repair schools; health care-related support, such as funds to pay nurses and to buy basic medicine supplies; and construction of basic infrastructure, such as small bridges and small-scale irrigation and water supply systems. The delivery of these benefits contributed to cash income from crop production and livestock raising and improved health care and education in project villages (Lao PDR country report, this volume). To what extent, though, these benefits have been equitably distributed across and within villages in the watershed in exchange for their efforts to provide the watershed service needs to be further investigated.

Likewise, the experiences of forest owners in Hom village in Son La Province, Viet Nam reveal the need to focus on how cash transfers to communities are made such that benefits are maximized and villagers are compensated equitably for soil- and water-related conservation practices. Many forest owners in Hom village paid from the hydroelectric dam PES fund have received only a meager amount that barely compensated them for their forest conservation efforts or hardly covered the opportunity costs associated with their not having converted forests into coffee plantations. Ensuring the success of watershed-related payment schemes and increasing buyers' understanding of the benefits and potential costs of failing to protect watersheds necessitate the establishment of the links between watershed protection, the watershed-related services and the importance of the payment in maintaining the services (FAO-RAP 2011). In planning PES schemes, it must also be considered that not all downstream users are wealthy and payment systems may also unfairly impose costs on poor households.

As a form of PES, China's Grain for Green Programme (also called the Conversion Croplands to Forests Programme), provided grain and cash subsidies and free seedlings to farmers in return for converting their farmlands on steep slopes to grasslands, economic forests or ecological protection forests, and for the afforestation of barren lands. Prompted by the 1998 flooding of the Yangtze River, the programme aimed to reduce soil erosion and increase forest cover while reducing rural poverty. Farmers who participated in the programme were guaranteed tenure for 50 years and economic benefits from the established tree crops. The programme is said to be the country's largest poverty alleviation project and community forestry project. A large number of rural households are recorded to have achieved higher incomes from the subsidies than from their former farming practices (Lui and Wu 2010). Other farmers, however, suffered income shortfalls as the level of compensation did not match their previous income and full compensation was not given in some areas (Bennet 2007). Additionally, the question of how farmers will derive economic benefit from the established forests, and particularly from ecological forests, when the subsidies stop in 2016 remains a concern.

Carbon Payments: Opportunities and Risks

Carbon payments, especially reducing emissions from deforestation and forest degradation (REDD) plus schemes, are gaining considerable attention in relation to expectations of huge flows of funding.

Depending on the extent to which local-level rights are recognized and poverty alleviation goals are incorporated into REDD plus strategies, REDD plus may have positive or negative impacts on local communities, indigenous peoples and the poor. Current demonstration and pilot REDD plus projects, place varying emphasis on poverty alleviation, community rights and participation. Potential benefits of REDD plus for local communities and indigenous peoples include the following (Poffenberger and Smith-Hanssen 2009):

1. strengthened security of forest tenure rights through legal recognition under national legislation and international agreements;
2. increased revenues and/or grant funds that could support a range of forest management and community development activities, such as sustainable agricultural programmes, microfinancing, infrastructure development and capitalization of the local economy; and
3. empowerment of local communities as equal stakeholders in multi-tiered agreements among forest-dependent communities, national governments, and international carbon markets.

There are, on the other hand, a number of risks associated with REDD plus projects whereby local people's rights are disregarded in efforts to maximize carbon-related income. Under such circumstances poverty could be exacerbated. The huge funds potentially available for standing forests or forest plantations could result in land-grabbing and expropriation of indigenous peoples' lands; reinforcement of central government and corporate control over forests and forestlands; designation of forests by governments and NGOs as protected areas and sustainably managed forests without informed participation at the local level; and loss of local community access to forest resources leading to economic dislocation, particularly if projects seek to ensure strict forest protection (Griffiths 2007).

Recommendations

For forests and the forestry sector to contribute to poverty reduction, this objective must be prioritized in national forest policies and forest management plans and programmes. Given the complex, multi-dimensional and dynamic nature of poverty, forests and forestry alone will not eradicate rural poverty. Forestry-based poverty alleviation strategies need to be integrated in broader rural development programmes to meet the basic needs and deliver social services that address the diverse conditions among the poor. This will require forestry departments to join with other organizations, agencies and stakeholders beyond the forestry sector to initiate rural development and poverty alleviation programmes with forestry included as an integral component.

Community forestry, commercial and industrial forestry, and PES (including carbon payments) offer varying levels of opportunity and potential in relation to poverty reduction. Depending on national development and forestry-related priorities, focus on different areas may be appropriate. To improve the contribution of forestry to poverty eradication, and not simply poverty mitigation, four priority actions for the three areas of forestry are identified as fundamental prerequisites necessary to expand benefits for the poor:

1. Allocation of clear and secure forest tenure and forest management rights over productive, good quality forests to poor people and local communities;

Secure tenure and clear management rights act as a guarantee to individuals, families or communities involved in forest management that they will reap benefits associated with their efforts to manage allocated forest resources. They also act as an incentive for them to invest in long-term forest management and local enterprises, and provide them leverage to negotiate with private companies aiming to operate in their allocated forest areas. Clear forest tenure and rights are also a requisite in ensuring equitable participation and allocation of benefits to local communities, including the poor, in PES and carbon payment schemes.

2. Capacity building for individuals, families and communities to develop the skills necessary to sustainably manage forests and derive economic benefits;

People and communities have different sets and levels of skills: as such, their capacity building needs vary. The skills and capacities needed may be related to sustainable forest management; enterprise development, including skills for making handicraft, furniture and other products; marketing; domestication and propagation of commercially valuable NWFPs; and organizational development, such as participatory decision making, fund management and awareness building.

3. Support for the development of economically viable and environmentally sustainable community enterprises and SMFEs;

Secure tenure and management rights and access to skills training and information are requisites in promoting the establishment of local enterprises. Related actions can also include the simplification of regulations on resource harvesting and marketing; providing credit and finance and marketing support; and support for the development of mutually beneficial partnerships between forestry companies and communities.

4. Ensuring equitable sharing of benefits from community forestry initiatives, large scale forestry activities, PES schemes and REDD+ projects

Some specific actions to promote the participation of poor households and increase benefits accruing to them include targeting the poor in selecting participants (using appropriate criteria to identify poor households), using forest revenues for projects that truly benefit the poor, waiving administrative fees for poor households, and ensuring representation of poor households, women and disadvantaged groups in village and forest management committees.

References

Angelsen, A. & Wunder, S. (2003). *Exploring the forest-poverty link: Key concepts, issues and research implications*. Center for International Forest Research.

Barr, C. & Stafford, B. (2009). Emerging scenarios in the Asia Pacific pulp and paper sector to 2020: A preliminary assessment of implications for wood demand and landuse. In R. Lesli (Ed.), *Asia-Pacific Forestry Commission – The future of forests in Asia and the Pacific: Outlook for 2020: 16-18 Oct 2007, Chiang Mai, Thailand*. Bangkok: Food and Agriculture of the United Nations-Regional Office for Asia and the Pacific (FAO-RAP).

Bennett, M.T. (2008). China's sloping land conversion program: Institutional innovation or business as usual? *Ecological Economics*, 65 (4), pp. 699-711.

Donovan et. al. (2006). The business side of sustainable forest management: Small and medium forest enterprise development for poverty reduction. *Natural Resource Perspectives*. Overseas Development Institute (ODI).

Fisher, R.J. (2011). Thailand's forest regulatory framework in relation to the rights and livelihoods of forest dependent people. In H. Scheyvens (Ed.), *Critical review of selected forest-related regulatory initiatives: Applying a rights perspective*. Institute for Global Environmental Strategies (IGES).

Food and Agriculture Organization – Regional Office for Asia and the Pacific. (2011). *Southeast Asian forests and forestry to 2020: Subregional report of the second Asia Pacific forestry sector outlook study*. Bangkok: FAO-RAP.

Griffiths, T. (2007). *Seeing 'RED'? 'Avoided deforestation' and the rights of indigenous peoples and local communities*. Forest Peoples Programme.

Grouwels, S. (2009). Editorial. *Non-wood News 19*. FAO. Retrieved from http://www.fao.org/docrep/012/i0987e/i0987e00.htm

Hansen, P., Durst, P., Mahanty, S., & Ebregt, A. (2007). Managing forests for poverty reduction: Key concepts and conference overview. In R. Obendorf, P. Durst, S. Mahanty, K. Burslem, & R. Suzuki (Eds.) *A cut for the poor: Proceedings of the international conference on managing forests for poverty reduction: Capturing opportunities in forest harvesting and wood processing for the benefit of the Poor.* FAO, RECOFT & SNV.

Hanssen, C. (2007). *Lao land concessions, development for the people?* Proceedings: International Conference on Poverty Reduction and Forests, Bangkok, September 2007. Retrieved from http://www.mtnforum.org/sies/default/files/pub/4948.pdf

Herbohn, et. al. (2007). Improving the triple bottom line returns from smallholder tree farms in the Philippines: A systems approach. In S. R. Harrison, A. Bosch & J. L. Herbohn (Eds.), *Improving the triple bottom line returns from small-scale forestry: Proceedings from an international conference. Improving the triple bottom line Returns from small-scale forestry, Ormoc, Philippines, (205-214). 18-21 June, 2007.*

Kayoi, M. et. al. (2006). *Poverty and natural resource conflict in Indonesian Papua: Reconciling growth and social justice.* Retrieved from

http://www.profor.info/profor/Documents/pdf/livelihoods/IndonesianPapuaCaseStudy.pdf

Kothari, A., Pathak, N., & Bose, A. (2011). Forests, rights and conservation; FRA Act 2006, India. In H. Scheyvens (Ed.), *Critical review of selected forest-related regulatory initiatives: Applying a rights perspective*. Institute for Global Environmental Strategies.

Leefers, K. (2005). The impacts of the Natural Forest Protection Program on rural livelihoods in Yunnan, China. Retrieved from http://forestry.msu.edu/china/New%20Folder/Kris_NFPP.pdf

Leimona, B. et. al., (2006). Singkarak: Combining environmental service markets for carbon and watershed functions? In D. Murdiyarso & M. Skutsch (Eds.), *Community forest management as a carbon mitigation option: Case studies*. Bogor, Indonesia: CIFOR.

Liu, C. & Wu, B. (2010). *'Grain for Green Programme' in China: Policy making and implementation. Briefing Series Issue 60.* China Policy Institute. Retrieved from http://www.nottingham.ac.uk/cpi/documents/briefings/briefing-60-reforestation.pdf.

MacQueen, D. (2006). *Opportunities and challenges for integration of small and medium forest enterprises into value chains*. In International Conference on Small and Medium Forest Enterprise Development for Poverty Reduction: Opportunities and Challenges in Globalizing Markets, Turrialba, Costa Rica, 23-25 May 2006.

MacQueen, D. (2008). *Supporting small scale forest enterprises – A cross-sectoral review of past practices.* IIED Small and Medium Forestry Enterprise Series No. 23. London, UK: International Institute for Environment and Development.

Maturana, J. et. al. (2005). *Moving towards company-community partnerships: Elements to take into account for fast-wood plantation companies in Indonesia*. CIFOR Working Paper No. 29.

Mayers, J. (2006). *Poverty reduction through commercial forestry: What evidence? What prospects?* The Forest Dialogue.

Mullan, K., Konteleon, A., Swanson, T., and Zhang, S. (2008). *An evaluation of the impact of the Natural Forest Protection Programme on rural household livelihoods*. Retrieved from http://www.landecon.cam.ac.uk/research/eeprg/cleed/pdf/selected_pubs/200834.pdf.

Obidzinski, K. & Barr, C. (2005). *Forestry sector employment in Indonesia Riau Province.* (Draft for Review). Retrieved from http://www.scribd.com/doc/41493832/DRAFT-for-Review-Riau-Forestry-Sector-Employment-Study-July-2005

Philippine Federation for Environmental Concern (PFEC), Department of Environment and Natural Resources (DENR), NGO-CBFM Support Group (NGO Consortium), People's Organization (POs) and Local Government Units (LGUs). *CBFM strategic plan 2008 – 2017.*

Poffenberger, M. and Smith-Hanssen, K. (2009). *Forest communities and REDD climate initiatives.* East-West Center. Retrieved from http://www.communityforestryinternational.org/publications/articles/Forest_Communities_and_REDD-EWC-2009.pdf

Regional Community Forestry Training Center (RECOFTC). (2009). *Is there a future role for forests and forestry in reducing poverty?* Working Paper No. APFSOS II/WP/2009/24. Bangkok: FAO.

Regional Community Forestry Training Center (RECOFT), ASEAN Social Forestry Network (ASFN) & Swiss Agency for Development and Cooperation (SDC). (2010). *The role of social forestry in climate change mitigation and adaptation in the ASEAN region: Assessment 2010.* RECOFTC, ASFN and SDC.

Schneck, J. (2009). *Assessing the viability of HTR – Indonesia's community-based forest plantation program*. Duke University. (Master's project).

Sunderlin, W., Angelsen, A. & Wunder, S. (2003). Forests and poverty alleviation. In *State of the world's forests*. Rome: FAO.

The Economics of Ecosystems of Biodiversity (TEEB). (2010). *National-level soil erosion control policies in China*.

Warner, K. (2007). Big trees for little people: Managing forests for poverty reduction. In R. Obendorf, P. Durst, S. Mahanty, K. Burslem, & R. Suzuki (Eds.) *A cut for the poor: Proceedings of the international conference on managing forests for poverty reduction: Capturing opportunities in forest harvesting and wood processing for the benefit of the Poor.* FAO, RECOFT & SNV.

World Bank. (2000). *World development report 2000/2001: Attacking poverty.* New York: Oxford University Press.

Yasmi, Y., Broadhead, J., Enters, T. & Genge, C. (2010). *Forestry policies, legislation and institutions in Asia and the Pacific: Trends and emerging needs for 2020.* Bangkok: FAO-RAP.

I

Assessment of the Contribution of Forestry to Poverty Alleviation in Bhutan

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Introduction

Located in the eastern Himalayas, Bhutan is a landlocked country bordered by China in the north and India in the south. It has a relatively low population density, with a population of approximately 600,000 people in a total land area of 3,839,400 ha (LCMP 2010). It has a rugged and mountainous terrain, with steep slopes descending into narrow river valleys (Dhital 2009).

Forest Resources of Bhutan

Based on the 2010 Bhutan land cover assessment, the national forest cover is about 70.5% of the country's total land area, of which 44% is broadleaf forest, 16% mixed conifer forest, 5% fir forest, 3% chirpine forest, 2% blue pine forest, and 0.8% broadleaf mixed with conifer forests. Shrubs constitute 10.4% of Bhutan's land area, while cultivated agricultural lands and meadows constitute 2.9% and 4.1%, respectively. Adding scrub cover to the forest cover will bring the total to 81% of the country's land area (LCMP 2010). Agricultural lands dropped from 7.9% in 1995 (LUPP 1995) to 2.9% cultivable land in 2010 (LCMP 2010).

Economic Development

The vision for the future contained in "Bhutan 2020" re-affirms the concept of Gross National Happiness (GNH) as the central development concept for the country. This organizing concept is translated into objectives or the pillars of GNH that give strategic direction to policy making and implementation. These pillars include equitable and sustainable socio-economic development, environmental conservation, preservation and promotion of culture and good governance, and their linkages. The strategic directions from the GNH pillars require that, while the country's rich biodiversity can be regarded as a development asset, this should not compromise environmental conservation. These also emphasize that development must take into account the devolution of new powers and responsibilities to the district and sub-district levels.

Bhutan's socio-economic development planning dates back to the 1960s with the start of the preparation of five-year development plans. Since that time, poverty has always been a major concern of the government. The first five-year plan led to the opening of the road connection between Bhutan and its neighboring country, India. The country had very little infrastructure like schools, hospitals and roads.

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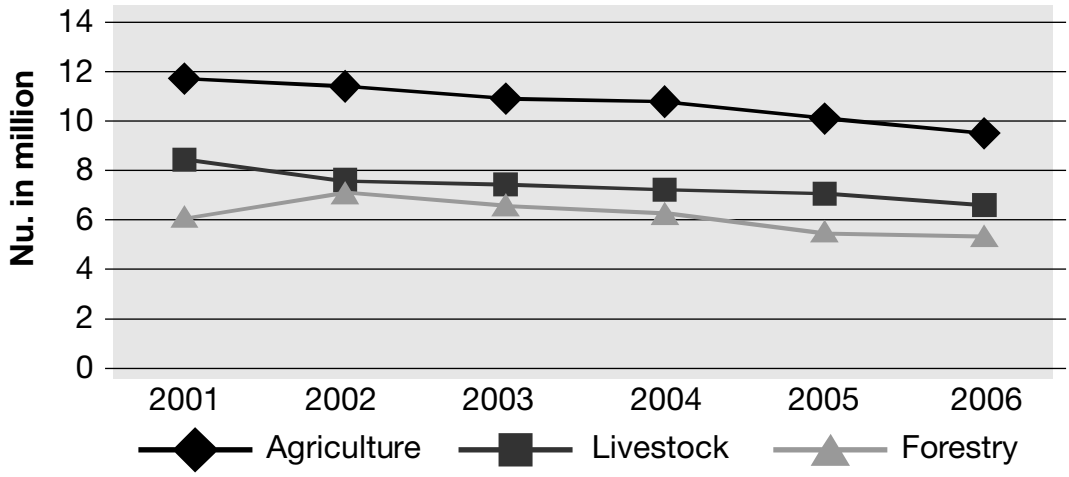
Life in an unforgiving environment was difficult and short-lived. In the subsequent five-year plans, the Royal Government of Bhutan (RGoB) placed high priorities on the socio-economic sectors such as education, health, and agriculture for the livelihood improvement of the Bhutanese people. Since then, the nation has undergone a major transformation. The Kingdom's economy is no longer entirely dependent on subsistence production. The gross domestic product (GDP) increased to Bhutanese Ngultrum (Nu) 61 million in 2011 from Nu 2.4 million in 1995. The share of the agriculture sector to GDP decreased from over 53% in 1985 to 18.2% in 2011 with the increase of secondary sectors like electricity (19%), community and social services (13%), construction (12%), transportation, storage and communication (10%), manufacturing, finance and insurance (8% each), wholesale and retail trade (5%), mining and quarrying (2%) and others, including private and tax subsidies (4%). The development of transportation and communications transformed the Kingdom into an increasingly integrated national economy. Since the 1960s, a road network of more than 3,300 km has been constructed, linking 19 of the nation's 20 districts today. The establishment of mobile services leapfrogged, setting up expensive communication infrastructure in mountainous terrains.

Today, mobile services across the country are state-of-the-art communication technology. Per capita GDP is estimated at US$ 2,109 with an average GDP growth rate of 6.7% in 2011, slightly below 6.8% in 1985. This indicates that the average growth rate was slow, but GDP increased by 25 times from 1985 due to the contribution from tertiary and service-oriented sectors, such as hydroelectricity and water services. The contribution from electricity and water services is expected to grow further with the expansion of hydropower plants and their network in the country. Another emerging sector is tourism that contributed US$ 38.8 million in 2008 (WCD 2010).

Contribution of Forestry to GDP

The Renewable Natural Resources (RNR) sector comprises agriculture, livestock, and forestry. According to data from the National Statistical Bureau 2007 (PPD 2008), the contribution of RNR sector to the national GDP has been slightly declining from 2001 to 2006 (Figure I.1). On the average, during this period, the agriculture sector contributed 44%, the livestock sector 30%, and the forestry sector 25%. According to 2011 estimates, agriculture's share to GDP decreased to 18.2% from 53% in 1985 (NSB 2010). Forestry and logging contributed Nu 2.6 million, just about 4% of the GDP (NSB 2010). The contribution of forestry is mainly in the form of royalties, levies, and sale of round logs, wood products, and commercially important non-wood forest products (NWFPs). The contribution of forests-based ecosystem services is currently undervalued, which otherwise could increase the RNR sector's contribution to the national GDP. However, forestry contributes a lot to forest-dependent communities in rural Bhutan as not all forestry goods and services are monetized.

Figure I1. Contribution of forestry to RNR Sector GDP at current prices



Source: PPD 2008.

Poverty in Bhutan

The first poverty index statistics showed that 31.7% of the population was below the poverty line in 2004 (PAR 2004). This was reduced to 23.2% in 2007 (PAR 2007), indicating that Bhutan is well on its way to halving the proportion of the population below the poverty line by 2015. Based on the 2007 report, the national poverty line was Nu 1,097[1] (US$ 24.6) per person per month. This figure does not take into account recent inflation and current market prices. The poverty analysis report (PAR) in 2004 noted that despite the progress made in good governance and economic development in the country, poverty persists, mostly in the rural areas (PAR 2007). Poverty reduction strategies developed over the years for improving the living standards of the poor allocated resources for developmental activities such as rural electrification, farm roads, basic health units, rural drinking water schemes, telecommunication facilities, and environmental conservation through the promotion of community and private forestry. However, the RGoB recognizes that much more needs to be done to reduce poverty in the country; thus, the RGoB and international donors emphasize support on assisting poor and vulnerable groups through special projects.

About 69% of the Bhutanese people are living on subsistence farming, livestock raising, and forestry practices. In general, farmers own very minimal landholdings and these are in many cases highly scattered and fragmented. These make it difficult for them to farm and guard their agricultural crops from destruction by wild boars, elephants, and other wild animals, a common problem throughout the country. Most of the farmers, especially those most vulnerable, depend on forest resources for their needs and cash generation. Thus, forests are an integral part of the farmers' livelihood. For the people of Bhutan, forests are an important natural renewable resource.

Poverty Reduction and Forestry Policy in National Poverty Alleviation

National Poverty Reduction Strategy

In the 10th Five Year Plan (FYP 2009-2013), poverty reduction is an overarching goal and this has major consequences for medium-term policy orientation in the forest sector. The plan emphasizes the importance of mainstreaming environmental issues into the development planning process to maximize both sustainable utilization and conservation of natural resources. It also recognizes the growing challenge of balancing development and livelihood opportunities with the need to conserve the environment. One of the five specific policy objectives of the 10th FYP is to conserve and promote sustainable commercial utilization of forest and water resources. It also noted that, more than any other sector, the RNR sector has the deepest linkage to the 10th Plan's theme and objective of poverty reduction and the best prospects to address it. Among the strategic measures included is one related to the establishment of community forests and expansion of commercial harvesting of NWFPs. This measure is clearly aimed at making progress in both devolution and poverty reduction within a broader sustainable development framework.

Among the districts (dzongkhags) in Bhutan, Samtse, Zhemgang, and Samdrup Jongkhar have the highest poverty incidence of 52-69%, followed by Mongar and Trashi Yangtse with an average poverty incidence of 44%. Lack of access roads and electricity are among the main factors impeding development in the rural areas (Kuensel 2011). Thus, accelerating rural farm road and electrification should be among the key measures for poverty alleviation in the country (Ibid.).

[1] The national poverty line, Nu 1,096.94 (US$ 24.6) per person per month, is below the international standard of US$ 1.25 per person per day. Nu 1,096.94 is broken down into Nu 867 for food needs and Nu 229.94 for non-food expenditure (Kuensel 2010).

Forest Policy and Its Objectives

About 71% of Bhutan's forests are government-owned and are managed and protected by the Department of Forests and Park Services (DoFPS). Almost 41% of the forest area is contained within the Protected Area System with an additional 9.5% designated as biological corridors. This makes a total of 51% of the total forest area designated as national parks and reserves. As of June 2009, 0.9% of the government reserved forests (GRFs) were handed over to communities as community forests for their management and protection. The DoFPS target is to issue a total of 4% of the total forest area to local communities by 2013 (DoFPS 2009). Communities are given use rights and control of forest products and services in community forests, although the land belongs to the government. Forest products harvested include timber and wood, such as sawn beams, planks for the construction of houses and buildings, poles for scaffolding, fencing and religious flags, and fuelwood for cooking and heating (Dick and Yonten 1995); NWFPs such as food, medicinal plants, leaf litter collected for cattle bedding and fertilizers (Roder et. al. 2003), mushrooms picked for vegetables and cash income (Namgyel 1996); and tree and grass fodder for feeding domestic cattle (Roder et. al. 2003). The forested watersheds of Bhutan also provide vital ecosystem services like watershed regulation for hydro-electricity generation, irrigation and domestic water supplies.

According to the forest resource assessment, out of the total forest area, 14% is potentially available for commercial exploitation while 9% is available for exploitation with improved science-based technology, improved forest road networks, and forest management plans. About 5% of the national forest is currently under 16 forest management units (FMUs) that are parts of the national forest set aside for the harvesting of forest products for commercial and non-commercial uses. With the rapid development of construction industries in the country, the challenge to meet timber requirements and other forestry goods and services is a growing concern of the government. The national forests are also being lost to infrastructure development (such as road networks, urban expansion, and electricity grid networks) and agri-horticultural encroachment.

A key feature of the National Forest Policy (NFP) is the application of an integrated landscape level approach to sustainable forest management (MoAF 2009). This is done through the implementation of strategies aimed at achieving a balance between conservation and sustainable utilization that respects the cultural values of the forests. Of particular importance is the emphasis on poverty reduction that is a thread woven throughout the policy objectives and strategies. The framework for the NFP consists of a long-term goal and major policy objectives and principles. The goal of the NFP is for forest resources to be managed sustainably to provide a wide range of social, economic, and environmental goods and services, which benefit all citizens, while still maintaining 60% of the forest cover at all times. To achieve the NFP goal and to ensure that all citizens receive an equitable share of the benefits from sustainable forest management, six broad poverty reduction strategies are to be pursued within a planning framework that integrates environmental and economic or commercial outcomes, as well as poverty reduction outcomes Box I.1.

Box I.1. Strategies toward achieving the National Forestry Policy goals

The six strategies are as follows:

- Sustainable production of environmental goods and services to meet the long-term needs of society through sustainable management of forests, including government reserved forests inside and outside FMUs:
- Maintaining species diversity and ensuring long-term sustainability of biodiversity, ecosystem services, and natural habitats through a network of protected areas (including national parks, wildlife sanctuaries, conservation areas, botanical parks, nature reserves, and biological corridors), with other parts of the forest landscape also managed to deliver positive environmental outcomes;

- Active management of watersheds in the forests to achieve sustainable rural livelihoods and produce a reliable supply of high quality water for domestic use, irrigation and hydropower production;
- Meeting the demands of rural communities from community forests and deriving economic benefits from the sustainable management of their forests through the sale of forest products and services. The increase in community forestry area is partly due to the relaxation of forest resources management and ownership by the community forestry rules in 2006 providing an enabling policy framework and guidelines.
- Establishment of economically viable and efficient forest based industry, utilizing both wood and non-wood products, aimed at adding value; and,
- Organizational and institutional reforms carried out at managerial, technical, and administrative levels and capacity development to implement strategies and achieve policy objectives.

Several principles guided the framing of the National Forest Policy:

- Equity and justice in terms of access, utilization and conservation of forest resources and ecosystem services;
- Contribution of forest products and services to poverty reduction;
- People-centered forest management and decision-making, including management of national forest areas outside FMUs, community forests and private forests; and,
- Application of good science and indigenous or local knowledge to underpin all aspects of forest planning and management.

Contribution of Past and Current Forestry to Poverty Alleviation

Subsistence Use of Forests and Allocation of Tenure over Forest Resources

The 10th FYP (2009-2013) adopted poverty reduction as its overarching goal that has major consequences for medium-term policy orientation in the forest sector. Wood products, such as timber for constructing houses and buildings both in urban and rural areas, are the primary use of forests in Bhutan. Rural communities obtain trees and timber for house construction at a subsidized rate, as well as firewood, fodder, medicines, and other products for subsistence use. Several studies, however, suggest that NWFPs have greater potential than wood to generate income for rural communities in general. Some studies show that bamboo and cane (Moktan et. al. 2009), lemon grass (Yangzom et. al. 2009), chirata (Pradhan et. al. 2008), and cordyceps (Moktan et. al. 2010) have contributed to income generation and poverty reduction at the household level.

Community Forests

It is estimated that about 4% of the forest land will be designated as community forests by the end of 2013 (DoFPs 2010). This targets the establishment of 400 community forests, in addition to the 200 community forests already established as of December 2009. This will involve 9,763 rural households managing 24,997 ha of community forests (DoFPs 2010). Community forest management plans encompass both wood and NWFP management. The community forest program is one of the pillars of income generation and poverty reduction in Bhutan's rural communities in forestry. According to Dorji and Phuntsho (2007), the community forest management groups are not only able to meet their basic forest resource needs, but can also sell surplus trees and timber (after meeting household member's domestic needs) for cash income. A part of the proceeds is contributed to a community revolving fund

to meet the expenses during community forestry activities. Similarly, Chetri et. al. (2009) reported that local communities generate substantial benefits from community forests through the sale of timber, firewood, and NWFPs. However, to realize the full potential of community forests, simplified procedures for the communities' sale of timber and other forest products and services are required. Others report that establishing hundreds of community forests will be a major provider of rural employment that can draw unemployed people in urban areas to the villages and make living in rural villages economically attractive (Namgyel 2010). As of now, only a few community forestry groups can generate excess timber but many derive benefits as workers paid on a daily wage basis for planting, fire line creation, and nursery activities. Wangdi and Tshering (2006) describe increased community participation in three community forests and earnings worth Nu 752,400 from labor contribution.

Private Forests

With the enactment of the Forest and Nature Conservation Act 1995 and the Private Forestry Rules 2006 legalizing private forests, a number of farmers from various parts of the country applied for private forests. In the west central region, 66 and 25 households in Dagana and Tsirang, respectively, submitted their applications. Although community forestry has significantly advanced, private forestry is far from taking off. Discussions with private forest owners and survey findings reveal that the people's interest and willingness to own private forests is in direct response to forest resources security due to the rapid socio-economic and institutional changes, notably the enabling legal framework. Private forests are grown in private land, thus tenure and resource security are more assured than in community and government reserve forests. Private forests can contribute to food security in many ways. The types of trees commonly selected for planting in private forests include those for household use and those of commercial value, mainly fast-growing trees. The species desired for timber (for house building) are *Michalea champaca*, *Juglans regia* and *Cupressus corneyana*; for firewood (for cooking and heating), *Alnus nepalensis*, *Castanopsis* and *Quercus griffithii*; for tree fodder (for cattle feeding), *Ficus roxburghii*, *Ficus cunia*, *Saurauja nepalensis*; and for grass fodder, *Thysanolaena latifolia* commonly known as tiger grass. Timber and firewood in excess of household use can be sold for cash income as per the private forest rules. Integration of multi-purpose trees and grasses in the private forests is beneficial. For example, broom grass not only provides winter fodder but also raw materials for making commercial brooms. This indicates that more than community forestry, private forests have a huge potential to take on board and demonstrate forest management that is closer to the people, to guarantee forest resources security, and to reduce poverty.

Commercial and Industrial Forestry

Non-Wood Forest Products

Non-wood forest products feature prominently in the 10th FYP of the RGoB as a strategy toward achieving the overarching policy goal of poverty reduction (SFD 2008). It clearly states the "establishment of community forests and expansion of commercial harvesting of NWFPs." Within the strategic framework, the policy objective for NWFP development is "strengthening agricultural marketing mechanisms to expand local markets for primary produce and enhance export of NWFPs and other low-volume, high-value products with specialization, standardization, and certification." Based on this, the forest sub-sector program outlines strategies to sustain the resource base and income from NWFPs (Box I.2).

Box I.2. Forestry sub-sector plans for NWFP development

- Formulation of the national strategy for NWFP development;
- Development of methodologies for assessing NWFPs that best suit local circumstances;
- Development of management guidelines for prioritized NWFPs and training of local government and communities in sustainable management;

- Analysis of problems and opportunities related to NWFPs harvesting, post-production technology, ecology, community use management, and marketing practices;
- Piloting of locally adapted NWFPs management regimes; and
- Review of forest and nature conservation rules to ensure that they support sustainable utilization of NWFPs.

NWFP management approaches are community-based within the framework of Community Forestry Strategy and Rules and Community-Based Natural Resource Management with specific technical guidelines. The NWFP program is coordinated and implemented under the guidance of the Social Forestry Division of the DoFPS.

To focus NWFP development activities, priority species were identified during a national stakeholders' workshop held on 16 November 2007 (SFD 2008) based on the following criteria: (i) economic (local demand and export market value, income generation, and bio-prospecting); (ii) social (job creation, poverty reduction for rural communities, and food security); (iii) environmental (positive impact on biodiversity conservation and protection); and (iv) technological (ease or difficulty in the propagation and cultivation, processing, marketing and export).

The Social Forestry Division established more than 100 community forests and 13 of these are concentrating on NWFP management. Recent studies show that NWFPs are indispensable at the household level for food, medicine, and cash income generation among rural communities. The total revenue generated from NWFPs between 2003 and 2007 amounted to Nu 146 million (about US$ 3.3 million) compared to Nu 86 million (US$ 1.9 million) from wood products, showing the importance of NWFPs in forest sector development and overall poverty reduction (PPD 2008). The revenue, however, tends to fluctuate from year to year, reflecting unreliable production. Although the policy focuses on reducing rural poverty through the commercialization of NWFPs, rural farmers lack technical capacity, capital and entrepreneurship skills to add value to NWFP products through processing and better marketing.

Also, a substantial amount of revenue through the export of NWFPs goes to the RoGB's general budget. The commercially important NWFPs exported are high-value mushrooms, lemon grass oil, *Ophiocordyceps sinensis*, and incense. The markets for Matsutake mushroom (*Tricholoma matsutake*) are Japan, Singapore, Thailand, and the United Kingdom. Bhutanese essential oils are well received in European markets with growing demands in the United Kingdom and Canada. Incense sticks are exported to Singapore, Taiwan, USA, UK, and Hongkong. Cordyceps are exported to Hongkong, Singapore, China, and USA (California). These high-value low-volume NWFPs have relatively organized markets, but not their production, as most NWFPs are harvested from the wilderness.

In the high mountains of Bhutan, cordyceps, a caterpillar fungus, is harvested annually by rural communities since harvesting was legalized in 2004. It is used as a general health tonic to improve stamina, vigor, and vitality. After the relaxation of the collection and sale of cordyceps, there is an increasing demand in international markets offering high cash returns for collectors and exporters. It was observed that, with the start of cordyceps harvest, the livelihood of high altitude herders transitioned from subsistence to cash economy. Annual production reached a record high of 673 kg in 2008 with financial value of Nu 97 million. Cordyceps collection, however, suffers from a lack of coordination during harvest, leading to over-harvesting and degradation of natural habitats.

Bamboo and rattan that grow in the forests of eastern and southern Bhutan contribute about 66% of the gross income of households in Bjoka, East Central Bhutan (Moktan et. al. 2009). The local communities specialize in the manufacture of high-quality finished products designed for the export markets and showcase traditional cultural heritage. Bamboo and rattan can be sustainably cut without jeopardizing the forest integrity.

Chirata is an important medicinal plant used to combat malaria and the roots containing concentrated chiratin are used for treating common cold, flu and mosquito-borne illnesses. It is a commercially important plant for rural communities of Singkhar Lauri in southeastern Bhutan. The plants, after maturing, are uprooted, bundled, and sold to the National Institute of Traditional Medicine (NITM) and exported across the Indian border for the manufacture of pharmaceutical medicines. During 1992-93 and 1993-94, Singkhar Lauri farmers collected about 18 tonnes and 20 tonnes of chirata worth Nu 504,000 (US$ 18,000) and Nu 560,000 (US$ 20,000), respectively. According to Pradhan et. al. (1998), the harvest, collection, and sale of chirata contributed the bulk (42%) of the gross household incomes of Singkhar Lauri farmers.[2] Postharvest practices such as improving processing, packaging, and marketing need to be further explored.

According to Namgay et. al. (2007), incense plants contributed 14% of the total income of the Layaps, the members of the Laya village in Gasa district. Of the 14 species of incense plants found in Laya, five common species contribute 94% of the proceeds from the incense products. Most of these incense products are sold in urban centers, e.g., Thimphu. NWFPs, such as medicinal plants, mushroom and bamboo, as well as handicrafts, have a growing market worldwide as such niched products are increasingly getting scarce. There is a growing demand for ecological, nature-based products offering attractive prices, mainly from developed economies. Bhutan's rich forests provide a wide range of these NWFPs with potential benefits to both conservation and development.

Certified organic lemongrass oil is used in perfumes, soaps, and cosmetics and for pharmaceutical preparations in developed nations (FAO 1996). Bio-Bhutan, a private enterprise, exports certified organic oil to Asia, Europe, and the USA with prices ranging from US$ 20-23 per kg of oil (Yangzom et. al. 2008).

Among the wild mushrooms found in the forests of Bhutan, the Matsutake mushroom is one of the commercially important ones, contributing to cash income generation for farmers during the growing season. According to Dhital (2009), between 2000 and 2005, a total of 9,339 kg of Matsutake mushrooms was collected with a total value of Nu 3.92 million (from both the market value of Nu 3.73 million and royalty of Nu 0.19 million).

Bio-energy

The main sources of energy supply for rural Bhutanese households for cooking and heating are fuel wood, wood chips, briquette and, occasionally, animal dung. Biomass energy is predominant, having the largest share (42%) of the overall energy supply matrix, followed by electricity from hydropower plants (DoE 2008). Biomass in the Bhutanese context includes wood, wood waste, peat, wood briquette, agriculture waste, and straw. Fuelwood forms the primary energy source for cooking, heating, and lighting for 69% of the rural population while fuelwood is used for room heating among the urban population, especially during winter. The rural poor are allowed to collect fuelwood from government forests for household use. Unlike the rural areas in Nepal and India, rural farmers in Bhutan do not sell firewood. Bhutan consumed about 725,000 tonnes of fuelwood in 2005, which accounted for 57.7% of the overall energy supply matrix. Bhutan has one of the highest per capita biomass energy consumption in the world (DoE 2008). This situation, however, is gradually changing with the emergence of hydropower-generated electricity and the policy of "electricity for all" by 2020 and fuelwood substitutes such as fuel for cooking and heating appliances.

Until recently, vast volumes of sawdust generated from the production of sawn logs by mills were disposed of as wastes. The commissioning of briquette machineries by a government-owned company efficiently converted sawdust as a firewood substitute for heating urban homes. The briquette machineries are located in urban centers (namely, Thimphu and Paro) with production capacity of 750 kg and 250 kg per hour, respectively. Briquettes are packed in gunny bags bearing the slogan, "Save the forest, Keep

[2] Aside from chirata, the other sources of household cash income were daily wage labor (24.7%), livestock raising (19.8%), chili (8%), star anise (4.5%) and others.

green," for marketing. The product is sold at Nu 3 per kg in summer and Nu 3.5 per kg in winter. The initiative is promoting efficient utilization of wood wastes to reduce pressure on natural forests. Poor farmers are employed as laborers on a daily wage basis.

Wood products: demand, supply, and revenue

The more accessible and productive parts of Bhutan's GRFs are managed under a system of FMUs, and all FMUs are covered by management plans. FMUs supply all commercial timber demand through harvesting, transporting, and auctioning of round logs, followed by plantations in the logged forests by the Natural Resources and Development Corporation Ltd., a government-owned forest enterprise. The FMUs also accommodate demand for timber for rural construction use.

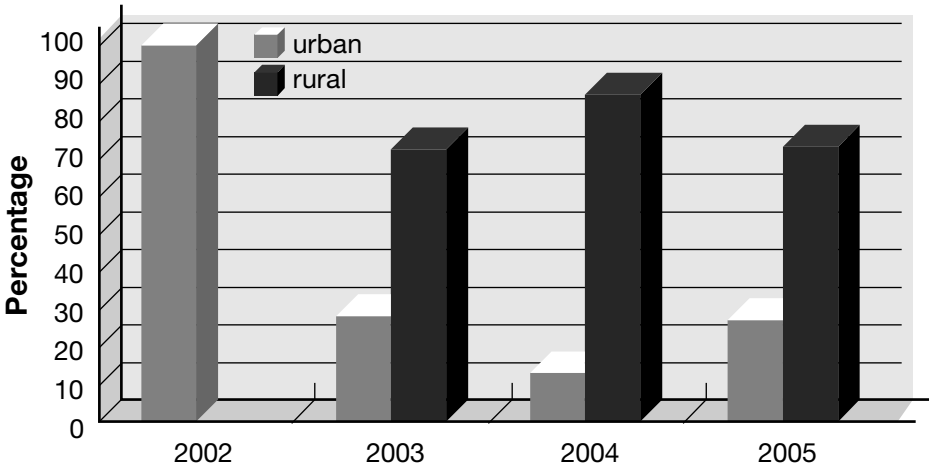
Round logs, sawn timber, and veneer, including non-wood products, account for about 20% of the exports. With the upsurge in infrastructure development in commercial towns across the country, the gap between timber supply and demand is widening. The bulk of the round logs harvested is used for the construction of houses in rural areas (Figure I.2). Demand for subsidized timber for rural house construction and other infrastructure, such as schools, hospitals and RNR offices, increased substantially from 2003 to 2005. The demand-supply gap is expected to widen in the future as urbanization increases. The DoFPS plans to reduce the gap by opening up potential areas under FMUs for commercial supply, bringing more national forests under community management and introducing forest-based enterprises. With the increasing demand, however, Bhutan may also import wood from neighboring countries in the future. Scientific studies on maximizing wood wastage in harvesting, transportation, and processing are lacking due to limited resources, research capacity, and facilities. There is ample opportunity to increase the supply and quality of wood products through reduction in costs, minimization of wastage from logging and transportation, and improvements in wood processing and use.

Table I.1. Timber production and consumption from FMUs for commercial use from 1997-2006

Production area	Demand	Supply	Deficit/surplus
	(m^3)	(m^3)	(m^3)
Wang Division	89482	89102	-380
Ringpung Division	129905	132261	2356
Zhongar Division	64321	67065	2744
Sha Division	98698	98055	-643
Zhemgang Division	66122	68172	2050
Phuentsholing Division	69763	69231	-532

Source: NRDCL 2007.

Figure I.2. Timber demand for urban and rural use



From 2003-04 until 2004-05, revenue generated from the sale of wood products to rural residents was slightly higher than revenue from wood products sold to urban residents (Table I.2). However, in 2005-06 and 2006-07, the revenue from the supply of wood products to urban users was around 60% and 92%, respectively, while revenue from the supply of wood products to rural users was about 17% and 8%, respectively. Although demand is higher in rural areas, more revenue is being generated from the sale of wood products to the urban consumers. This is because, at a subsidized rate, rural residents can buy timber at a much lower price than the amount urban residents pay for the same amount of timber. The total government revenue generated from supply of wood and wood products to rural and urban consumers from 2003-04 to 2006-07 amounted to Nu 85.93 million, which went to the government exchequer.

Table I.2. Revenue generated (Nu. in million) from supply of wood products.

User	Year			
	2003-2004	2004-2005	2005-2006	2006-2007
Rural	3.98	3.75	4.57	2.33
Urban	0.46	2.22	17.43	27
Monasteries	0.28	1.65	0.11	-
Government institutions	7.61	8.39	6.15	-
Total	12.33	16.01	28.26	29.33

Source: Department of Forests.

Government plantations

Commercial plantations in Bhutan date back to 1947 with the establishment of plantations along the sub-tropical foothills of Bhutan. Clear-felling followed by artificial planting of exotic and local species, such as teak (*Tectona grandis*), sal (*Shorea robusta*), champ (*Michelia champaca*), and other valuable species, was practiced. Since the 1960s, the plantation program expanded to other parts of the country to reforest degraded, denuded, and barren areas and to arrest forest degradation and forest cover loss, particularly in sub-tropical zones where high human population and cattle population co-exist. A total of 21,516 ha have been planted as of June 2008.

Although plantation has been an annual event throughout the first to the ninth FYP with the participation of government agencies and private and wood-based industries, progress has been slow. This is because of the country's dependence on the natural forests, which supply the bulk of the forest resource demand, lack of clear-cut plantation directions and strategy, lack of funding support, and other institutional gaps. Conifer and broadleaf plantations constitute about 2% of Bhutan's total forests cover. Rural people are employed on a daily wage basis as plantation laborers for planting in government land. Very little benefits are derived.

Wood-based industries plantation

Industrial and commercial forestry operations are carried out by a few wood-based industries such as the Bhutan Board Product Ltd. (BBPL), Natural Resources Development Corporation Ltd. (NRDCL) and Bhutan Chemical Carbide Ltd. (BCCL) for charcoal production. Out of the total plantations planted by various agencies, commercial plantations of short rotation-high density forests account for only 18.7%. As in government plantations, the rural poor are hired by the wood-based industry on a daily wage basis as workforce for planting, harvesting, wood processing, and marketing tasks. BBPL has two nurseries for supplying production and planting materials, NRDCL has 10 nurseries, while private individuals have 27 nurseries.

The constraints faced by industrial forestry are unclear legislation and regulation on leasehold government reserve forests, limited forest resources, and the need for accommodation of biodiversity

in plantation forestry. As regards the species and coverage, NRDCL since 2006 has established 53.85 ha of plantation of bamboo species, such as *Dendrocalamus giganteus*, *D. hamiltonii*, *D, strictus*, and *Bambusa balcooa* in the sub-tropical districts of Chukka, Mongar, Samdrup Jongkhar, Samtse, Sarpang, Wangduephodrang and Zhemgang, in addition to the ongoing regular plantation activities in the harvested cable corridor sites and degraded forest areas inside the FMUs. Bhutan is rich in bamboo resources but these remain under-utilized, due to the limited technological know-how and plantations. Many local communities manufacture bamboo crafts and their commercialization can bring positive benefits to their livelihoods. DoFPs and NRDCL jointly identified 351 ha of areas in Samtse for commercial plantations, and planting was initiated in 2007 in a phased manner for commercial species: teak, sal, champ and sissoo (*Dalbergia sisoo*). NRDCL plans to carry out commercial plantation of valuable species across the southern districts of Bhutan.

Wood-based industries

The national forest policy clearly stipulates the promotion of "an economically viable and efficient forest-based industry utilizing both wood and non-wood products aimed at adding value." However, the strategies to achieve this objective remain unclear. The move toward timber pricing and marketing reform resulted in the ban on round log export to satisfy domestic timber demand, improve wood processing, and minimize wastage. Wood-based industries can be climate-friendly by pursuing efficient harvesting, processing, and utilization of wood products and NWFPs. According to data from the Ministry of Economic Affairs (PPD 2008), there are a total of 324 operational wood-based industrial enterprises in the country, with operations varying from cottage-based to large scale: 121 furniture making shops, 21 incense making shops, nine paper factories, 77 sawmills and 13 woodcrafts shops. Rural people either own shops or get employed by the owners of these wood-based industries.

The formal forestry sector does not employ many people. For example, NRDCL, a company with seven field divisions spread out all over the country, currently provides employment to about 259 personnel in forest harvesting, forest road construction, plantations, sand and stones business, and wood-based industries (NRDCL 2011).

It is recognized that private sector development is an important driver of economic growth and can contribute significantly to employment generation and poverty reduction. The role of the government is to provide an enabling environment to encourage the private sector to grow and prosper. Until 2000, about 50% of the logs produced by the Bhutan Logging Corporation (now NRDCL) were exported. The local industry could not compete with outside buyers and thus suffered from shortage of timber. A ban on the export of logs and sawn timber was introduced in 2000 in an attempt to free up supplies for the local market and generate local employment. However, the ban was followed by an increase in the price of local timber brought about by increasing urban and rural infrastructure using wood as construction material. At present, the local wood processing industry is in an early stage of development and consists mainly of small sawmills, furniture units, joinery and woodcraft units, and particle board and plywood factories.

The efficient operation of a forest-based industry requires an open market and competition, and the presence of entrepreneurs who can take advantage of market opportunities. The harvesting, processing, and marketing of NWFPs from the rural areas are growing in importance and have the opportunity to contribute significantly to poverty reduction and food security. These are mainly cottage industries and require government support to ensure that NWFPs are harvested sustainably and that rural people who do the harvesting receive an equitable return on their efforts. The development of forest-based industries, utilizing both timber and NWFPs, can contribute significantly to income generation. In time, products sourced from private and community forests can also contribute to the overall supply. Supporting cottage-based industries in potential timber-yielding community forests are emerging initiatives of the Department of Forests and Park Services.

Payment for Environmental Services

Bhutan is well known for its pristine environment and conservation of its forests. With the national policy of keeping 60% of the country's land area under forest cover at all times, the Bhutanese population can benefit from the forests' environmental services. However, the identification, quantification, and valuation of various ecosystem services need to be studied, which can greatly enhance the contribution of forests to GDP.

Ecotourism

While tourism is increasingly being seen as a major opportunity for economic diversification (Norbu 2003), the country does not wish to compromise the fast economic return of tourism with erosion of cultural heritage and biodiversity. Thus, the current policy of high return and low impact tourism targets rich people and countries to limit the ill-effects of tourism on the physical and cultural environments. Endowed with a bountiful nature as well as rich and unique culture and traditions, Bhutan has a huge potential to benefit from this growing market.

According to the National Statistical Bureau (NSB 2009), the tourism industry in Bhutan began in 1974. The erstwhile government agency, Bhutan Tourism Corp., controlled tourism until its privatization in 1991. In 2008, there were 475 licensed tour operators. The potential as far as foreign exchange earnings are concerned is very high. The revenue generation from the tourism sector increased from over US$ 2 million in the late 1980s to over US$ 38 million in 2008. Culture and nature-based tourism are always the selling points for the tourism industry of Bhutan. In 2008, major festivals in the country attracted a significant number of visitors. There were 26,426 tourists who visited Bhutan for cultural exposure, holiday, and recreation purposes. Tourism businesses centralized operations, mostly by urban dwellers. In recent years, community-based tourism is being encouraged to make the benefits of tourism reach the rural communities. Such initiatives are currently piloted in a few areas. The rural poor receive minimal benefits through serving as porters and renting out their horses and mules for transporting luggage. They get paid based on the daily wage rate. The bulk of the benefits go to tour operators and tourism operation is centralized.

Bhutan's Protected Area Networks is opening up to markets for nature recreation, capitalizing on ecotourism, although the number of eco-tourists is less compared to tourists interested in Bhutanese culture. Ecotourism pursues a policy of promoting conservation as well as development for local communities in and around the protected areas.

Watershed management

With technical support from FAO, the Watershed Management Division of the DoFPS is experimenting on PES initiatives for the forests' support for the drinking water supply of the downstream communities in Mongar, conservation of the black-necked crane in Phobjikha through ecotourism, and watershed rehabilitation in Pachu-Wangchu. The initiatives focus on establishing relationships between the service providers upstream and the buyers downstream with reference to a particular environmental service of the forests, such as sustaining drinking water supply, conservation of biodiversity (specifically, the black-necked crane), and watershed protection, for the benefit of rural communities and conservation of environment. Currently, mechanisms are being worked out and implemented to compensate the communities on an equitable basis.

Reducing emission from deforestation and forest degradation (REDD)

The DoFPS is aware of the emerging financial incentive in the form of the REDD mechanism, which may accrue to rural communities. The development of policy initiatives is underway, which aims to capitalize on carbon storage by Bhutan's forests and to plough back funds for conservation, sustainable management of forests, and enhancement of carbon stocks. The strategy, however, is unclear how REDD+ can contribute to benefit rural communities and reduce poverty.

Capacity Building for Public Forestry Service

The development of human resources to carry out the Department of Forests and Parks Services functions more effectively and efficiently is a top priority in the 10th FYP. The Department of Forests at its inception had virtually no trained staff and the requirements were met by deputized Indian foresters and hiring of expatriates. To meet the dire need for competent personnel, the government sent a few Bhutanese foresters for training at the Indian Forest Research Institute (later known as Indian Council for Forestry Research and Education) starting in the 1960s. The number of forestry officials and staff by qualification as per 2003 record and updates are as follows: five professionals with PhD degrees, 15 professionals with M.Sc. degrees, and two administrators with M.Sc. degrees, and one with a B.Sc. degree, 11 post-diploma certificate holders, 18 professionals with B.Sc. degrees, 243 technical support staff with diploma, 77 technical support staff with certificates, 623 forest guard with certificates, 59 administrative staff with certificates, 47 plant and machinery operators, and 26 SPC staff (DoFPs 2003). Salary levels of forest guards, including officers, fall below the national poverty line.

Case Studies

Each of the following case studies focuses on the contribution of a NWFP—namely pipla, lemon grass oil, and chirata – to the subsistence and cash incomes of rural farmers. The first case study aims to determine whether there are farmers who still engage in collecting pipla and whether pipla is still one of the main NWFPs contributing to the local economy as in the past. Farmers engaged in pipla collection were also asked to determine how much pipla contributes to the household's income. The second case study looks into the socio-economic benefits from lemongrass oil distillation activities in terms of employment and poverty alleviation for the distillers, firewood collectors and grass collectors, as well as their environmental constraints and opportunities in the management of lemon grass oil production industry. Interviews with the Dozam distillers, firewood, and grass collectors, and field visits to their distillation units were conducted to get an overview of the harvesting and distillation units and to observe practical problems and opportunities faced by distillers and harvesters. The third case study focuses on the contribution of chirata as a source of income among the farmers of remote villages (Zangthi, Dungmanba and Momring) of Shingkhar Lauri, where the resource base is depleting.

Case Study 1: The Contribution of Pipla to the Incomes of Farmers

Pipla[3], according to the baseline survey carried out by the Integrated Sustainable Development Project (ISDP) at Zhemgang, is considered a high cash income-generating crop for farmers. The forests in the Kheng region are rich in NWFPs in terms of diversity, number, and value, and produce the largest number of NWFPs, especially pipla. Incomes generated from pipla collection can be considerably high, therefore, pipla is one of the main contributors to the local economy, particularly to the incomes of the marginal farmers.

Farmers in Bardoh and Nangjor geogs (sub-districts) have long engaged in pipla fruit harvesting. Pipla used to be one of the main sources of income in 1998, but many farmers stopped collecting because the prices were lowered. Also, the farmers are now required to obtain a permit from the forest office and to follow government regulations. Some farmers are still collecting pipla, though not as much as before. In the past, farmers sold their harvests either to the National Institute of Traditional Medicine (NITM) or to middlemen, who in turn either auctioned pipla at the Food Corporation of Bhutan (FCB) auction yard in Gelephu or sold the products across the borders. However, as the demand for pipla increased, the farmers harvested unsustainably and indiscriminately. Over-exploitation eventually led to low production and to increase their collected pipla, many farmers resorted to adulteration by adding non-commercial species of piper. Because of this practice and the inconsistent trade outside the borders, there are no buyers and markets across the border at present.

[3] Pipla is a perennial crop of the Genus Piper, Family Piperaceae and grows wild in sub-tropical areas of Bhutan such as in Zhemgang Dzongkhag.

The auction yard for pipla at Gelephu was shut down for several reasons. One, most of the farmers wanted to avoid the compulsory 3% commission tax on their products, so they preferred to sell directly to Indian buyers across the border. However, the price offered by the auction yard in the 1990s was actually higher compared to the price offered by the middlemen. Other farmers preferred to sell to middlemen to avoid transportation costs. But, unlike in former times when they would go to the farmers' doorsteps, some of these traders were also discouraged by the practice of adulteration by the farmers. Thus, the low volume of pipla taken for auction made auctioning no longer economically feasible. Another, a syndicate of bidders tended to offer the farmers low prices and other bidders within and outside Bhutan were also discouraged by pipla adulteration by the farmers and middlemen.

Pipla collection and trade are now limited. Today, farmers find it difficult to harvest good quality pipla at the sources. In many areas, pipla are overgrown or are competing with shrubs and climbers, because a government regulation prohibits farmers from clearing the climbers and other competitors. Also, farmers are required to acquire permits for collecting pipla from the forest offices, adding burden to the farmers. Pipla fruit is best collected as soon as it matures, and this often coincides with the agricultural harvest. By the time agricultural harvesting is completed, it is already late for pipla collection. Many of the men are engaged in off-farm activities that are more profitable than pipla collection. Most of the children and the youth are going to school, thus, with the shortage of labor, most of the lands in the village are abandoned. Some farmers prefer to engage in agriculture than collect pipla, as there is no assurance of income from pipla collection. However, some farmers, especially livestock herders, continue to collect pipla and sell to a few middlemen.

Pipla collectors' livelihood activities

Villagers active in pipla collection and interviewed for this study also engaged in farming and livestock raising. Based on their estimated incomes, the respondents were roughly grouped into those with high-income, middle-income, and the low-income. All of them have land holdings (ranging from two to eight ha) but, in general, the farmers with the highest income in the group own the most land holdings (in terms of land area) and own more livestock than the others. Those in the middle-income group also have large land holdings, mostly grazing lands.

The farmers grow maize, paddy, vegetables, buckwheat, wheat and foxtail. Maize, the most common staple food, is double-cropped in a year. In terms of the production of food grain crops, maize yield is highest, followed by rice and buckwheat, except in Ngangkhar where rice is the major crop. On average, the high-income farmers produce the highest amount of food grain followed by the low-income farmers. Livestock are raised for village consumption. During rare occasions, some farmers earn from the rental of their horses for the transportation of officials who visit the village.

Because of their limited land holdings, the low-income farmers usually work for the better-off farmers on a crop sharing basis. Most of the lands owned by the respondents in the middle-income group are tsheri, swidden farms mostly located far from the villages and exposed to attacks by wild animals; thus some of them work for the relatively well-off farmers as well. Nevertheless, the food grain they produce is often not enough for their household needs. The common option for them is to collect and sell pipla to be able to purchase food, clothes, and other basic necessities. It is quite common for the farmers to take advance payment from middlemen within or outside their villages for their next harvests of pipla, especially during the hunger months from March to June.

Contribution of pipla to the farmers' incomes

In general, the contribution of pipla to the farmers' household incomes depends on their economic status. For the farmers with the highest income among the respondents, proceeds from the sale of pipla harvest is secondary to the sale of livestock products, with sale of grain as their third income source. Farmers in both the middle-income category (about one-third) and the low-income category (almost one-half) say that pipla collection contributes the highest to their income. Next to pipla, middle-income farmers derive almost the same income from the sale of grain and livestock products and daily wage

labor. The respondents with the lowest incomes among the group of respondents, who also have the least landholdings and livestock, depend on pipla the most to generate cash income for their needs. The farmers in this group also depend on remittances they get from family members who have left their villages to work elsewhere.

Although pipla is a major source of income for the farmers, they also engaged in livestock raising, and only one-third of the respondents belonging to the high- and medium-income categories expressed willingness to grow and register pipla in their own land. These are the farmers who own lands, although the land holdings of the middle-income farmers are mostly tsheri and mostly located far from the villages. The low-income farmers derive the highest share of income from pipla but own limited lands.

Challenges in improving the contribution of pipla

Most farmers recognize the need to improve their capacities in collecting, processing, and marketing pipla so that they can maximize their profit and sustain their resource base. Of these three areas of limitations in pipla production, one-half of the respondents identified their current unsustainable and unorganized collection practices as the main drawback, while one-third identified marketing challenges, and the rest, limited processing skills.

Many of the farmers see the need to establish community rules on proper collection practices for more organized and sustainable harvesting of pipla. Because pipla has a high commercial value in the market, farmers tend to compete among themselves in collecting pipla berries. Ideally, pipla should be collected when the berries mature, but there are farmers who want to pick ahead of the others, even if the berries are still premature. Some farmers uproot the plant, putting to waste the small berries. The DoFPS developed guidelines for the proper harvesting of pipla, which the farmers need to collectively adopt and commit to follow.

The farmers are also concerned about marketing as the current practice is not organized and does not fetch the most favorable price for the farmers. In the early 1990s, the relatively well-off farmers at first were able to fetch higher prices than the poorer farmers because they did not involve the middlemen in selling their harvest. The farmers recalled that, in 1996, the prices improved for the poorer farmers as well with the entry of other middlemen from other places that allowed for competition in buying prices. Still, the poorer farmers tended to obtain lower cash income from pipla. Some of them bartered pipla with other products, such as rice and sheets of cloth, while others took advance payments from the middlemen; thus, they could not negotiate with the middlemen for higher prices. The market value of pipla could have been higher than the present price had the farmers not resorted to adulteration.

Many of the low-income farmers are generally forced to sell their collection to the middlemen since they cannot afford to bring their produce to the distant market outlet and, in many cases, they already tie their future harvests to middlemen as payment for their cash advances. Sometimes the low-income famers cannot compete with high-income farmers in collecting pipla since the latter exert some control over the market. In some areas, pipla grows in *tsheri* and pasturelands owned by the other farmers and are not accessible to low-income farmers. Some of the poor farmers, however, collect pipla for the well-off farmers and are paid for their labor on a daily wage basis.

Farmers process pipla berries by drying these under the sun. Direct sun-drying is done by spreading the pipla on the ground to maintain the quality. During continuous rain, pipla is oven-dried, which is a faster way to dry pipla than sun-drying. However, the smoke can cause the color of pipla to change, thereby reducing its quality. Sun drying is generally preferred to oven-drying since it is cheaper and less laborious as it does not require fuelwood. Poor farmers often store their pipla collection for a few weeks until it is sold to the middlemen. Some better-off farmers can store their collected pipla for as long as one year while waiting for favorable prices.

Recommendations

Pipla collection is the one of the main sources of income for many farmers in the central region of Bhutan. It forms a significant portion of the income of poor households with limited lands to cultivate and other assets. It plays an important role in food security when the agricultural harvests fall short in sustaining their needs. The establishment of local processing units to capture the economic value of pipla at the source, so as to benefit the farmers, is necessary. The formation of collection groups among the farmers will provide a venue for them to agree on their rights and regulations on appropriate harvesting and marketing and, with external assistance, to explore better processing and marketing strategies. There is good potential for pipla collection and trade in Bhutan. Further, government can support the farmers by reviewing and revising the policy on restrictions on the export of all medicinal plants, as marketing is adversely affected. Pipla trade should be allowed since its contribution to the household income, particularly of low-income farmers, is considerable. With more opportunities to increase their income, farmers will be more motivated to ensure the sustainability of pipla.

Case Study 2: The Contribution of Lemon Grass Oil Production in Eastern Bhutan

History of lemon grass oil production in eastern Bhutan

The Bhutan Aromatic and Phyto-Chemicals of Tashi Commercial Corporation commercialized lemongrass oil production in eastern Bhutan in 1981. The oil was processed through steam distillation using low-cost, cottage-type distillation units made from second-hand petroleum drums. The company also demonstrated harvesting and distillation of lemongrass to farmers at various locations. In 1990, the FAO-supported project, "Production of Essential Oils by Smallholders in Remote Areas," was launched with ITA industrial-type units installed at Pakhadrang, Mongar and Lungtenzampa, Trashigang with a total capacity of 2.5 tonnes of lemongrass. The units developed by FAO developed operational difficulties and the Ministry of Agriculture intervened in 1991 modifying a stainless-steel type prototype, which improved the distilling efficiency and quality of the oil.

By 1993, the Essential Oils Development Project (EODP) of the Ministry of Trade and Industry (MTI) took part in the process of developing the cottage-type distillation units and began supporting marketing with 18 semi-portable FAO-type stainless units installed in 1995. Three years later, 118 stainless steel cottage-type distillation units were distributed to distillers meeting their demands of portability, efficiency, and durability. In 1999, distillers in four districts of eastern Bhutan owned 154 units of this type. Lemongrass oil was marketed by Tashi Commercial Cooperation to India and expanded to Europe in 1990 with Primavera Company as the first and only customer of the EODP for many years. Primavera is a German company specializing in the import and distribution of aromatherapy products. When the production of lemongrass oil increased to 17.5 metric tonnes in 1998, Primavera was unable to purchase the whole output and quit the business with Bhutan. Therefore, MTI had to search for customers. The Bhutan Export Promotion Centre reviewed potential markets for lemongrass oil in the UK, Germany, France and the Netherlands and also recommended enhancement of post-production and marketing strategies. As follow up, MTI established a quality processing unit at Mongar and started exploring new markets in Western Europe. Several consignments were delivered to end-users in France, Germany, and the UK. They desired the supply of quality lemongrass oil with minimum standards. A quality control unit was established but oil quality continued to deteriorate due to inappropriate transportation and storage problems in Calcutta, Singapore, and Sri Lanka en route to Europe.

Since 2003, John Kelly from the UK has been the sole importer of Bhutanese lemongrass oil. According to the EODP, John Kelly provides high-quality containers for transportation from Calcutta to Europe and accepts consignments with citral content below 75%, as they mix low-grade oil with high grades to maintain minimum acceptable standards.

Lemongrass and its potential to alleviate poverty

According to Yangzom et. al. (2008), organic certification added value to lemongrass oil and increased the income of participating households (distillers, grass collectors and firewood collectors), enabling it to contribute directly to MDG 1 on reducing poverty and hunger, as well as MDG 7 on environmental sustainability. They reported that there was increased participation of local people in the sustainable management of lemongrass, but little or no improvement with regard to the management of fuelwood. Commercialization of the lemongrass oil industry can bring about sustainable management of lemongrass resources by local communities who are given rights to use the common resource under a community-based resource management regime. Thus, sustainable management of lemongrass is considered a success case study from eastern Bhutan where enterprise-oriented resource management brought about changes in the rural livelihood of distillers, grass, and firewood collectors through employment and cash incentives.

Lemongrass grows beneath the chirpine forest in the districts of Mongar, Lhuntse, Trashigang and Trashiyangtse in eastern Bhutan. It is estimated that 50,000 ha of chirpine forests support lemon grass with better growth and biomass where crown density of pines is low (RNR-RC 1998). RNR-RC estimates that about nine kg of lemongrass oil is produced from a hectare of lemongrass growing in the wilderness in Wengkhar, eastern Bhutan. The low production of biomass and the amount of oil is attributed to moisture and soil nutrients. RNR-RC Wengkhar undertook research studies to domesticate the lemongrass for oil extraction and soil erosion control purposes and developed technologies to improve grass harvests. At low altitudes (<1,000 masl) under reasonably good management conditions, grass growth can be maintained throughout the year allowing five harvests yielding 105 kg of oil per hectare per annum (Legha 1998).

Description of the site

Two study areas of the six eastern districts were selected for this report. First, Mongar district covers a total geographical area of 483,493 ha, of which 82% is forested, and has a total population of 40,000 (Samal 1998). Second, Trashigang district has a total geographical area of 3,721 sq km comprising of 24 sub-districts (Gyeltshen 1998). Its economy is subsistence-oriented with little or limited cash income opportunities. The firewood for lemongrass distillation and cooking and heating is sourced from natural chirpine forests. The Dozam community forest is the oldest community forest in Bhutan handed over for community management in 1997. It has a total area of 358 ha of chirpine forests whose ground story is covered with abundant growth of lemongrass. The community forest management plan was initially conceptualized for timber, but it now also covers associated resources like lemongrass.

The Dozam community forestry management group (CFMG) is composed of distillers, grass collectors, and firewood collectors. With its resource regulation by-laws, the Dozam CFMG has been managing, harvesting and distilling lemongrass oil since 1981 and supplying the product to a private enterprise, Bio-Bhutan. Bio-Bhutan buys the oil from the CFMG and exports the product to Europe. With a total community forest of 358 ha, Dozam community forest represents 0.7% of the potential area of lemongrass in eastern Bhutan. The production of 1.2 tonnes of oil from Dozam community forests accounted for 14% of average production of 8.9 tonnes in 2007 (MoE 2008). However, the CFMG still depends on the government forests for the wood supply since the group cannot meet the wood requirements from their community forest.

Livelihood activities and the contribution of lemongrass distillation to household income

The distillers among the respondents own some landholdings, with an average size of 2.4 ha. Maize and potatoes are mostly grown on dry lands and rice on irrigated paddy. Other lands are classified as *tsheri* for shifting cultivation, *pangzhing* for grass fallow and trees, and sokshing for leaf litter collection forests. Some also raise livestock, such as cattle, horses, pigs, and poultry. Their jobs at the lemongrass distillation provide additional cash income for the rural farmers, particularly those

whose incomes are at the lower end. At present, there are 41 distillation units at Dremetse and Dozam village.[4]

Distillation of lemongrass provides seasonal income for a maximum of six months from the onset of the monsoon rains in May until the decline of lemongrass growth in October. During these six months, each distillation unit on average employs up to 12 skilled and unskilled laborers, including two operators of the distillation units (one is usually the owner of the unit), six to seven grass collectors, and three firewood collectors. The wage rates paid to operators and grass and firewood collectors are the same whether or not they use organic or conventional management practices. Operators are paid Nu 50 per drum of lemongrass oil. Considering that on average five drums of lemongrass oil can be distilled over 24 hours, the total wages paid to operators amount to Nu 250 per 24 hours or Nu 125 per 12 hours (one shift). The distillation units are operated throughout the day and night. On the other hand, wage rates for grass collectors are based on the number of loads carried per day. The weight per load ranges from 25 kg for women to 45 kg for men. The number of loads collected per day varies depending on the abundance of grass in the different areas. The survey findings show that men carry on average 3.3 loads of grass per day while women carry 4.9 loads. As a result, the total weight of grass collected per day amounts to approximately 122 kg for women and 148 kg for men. Considering a male/female ratio of 1:1 among the grass collectors, it is estimated that an average of 135.5 kg of grass is collected per day. The wage rate for grass collectors is Nu 150 regardless of gender. The amount of firewood collected per day depends on the distance between firewood collection places and the location of the distillation unit. On average, one firewood collector collects and carries up to four backloads or 180 kg of firewood for an average wage rate of Nu 150.

The household income contribution of lemongrass harvest contributes 30% to the respondents' household income, next to agriculture (40%). Livestock contributes 20%, while daily wages and wood products contribute 6% and 4%, respectively. This clearly indicates that lemongrass is one of the main sources of cash income for households engaged in the business in the surveyed areas.

Employment in organic and conventional lemongrass distillation units

In a study, Yangzom et. al. (2008) compared the seasonal employment and income of distillers, firewood and grass collectors working for an organically grown and certified lemongrass oil distillation unit and those working for a conventional lemongrass oil distillation unit in Dozam. Under conventional production of lemongrass oil, the farmers manage the conditions using their own harvesting practices. On the other hand, organic lemongrass oil production must strictly adhere to international guidelines on wild collection (WHO 2003; ISSC-MAP 2007). The most important requirements are (i) resource assessment and definition of the botanical species including time of harvest; (ii) maximum harvestable quantities and annual records of harvesting volumes according to the area defined in the management plan; (iii) locally-defined good collection practices to ensure the long-term survival of the species; and (iv) a clear description of post-harvest practices, including an assurance that no chemicals were used over the last three years.[5]

Between the two types of production, the enterprise following organic procedure and guidelines reported a higher average net income for 2006-2007 amounting to Nu 32,000 (US$ 820, official exchange rate of US$ 1=Nu 39 in 2008) compared to the income of the enterprise using conventional practices for the same period of Nu 9,211 (US$ 238).

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[4] In Mongar district, apart from the 41 distillation units in Dremetse and Dozam village, there are 11 distillation units at Chaskar village and eight distillation units at Thangrong village. In Trashigang district, there is one distillation unit at Bartsham village and 13 in Udzrong village. In Lhuntse district, there are 15 distillation units at Tshengkhar village. Altogether, there are 89 lemongrass distillation units in eastern Bhutan.

[5] Other requirements are (i) a record of all substances used for cleaning, disinfection and pest control, training extended and supervision of procedures; (ii) assurance that co-mingling with conventional produce was avoided; and (iii) a transparent record of harvest volume, processing, and sales.

In 2006 and 2007, distillers, firewood collectors and grass collectors were paid the daily rate of Nu 150 from both types of production. However, those working in the organic lemongrass oil production enterprise were able to earn more because they had more person-days than those working in the conventional distillation unit (Table I.3). Comparing the total number of days of employment in 2006 and 2007, distillers involved in organic production had 129 days of employment more than their counterpart in the conventional distillation unit; firewood collectors, 378 days of employment more; and grass collectors, 135 days of employment more. The person-days for the three groups in organic distillation units were over 100% more than the person-days required by conventional distillation units.

Table I.3. Employment and income analysis of lemon grass oil production at Dozam

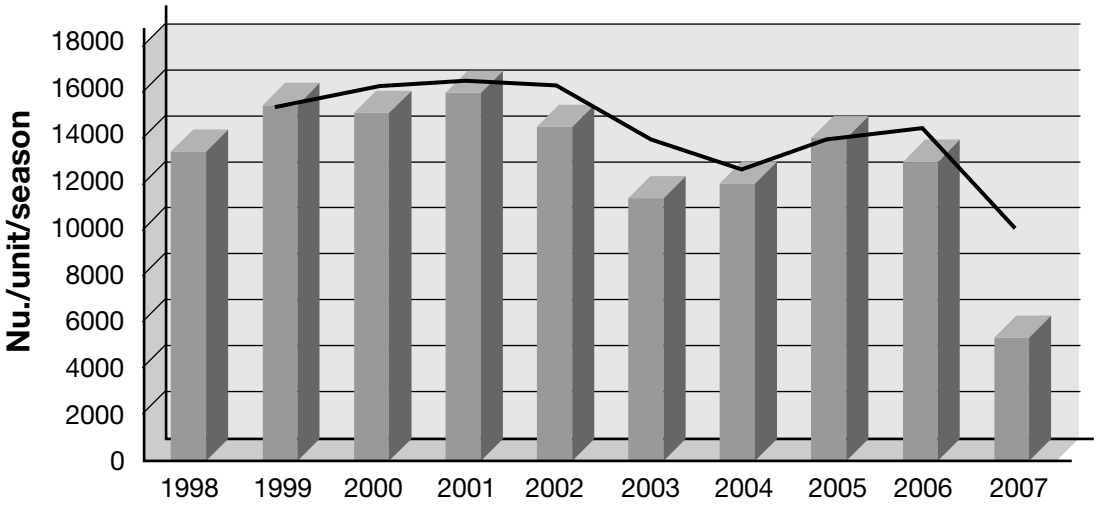
Employment and income	Organic		Conventional	
	2006	2007	2006	2007
Distillers (2 nos.)				
Days of employment	120	123	75	39
Rate of payment/day (Nu)	125	125	125	125
Gross income (Nu)	15000	15375	9375	4875
Individual income (Nu)	7500	7688	4688	2438
Firewood collectors (3 nos.)				
Days of employment	332	340	207	107
Rate of payment/day (Nu)	150	150	150	150
Gross income (Nu)	49800	51000	31050	16050
Individual income (Nu)	24900	25500	15525	8025
Grass collectors (6 nos.)				
Days of employment	125	128	78	40
Rate of payment/day (Nu)	150	150	150	150
Gross income (Nu)	18750	19200	11700	6000
Individual income (Nu)	9375	9600	5850	3000

Production and sale of lemongrass oil (1998-2007)

Production and sale of lemongrass oil peaked in 1998-99 and, since then, average production fluctuated until 2007, with an estimated annual production of 12.36 metric tonnes per year. The annual returns from sale of lemongrass oil also fluctuated since the highest sales at over Nu 8 million, with average annual returns of Nu 6.13 million per year. The decline in production is due to the unsustainable management and use of lemongrass and associated resources like firewood. The distillation process involves high firewood consumption (75 kg of firewood required to distill a kg of lemongrass oil) and water for distillation. Prommegger et. al. (2004) attributed the decline of lemongrass oil production to alternative sources of income like wage labor, fluctuation in lemongrass biomass production, and shortage in fuelwood and water supply in certain pockets of lemongrass growing areas in eastern Bhutan due to environmental changes.

The distillers reported the highest net income (gross income minus cost of production) of per distillation unit per season from 1999 to 2002, peaking in 2001 at Nu 16,000 (Figure I.3). This went down to about Nu 11,000 in 2003, but rose again to Nu 14,000 in 2005. The distillers' net income was lowest in 2007 at below Nu 6,000. The net income of lemongrass harvesters, who were mostly women, per distillation unit in a season ranged from the Nu 3,800 (lowest in 2003) to Nu 5,300 (highest in 2006), with an average annual net income of Nu 4,700 per unit in a season.

Figure I.3. Net income per distillation unit of distillers in a season



It could be concluded that lemongrass distillers and harvesters reaped benefits in terms of seasonal employment and cash income during winter. Through this, the lemongrass cottage industry provides a livelihood option for the rural farmers (including a few students working as part-time workers) for them to earn cash for their needs.

Challenges in the lemongrass oil cottage industry

Although lemongrass cottage industry is contributing significantly to the livelihoods of poor farmers in the eastern Bhutan, it is facing some challenges.

The primary concern identified by the respondents in six villages is the declining supply of the main raw materials needed for lemongrass oil production. Insufficient quantities of lemongrass, firewood, and water for the operation of distillation units was ranked as high priority in the villages of Dremetse, and Chasker, except Thangrong where water scarcity is severe. At Udzrong and Bartsham under Trashigang, water scarcity is severe; however, lemongrass and firewood shortage are not that severe.

Lemongrass can be harvested repeatedly for about 8-10 years. However, studies show that lemongrass availability in the distillation areas are declining as a result of unsustainable harvesting practices (RNR-RC East 1998; Lama 2004). The method of harvesting differs from site to site with a minimum cutting of two to three times per season depending on the altitude of the location. The distillers expressed their concern that three or more cuts per season and improper methods of harvesting were having adverse effects on the quantity of lemongrass growing in the wilderness.

To develop proper harvesting guidelines, a collaborative study was undertaken by a research center in Wengkhar, Conifer Research and Training Partnership (CORET) and the Social Forestry Division in 2005. The study recommended that cutting must be limited to two cuts per season and that during harvesting, the collectors should ideally retain 20 cm of the stalk above the ground level. The repeated cutting of lemon grass promoted the colonization of the area by weeds. According to Yangzom et. al. (2008), guidelines for the sustainable management of lemongrass were established and now form part of the Dozam community forest management plan. The guidelines on lemongrass limit the annual harvest to two cuts per area and recommended the farmers to cut the grass at about 10-15 cm from the ground to maintain the reproductive capacity of the grass. Farmers related that frequent fires enhance the growth of weeds. There are five main reasons for forest fires: to promote the regeneration of fodder resources for cattle grazing in off-farm periods, to scare off wild animals, to avoid crop depredation and damages, and to induce lemongrass growth.

With regard to firewood supply, most distillers expressed that firewood has become scarce now. Firewood demand was initially obtained from collecting lops and tops and other dead, dying, or diseased chirpine

trees. These trees can be collected after paying a royalty to the DoFPS. In most cases, distillers use chirpine trees from nearby chirpine tree areas, but also occasionally use broadleaved trees sourced from FMUs to heat the distillation units. In response to the problem, the Department of Forests allowed distillers to source firewood from the FMUs through a firewood contractor. According to RNR-RC East (1998), an average of 16.5 truckloads (approximately 124 cu m) of firewood is burnt to obtain one metric ton of oil with an average fire wood consumption of 211 truck loads (1,582 cu m) per year. Yangzom et. al. (2008) point out the high firewood consumption of about 75 kg per kg of lemongrass oil. Distillers, however, complained that firewood supplied by contractors is expensive and are often decomposed, which increases their costs of production. To address the constant firewood shortage, it is suggested that the distillers, in collaboration with the DoFPS, initiate the establishment of community plantations for high-intensity short rotation biomass production of indigenous or exotic fast growing trees (for example, eucalyptus) suited the to socio-environmental conditions in the areas. Producing short-rotation firewood would not only meet firewood shortages but also increases the distillers' net income by reducing the costs of production.

Lemongrass distillation units require a constant flow of water to cool the condensers. Some units are located near streams to have an accessible water source. Those located far from streams installed polythene pipes. Yangzom et. al. (2008) proposed that the firewood and water efficiency of existing distillation units should be improved with the use of firewood substitutes through recycling of distilled grass and bio-energy plantation in collaboration with UNDP-Global Environment Facility and Bio Bhutan. The initiatives would not only reduce the cost of production but also increase the net income of distillers.

Some recommendations

Lemongrass oil production is one of the promising enterprises that can bring benefits to local communities to help reduce poverty, while at the same time conserve the environment. Most of the firewood and grass collectors are women, thus, women can gain more benefit from lemongrass oil production than the men who are mostly the distillers. To sustain the benefits from the lemongrass oil production enterprise, it is suggested that:

- Sustainable management of lemongrass harvest is practiced and strictly adhered to using the harvesting guidelines developed;
- More areas of chirpine-lemongrass ecosystem are brought under similar management under the framework of community forestry rules to multiply benefits to communities;
- Efficient distillation units and alternative biomass and non-biomass-based energy sources like fast-growing and environmentally adaptable tree species are established and electricity is tapped to reduce and eventually overcome firewood crisis and pressure on surrounding environment; and,
- Reliable sources of water for distillation units are tapped.

Case Study 3: The Contribution of Chirata to Livelihoods of Farmers

The practice of traditional medicine in Bhutan prevails until now. Local healers keep the indigenous knowledge on medicinal plants and their use. Chirata, locally referred to as *khalu* is well known for its bitter taste and medicinal value,[6] and is found in Shingkhar Lauri in eastern Bhutan. It is used widely to treat different human ailments such as fever, fungal infection, cough and colds, worm infestation, body pain, malaria, gout, and headaches. Among the species of the genus *Swertia* growing across the country, *Swertia chirayita* is the species with the highest commercial value and is in high demand in the international market. It grows mostly on former shifting cultivation areas (*tsheri*) near a number of villages. Chirata makes an important contribution to rural communities' cash income. The

[6] All parts of the plant, including leaves, flowers, roots, and stems are used. The plant is biannual and totally dies after seed dispersal during the second year.

domestic demand of traditional medicine is rapidly increasing to meet the requirements of the country's increasing population. However, the increasing number of rural households harvesting medicinal plants to generate cash income has caused serious concern about the conservation and sustainable use of medicinal plants of the country.

Chirata is one of the main sources of income of the farmers of the remote villages of Shingkhar Lauri. In 1998, 70 households in Shingkhar Lauri geog were depending on chirata as a source of income (Pradhan et. al. 1998). The villagers harvested naturally-growing chirata that they sold to traders from India, although RGoB recently started to operate the auction of chirata. In recent years, the resource base is depleting. Respondents for this case study claim that 15 years ago, it was possible to produce at least 20 metric tonnes of chirata annually, but the production now is less than five metric tonnes. The factors causing the depletion of the resource base of chirata are:

- Ban on shifting cultivation (*tseri*) since 1993 to prevent the loss of forests and degradation of environment. Slash and burn agriculture is not allowed as fire under certain conditions usually escapes from the farmland into the forests. According to farmers, however, fire enhances the growth of chirata that grows in shifting cultivation land.
- Increasing number of collectors leading to over-exploitation
- Premature harvesting, thus, reducing the capacity for natural regeneration
- Lack of appropriate drying techniques and facilities
- Difficulties in transportation and marketing

Site description

Lauri geog is one of the remotest geogs in the Samdup Jongkhar Dzongkhag in the far eastern section of Bhutan. The geog is a distance of three days walk from Jomotshangkha Dzongkhag, the nearest road and market access point. The geog has 13 villages with a total of 539 households and a population of 4,303 people. The villages selected for this case study are Dungmanba, Momring, and Zangthi. The geog covers an area of about 27,800 ha, with an elevation ranging from 1,200 to 3,500 masl and heavy rainfall during the monsoon season (June-August). Shingkhar Lauri is rich in medicinal herbs like chirata, and star anise (*Illicium griffithii*). Chirata is widely grown in almost all of the villages of Lauri geog. It grows in association with other native vegetation in open and dry areas of degraded broadleaf forests, such as tseri land, fallow dry land, and grazing areas. It grows more abundantly in tseri land than in private agriculture land because the plants survive fire, and the seeds that are buried deep in the soil germinate once tseri is cleared.

In the villages of Dungmanba, Momring, and Zangthi, chirata is collected from different areas, mainly found in forests (mostly broadleaf) with less dense vegetation, in open and dry areas in rocky areas, and in steep slopes. Of the three villages, Zangthi has the highest density of chirata with 12 kg dry weight per ha (the average of the whole area is nine kg per ha).

Economic importance of chirata

Farming practices at Shingkhar Lauri are evolving from the tsheri (shifting cultivation) system toward permanent agriculture. Because of the ban on shifting cultivation, tsheri is being converted into other uses such as wetland, orchard, and dry land cultivation. Agriculture, livestock rearing, and forestry related activities are major components of the farming system in the geog. The main agricultural crops are maize, foxtail millet, and wheat. Maize is the staple food with both local and improved varieties grown in the geog. Since wetland is limited, paddy cultivation is confined to a small scale. Local cattle dominate cattle population with only few improved breeds.

Traditional harvesting of chirata

Collection in each village is governed by well-defined community rules and regulations. The villagers

decide on the first collection day, based on their experience of plant maturity and the general labor availability trend in the village. Once the first day is fixed, the collection is organized by inviting one member from each household to join the collection for a period of 1-3 days. Thereafter, the limit on the number of members allowed from each household to collect is lifted. Most of the collectors used to put up a temporary shed near the chirata-growing area to have maximum collection. The groups have their own set of rules on harvesting, but these are not being followed strictly, and there is inequity in benefit sharing and conflicts in resource sharing. Through social understanding, each village or community restricts the collection of chirata within its jurisdiction to its own members. There is no violation yet on the village's respective collection area.

The main period for collecting chirata is December to January. To have the best quality, chirata should be harvested just after the flowering is over. The collectors set the day for the start of chirata collection. In harvesting, farmers usually uproot the entire plant since it is believed that the medicinal properties are concentrated in the roots. This practice puts at risk the sustainability of chirata. In the long-term, it demands measures for its conservation and sustainable use. For want of cash, the available resource is already under pressure.

Usually, the people uproot the whole plant and get what they can use until they are satisfied and no harvestable chirata is left. The collectors could harvest between 10-30 kg per day, depending on the weather condition, area, and available supply. As there is no drying facility, the harvested chirata is spread on the roof of houses or on the ground for three to seven days to dry. The method is labor-intensive and time-consuming. Drying is the main factor determining the quality of the raw product and price. The farmers tie the dried plants into bundles and carry these on their backs and bring these by mules to Jomotsangkha (Daifam).

Income from chirata

The economic status of the farmers surveyed is generally low and they have limited sources of income. On average, a household's cash income is Nu 6,510, of which chirata contributes more than 40% (Table I.4). The other main sources of income are daily wage earning (25%), and livestock, specifically swine and poultry, for low-income families and cattle as source of dairy products for high-income families (20%). The collection and sale of star anise, another forest product collected in October-November for medicinal and kitchen use, makes a minimal contribution of only 5%, while chili contributes about 8%.

Table I.4. Farmers' sources of income

Sources of income	Income earned (in Nu.)	Percentage
Chirata	2738.6	42.1%
Daily wages	1612.0	24.8%
Livestock	1290.3	19.8%
Star anise	293.3	4.5%
Chilli	519.4	8.0%
Miscellaneous	55.5	0.8%
Total	6509.5	100%

According to many chirata collectors in Lauri geog, the market offers a higher price for mature and good quality chirata. Immature chirata fetches a low price because these will not yet have the bitter taste required by the customers. A low price is also paid for plants attacked by fungi, which can occur if the collected chirata gets wet while being transported to Jomotsangkha. The chirata management group agreed to collect mature plants and ensure this by collecting the plants only after seed dispersal, as prescribed in the group's laws.

Chirata is harvested between November and December, dried and stacked in bundles and sold in December and January. Plants are moistened for few weeks before transportation and are carried on people's backs or on horses to Jomotsangkha for marketing. A farm road is now available until Tokaphung from where vehicles can transport the products to the market. In the past, the Food Corporation of Bhutan used to

auction chirata. However, due to Indian militant activities disturbing the area, the formal marketing system ceased. Farmers individually sell their products either to Indian buyers or Bhutanese exporters. There are two main dealers located in Jomotsangkha to whom most farmers sell their chirata and star anise. A *tshering dorji* (dealer) said that dealers can buy chirata at Nu 160 per kg. A single dealer was buying all the products in 2011, and he suggested that the government should intervene to require an auction to ensure fair play. The dealers in turn sell to Bhutanese exporters. The exporters check the products, repack these in bundles, which they then send to India. The highest export price reached Nu 200 in 2000, which decreased to Nu 55 in 2004, and rose to Nu 152 in 2011.

Some recommendations

Local people have strong ethno-botanical and ethno-medical knowledge about chirata, which is currently not documented. Although they have their own set of rules for sustainability, these are not followed systematically under the user management group and therefore there is inequity in benefit sharing and conflicts in resource sharing. Government intervention on ensuring adherence to harvesting rules and marketing is required for the sustainable use of the resource and providing support in improving the markets for their products. The development of a management plan to manage, market, and protect chirata by a community self-help group is essential both for sustainability and income generation. Since chirata is harvested over a large area and small subsistence farmers and herders harvest a significant amount, studies should be done on the possibility of providing small drying facilities at the village level.

Outlook for Forestry and Poverty Alleviation

The Royal Government of Bhutan aims to maintain at least 60% of the total land area under forest cover in perpetuity. At the same time, the RGoB aims to support the livelihoods of rural communities, which comprise 69% of the country's population and depend on agriculture and forest resources, to reach the target of reducing the proportion of the population living below the poverty line to 15% by 2015. The forestry sector in Bhutan can re-orient its policies and programs and contribute to reducing poverty by focusing the following strategies:

Non-wood forest products

The expansion of commercial harvesting of NWFPs is to be taken to a new level where it is restructured from largely subsistence production to commercial and industrial exports catering to a rapidly growing overseas market. Much of Bhutan's NWFPs need to be actively promoted in potential markets with a marketing emphasis as the cleanest and the least polluted natural environment in the world and on the organic and natural methods of production. This would not just include the exports of raw produce but also involve developing a wide array of downstream value addition processing of NWFPs products. This large-scale commercial development of the NWFP sector in Bhutan is envisaged to become an important foreign exchange earner rivaling horticulture exports and to gradually make a significant impact on the national economy. Additionally, the processes will effectively empower the rural poor by promoting self-organization and enterprise development through the development of cooperatives, community level business associations, and other necessary support mechanisms.

A key challenge in the expansion of the NWFPs sector will be to achieve a sustainable balance between commercial harvesting of NWFPs and ensuring their conservation. There is the real danger that these products could easily be over-exploited, with the possibility of destroying endemic plant populations. The lack of knowledge and awareness in local communities about sustainable harvesting methods will have to be addressed through appropriate training in crop handling, storing and drying. More research on various aspects of resource management and market opportunities for NWFPs will also need to be carried out, including studies on the prospects of broadening the range of NWFPs harvested. Adequate resource user rights and arrangements must also be provided adequately to avoid potential resource use conflicts and to ensure that benefits accrue mainly to local communities rather than market intermediaries.

Community forestry

An essential and high priority activity for the 10th plan will be to expand the commercial harvest of timber and NWFPs under community forest management plans. There is considerable potential for harvest and sale of timber from community forests that are well-stocked. The formalization of timber harvest and market rules from community forests will facilitate timber sale and transaction for income generation by community forest management groups. There is considerable potential of the sector to significantly decrease unemployment among rural households and raise their returns on labor and investment. The revenue returns to labor from NWFPs are considerably much higher than existing agricultural wages. The most important NWFPs exported are cordyceps, bamboo, cane, chirata, pipla, mushroom, lemongrass oil, rosin and turpentine, incense sticks, and handmade papers. The rate of return on investment for harvesting certain NWFP crops, such as cordyceps and chirata, work out to as much as 500%, with further scope of enhancement through better harvesting and drying techniques.

Valuing ecosystem services

Recent studies reveal that forests are equally important for providing ecosystem services, such as regulation of water discharge for hydroelectricity, irrigation and drinking water supply, and ecotourism. The contribution of ecosystem services, however, is undervalued due to lack of appropriate policies, regulatory frameworks, scientific methods for quantification and valuation of these services that can greatly enhance the contribution of forestry to GDP and simultaneously contribute to reducing poverty of rural communities. A few initiatives are being piloted under the framework of PES. These include the scheme to plough back "payments" to watershed management upstream communities from the downstream generation of hydroelectricity in the Woochu watershed management, rehabilitation of black-necked crane habitats from ecotourism payments in Phobjikha – a high-altitude wetland management scheme – and payment for drinking water supply collected from urban households for community forest management groups in Mongar, eastern Bhutan. Such activities are at experimental stages and, if successful, may be scaled up.

Recommendations

Sustainability and the balancing with improved livelihoods are shared responsibilities of the government and the people of the country. Major areas requiring immediate attention for an overall development of NWFPs including their trade are identified, and these are: information, production, product improvement, marketing, and coordination. Improvements in these areas will be possible with research support and policy reorientation.

Research

- Documentation of NWFPs containing information on product description, uses, sources, inventory, indigenous knowledge, and other relevant information for dissemination
- Conduct of a systematic research and development program on sustainability, processing, and marketing on high-value NWFPs in collaboration with local communities
- Exchange of information through sharing of experts and exchange visits in capacity building among research institutions

Production

To ensure the sustainable supply of the NWFPs, the strategies suggested are:

- Integration of the management of wood and NWFPs in natural and plantation forests and agro-forestry systems
- Standardization of management practices for domestication and cultivation of NWFPs
- Research support for propagation techniques and qualitative assessment of NWFPs

Product improvement

- Improvement of harvesting techniques and guidelines for sustainable harvesting from wilderness and plantations
- Product diversification, improvement of processing, storage and transport methods
- Decentralization of processing near the raw material source to ensure more benefits to local communities and reduce wastage during processing and transportation
- Standardization of grades, encouragement of grading by collectors, and setting fixed minimum grades for value addition
- Encouragement of national traders or exporters from the country for product branding and marketing

Improved marketing

- Conduct of market research to understand markets and market channels
- Rationalization of the role of middlemen to safeguard against price increases
- Dissemination of market information to ensure fair prices to the collectors
- Encouragement of the formation of collectors and processors cooperatives to coordinate product development, collection, transport, and negotiate premium price

References

Chhetri, B.B., Schmidt, K., & Gilmor, D. (2009). *Community forestry in Bhutan: Exploring opportunities and facing challenges.* Paper presented at the Community Forestry International Workshop, Pokhara, Nepal, 15-18 September 2009.

Department of Energy (DoE). (2009). *Overview of energy policies of Bhutan.* Thimphu, Bhutan: Department of Energy, Ministry of Economic Affairs.

Department of Forests (DoF). (2003). *Briefing on Department of Forests.* Department of Forests and Park Services, Ministry of Agriculture and Forests.

Department of Forest. (2004). *Community forestry manual of Bhutan: Part I - Initiating community forestry.* Thimphu. Bhutan.

DoF. (2009). *National forest policy.* Thimphu, Bhutan: Department of Forests, Ministry of Agriculture.

DoF. (2010). *National strategy for community forestry: The way ahead*. Department of Forests and Park Services, Ministry of Agriculture and Forests.

Dhital, D.B. (2009). *Bhutan forestry outlook study. Country paper* (Asia-Pacific Forestry Sector Outlook Study II. Working Paper No. APFSOS II/WP/2009/04). Bangkok, Thailand: FAO Regional Office for Asia –Pacific.

Dhital, B. & Dhan. (2009) *Asia-Pacific forestry outlook study 11: Working Paper Series - Bhutan forestry outlook study.* Preliminary draft report for regional meeting discussion at Changmai.

Dick, J.H. & Yonten, D.P. (1995). *A preliminary sectoral environmental assessment and a framework for environmental monitoring: Third Forestry Development Project (TFDP) Report*. Trashigang.

Dorji, S. & Phuntsho, S. (2007). Timber sales from community forestry is possible: A case study on two community forests in Mongar and Bumthang. In D. McLeod, P. Stephen. P, & H.J.J Beukeboom. (Eds.), *A series of community-based forest and natural resources management in Bhutan*. Ministry of Agriculture, Royal Government of Bhutan.

Food and Agriculture Organization of the United Nations (FAO). (1996). *Non-wood forest products of Bhutan*. Bangkok, Thailand: FAO Regional Office for Asia and the Pacific.

Gyeltshen, K. (1998). *Fuelwood resources, uses and issues in Trashigang Forest Division*. Paper presented at the Wood Production and Marketing in Bhutan National Workshop, Taba, Bhutan, 20-22 April, 1998.

ISSC-MAP. (2007). *International standards for sustainable wild collection of medicinal and aromatic plants, Version 1.* Medicinal Plant Specialist Group, Species Survival Commission, IUCN-The World Conservation Union..

Lama, B. (2004). *Discussion paper on essential oils industry in Bhutan*. EODP Mongar, (Unpublished report).

Legha, P.K. (1998). *Present status and future strategy for sustainability of lemongrass production in eastern Bhutan*. RNR-RC Khangma, MoA.

Ministry of Economic Affairs. (2008). Essential oils development programme. *Kuensel*. 5 January 2008.

Ministry of Agriculture (MoA). (2008). *Draft national forest policy.* Department of Forests and Park Services, Ministry of Agriculture and Forests.

Moktan, M.R. (2009). Impacts of recent policy changes on rural communities and species diversity in government-managed forests of western Bhutan. *Mountain Research and Development* 30: 365-372.

Moktan, M.R. (2009). The role of forest products in carbon sequestration, storage and conservation in Bhutan. In S.H. Choh (Ed.), *Asia and the Pacific forest products workshop green technology for climate change mitigation and adaptation*, Colombo, Sri Lanka. IUFRO.

Moktan, M.R., Norbu, L., Dukpa, K., Rai, T.B., & Kunzang, D. (2009). Vulnerability of bamboo and cane and income contribution to rural household subsistence economy in Bjoka, Zhemgang Bhutan. *Mountain Research and Development*. 29, 230-240.

Moktan, M.R., Norbu, L., Dukpa,D., Gyeltshen, D., Dhendup, K., & Rai, T.B. (2008). *Cordyceps sinensis – Ecology, harvest and use in the high mountains of Bhutan*. RNR Research Centre Bajo. (Unpublished report).

Namgay, K., Thinley, S., & Tenzin, S. (2007). Beyond this, what? Can the sustainable harvesting and sale of incense plants contribute to the livelihood of Laya people?, In D. McLeod, P. Stephen, & H.J.J. Beukeboom (Eds), *A series of case-studies on community-based forest and natural resource management in Bhutan*. Department of Forests.

Namgyel, P. (1996). *Beyond timber—What value of the forest? A rapid rural appraisal study on non-timber forest products on the Nahi gewog.* Forestry Research Centre/Bhutan German Integrated Forest Management Project, Occasional Paper No. 1. Wangdi Phodrang, Bhutan.

Namgyel, P. (2010). *Ministry of Agriculture and Forest special assignment report: 15 August- 19 November 2010.*

Namgyel, P. (2010). The magic bullet for Bhutan. *Kuensel*. 31 July 2010.

National Statistical Bureau (NSB). (2009). National Statistical Bureau, Royal Government of Bhutan.

Natural Resources Development Corporation Limited (NRDCL). (2011). Retrieved from http://www.nrdcl.bt/index.php/home

Norbu, L. (2003) Nature conservation and biodiversity for poverty reduction: Case of Bhutan. In H.C. Sim & Y. C. Youn (Eds), *Forest for poverty reduction: Opportunities with clean development mechanism, Environmental services and biodiversity proceedings*. Seoul Korea, 27-29 August 2003.

Policy and Planning Division (PPD). (2008). *Compendium of renewable natural resources statistics.* Thimphu, Bhutan: Policy and Planning Division. Ministry of Agriculture.

Pradhan, P.M., et al. (2008). *Perspective on conservation and sustainable use of Chirata (Swertia chirata) in Eastern Bhutan*.

Pradhan, P.M., Moktan, M.R., Legha, P.K. & Dukpa, D. (1998). Perspectives on sustainable collection and use of Chirata. *Journal of RNR Bhutan*. 1: 6-19.

Prommegger, W., Budur, K., Dorji. & Chhetri, P.B. (2004) *Lemon grass distillation in Eastern Bhutan. A scenario analysis*. RNR-Research Centre Jakar in collaboration with Conifer Research and Training Partnership and Social Forestry Division, Department of forests, Ministry of Agriculture.

Rawal, R.B. (1994). *Herbs production and processing of aromatic and medicinal plants in Nepal*.

RNR-RC East. (1998). *Impact of lemongrass distillation on socio-economy and environment in Eastern Bhutan*. Trashigang, Bhutan RNR Research Centre-East, Khangma. Renewable Natural Resources Research Center.

Roder, W., Gratzer, G., & Wangdi, K. (2003). Cattle grazing in the conifer forests of Bhutan. *Mountain Res. Dev.* 22, 7.

Samal, K. B. (1998). Fuelwood resources, uses, issues and potentials in Mongar Forest Division. *In Wood Production and marketing in Bhutan National Workshop* Taba, Bhutan 20-22 April, 1998 Regional Wood Energy Development Programme in Asia GCP/RAS/154/NET FAO, Bangkok May 2000. pp. 26-30.

Shiva, M.P. (1994). *Collection, utilization and marketing of medicinal plants from the forest of India with an overview on NTFPs in the Asia Pacific Region*. Paper presented at the Regional Expert Consultation on Non-Wood Forest Products: Social, Economic and Cultural Dimensions, 28 Nov.-2 Dec 1994, Bangkok.

Social Forestry Division (SFD). (2008). *National strategy for the development of non-wood forest products in Bhutan 2008-2018*. Ministry of Agriculture.

Sounthone, K. (1995). Non-wood forest product in Lao Peoples Democratic Republic. In P.B. Durst and A. Bishop (Eds.), *Beyond timber: social, economic and cultural dimensions of non-wood forest products in Asia and the Pacific; Proceedings of a regional expert consultation, 28 Nov - 2 Dec 1994*. Bangkok, Thailand: FAO-RAP.

Tenth Five Year plan. 2008-2013. Samdrup Jongkhar Dzongkhag.

WHO. (2003). *World Health Organization guidelines on good agricultural and collection practices for medicinal plants*. Geneva: World Health Organization.

Yangzom, K., Krug, I., & Tshomo, K. (2008). Organic lemon grass oil contributes to poverty reduction and environmental sustainability. In H.J.J. Beukeboom & P. Franks (Eds.). *A series of community-based forest and natural resources management in Bhutan*. Royal Government of Bhutan: Ministry of Agriculture.

Wangdi, R. & Tshering, N. (2006). Is community forestry making a difference to rural communities? A comparative study of three community forests in Mongar dzongkhag. In T. Meyer, P. Stephens and H.J.J. Beukeboom (Eds.), *A series of community-based forest and natural resources management in Bhutan. Royal Government of Bhutan*: Ministry of Agriculture.

Wildlife Conservation Division (WCD). (2010). *Analysis of the contributions of protected areas to the social and economic development of Bhutan at national level. Department of Forests and Park Services.* Royal Government of Bhutan: Ministry of Agriculture and Forests.

II

Assessment of the Contribution of Forestry to Poverty Alleviation in Cambodia

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Introduction

Cambodia is one of the smallest countries in Southeast Asia, with a total area of 18,103,500 ha. It shares borders with Thailand, Laos, and Vietnam. According to census data of the National Institute of Statistics (NIS) of the Ministry of Planning (MOP), the country's population in 2008 was approximately 13.4 million and annual growth rate was 1.5% (NIS 2008). The population is concentrated in the central plain where population density is highest at 261 people per sq km, followed by the coastal region with an average population density of 56 people sq per km. The highlands have the lowest population density at approximately 22 people per sq km.

The Atlas of Cambodia (2006) reports that over 84% of the country's population lives in rural areas with a large proportion dependent on forest resources for both consumption and income generation. On the other hand, according to the NIS survey in 2008, approximately 82% of the households live in rural areas and a large majority of these households engage in rice-based agriculture, collection of forest products, and livestock raising. The agriculture sector generates about 32% of the gross domestic product (GDP) and provides employment to about 80% of the country's labor force. Results of the Cambodia Socio-Economic Survey (CSES) in 2009 conducted by NIS show that approximately 80% of the population relies on forest-related livelihood activities (CSES 2009).

Forest Resources

Cambodia's forests perform a range of important ecological, social, and economic functions needed for the development of the country. In relation to this, the National Forestry Policy Statement specifies five objectives for the forest sector, namely:

- conservation and sustainable management of forest resources to achieve maximum contribution to national socio-economic development;
- establishment of permanent forest estates managed in a sustainable way;
- maximum involvement of the private sector and participation of the local population to ensure food security, poverty reduction, and socio-economic development;
- provision of a wide range of coordinated multi-stakeholder processes to enable harmonization of different perspectives, interests, and objectives of various interest groups at all levels; and,

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- reforestation and protection of planted trees.

Within the comprehensive policies and strategies of the Royal Government of Cambodia (RGC) for economic growth, including rural poverty alleviation and livelihoods improvement, forests are emerging as a key component. Based on NIS data, many rural communities depend on forest resources for their daily livelihoods. Non-wood forest products (NWFPs) are an important safety net for the rural poor. In response, the new Forestry Law recognizes and ensures the customary user rights for local communities living within or near permanent forest reserves to collect wood and NWFPs for their household consumption.

To promote sustainable forest management (SFM) while meeting demands for forest products in the country, the formulation of forest management plans (FMPs) at national and local levels was recently initiated. These FMPs will guide the coordinated management of forest resources in both conservation and utilization, taking into account the conditions of the forest resources in each area and the forest products and services expected from those forests.

Forest Cover and Classification

In 1965, forest cover was estimated at 13.2 million ha or 73% of the country's total land area. Until the early 1970s, forest management emphasized the preservation of natural resources and sustainable production, which had little adverse impacts to the forest ecosystem. By 1997, forest cover declined to 58.6%. From 1998 to 2002, the government stopped all forest concessions and promoted tree-planting activities on degraded forest land and the involvement of local communities in participatory SFM. Re-planting activities between 1985 and 2002 covered a total of 11,125 ha.

To monitor the loss of forests, the Forestry Administration (FA) conducted a series of forest cover assessments in 1992-93, 1996-97, 2000 (partial), and 2002 (FA 2008). In 2002, forest cover increased to 61.15% of the country's total land area. The reduction in forest cover between the 1960s and 2002 was almost two million ha. In 2006, forest cover decreased to about 59% (10.7 million ha), with an estimated loss of 2% or 373,519 ha of forests in four years (Table II.1). Although official data shows that responses to forest cover decline were undertaken, the roots of the problem still remain, suggesting that unless the pressure for land, timber and fuelwood is curbed, forest coverage will continue to be in great danger. The loss of forests over the years was primarily due to: (i) forest clearance for shifting cultivation; (ii) illegal forestland encroachment; and (iii) conversion of forests to agricultural lands.

According to FA, the estimated annual net rate of deforestation in Cambodia during the period 2002-2006 declined to 0.5%. This is lower than the annual deforestation rate of 1.3% that the World Bank (WB) and the Food and Agriculture Organization (FAO) sources continue to cite, based on earlier analyses. There are provincial variations in the annual net rate of deforestation, the highest being in four northwest provinces.

Table II.1. Changes in forest cover (2002-2006)

No	Forest Type	2002		2006		Change 2002-2006	
		Hectare	%	Hectare	%	Hectare	%
1	Evergreen forest	3,720,493	20.49	3,668,902	20.20	-51,591	-0.28
2	Semi evergreen forest	1,455,183	8.01	1,362,638	7.50	-92,545	-0.51
3	Deciduous forest	4,833,887	26.62	4,692,098	25.84	-141,789	-0.78
4	Others forest	1,094,728	6.03	1,007,143	5.55	-87,585	-0.48
	Total Forest Area	11,104,291	61.15	10,730,781	59.09	-373,510	-2.06
5	Non forest	7,056,383	38.85	7,429,893	40.91	373,510	2.06
	TOTAL AREA	18,160,674	100	18,160,674	100		

Source: FA 2008.

Forest lands in Cambodia belong to the government, although the government recognizes prior access and use rights of local and indigenous communities and can issue long-term economic land concessions (ELC). The Forest Law of 2002 gives the FA authority to grant areas of production forest in the permanent forest estate to local communities for them to manage and derive benefits. The Forestry Administration is a government agency under the Ministry of Agriculture, Forestry and Fisheries (MAFF) with the mandate for forest resource management, according to the National Forestry Policy Statement and the Forestry Law. To improve efficiency, the government forest service went through an organizational reform in 2003 in line with the commitment of the RGC to implement "forest sector reform." Generally, forest management systems are implemented according to existing land and forestry laws, consisting of a hierarchical series of policy steps relating to the allocation of land for different purposes: indigenous titles, protection, production, and conversion.

The FA-controlled forests include the production forest and community forest areas of about 4.5 million ha, and almost one-half (2.25 million ha) can be classified as degraded forests. Of the total forest estate, 30% is presently covered under forest concessions (approximately 3.2 million ha) and the remaining 28% (approximately 3 million ha) is classified as other forests. About 4% are classified as protected forest (approximately 1.5 million ha).

According to the Community Forestry Office database (2010), there are currently more than 428 community forest (CF) sites established, covering 380,898 ha or about 26% of the total forest cover. These involve 757 villages, 247 communes, 92 districts, and 20 provinces. In 2010, the FA identified 288 potential CF sites covering 587,576 ha in 22 provinces. Thirteen CFs in Oddar Meanchey province (over 60,000 ha) are being developed as the first pilot sites for marketing carbon in Cambodia.

National Economic Development

Cambodia's economy grew at an average annual rate of 8.8% in 1999 to 2003. Although official development assistance continued to finance growth, foreign direct investments, especially in garment and tourism, played a key role in promoting growth. During this period, the textile sub-sector grew by 35.1% a year. The construction sub-sector became a pillar of growth, growing at an average annual rate of 20.1%. Recently, restored peace contributed to the rapid development of tourism and this sector grew at an average annual rate of 13.6%. Continued rehabilitation of the power and water sectors resulted in the electricity, gas, and water sub-sectors growth at an annual average rate of 10.2%. Although the share of the agriculture sector in total GDP declined slightly as other sectors grew, it still accounted for 32% of total GDP in 2003. Forests made a relatively small contribution to GDP, not exceeding 4% between 1998 and 2001. This trend is likely to continue as Cambodia continues to diversify its economy away from direct dependence on natural resources.

During the economic take-off phase between 2004 and 2008, RGC accelerated the pace of the implementation of its second-generation reforms, in particular the implementation of the Public Financial Management Reform Program. It also increased investments in social sectors and infrastructure development to reduce poverty specifically in the rural areas. The efforts were focused on rehabilitating and building rural irrigation systems and provincial and rural road networks. Economic growth during the period 2004-2008 averaged 10.3% per year, with a record high growth rate of 13.3% in 2005. The overall recent economic performance was characterized by balanced contributions from agriculture, manufacturing, construction, tourism, and services. Economic performance declined to 6.7% in 2008 and 0.1% in 2009 as a result of the 2008 global financial crisis. GDP growth rose to about around 5.5% in 2010 and is expected to reach 6% in 2010 and 6.5% in 2012-2013. (KohSantepheap Daily, February 2011).

Since the first general elections held in 1993, GDP increased to US$ 2.48 billion in 1993 to US$ 10.34 billion in 2008, and per capita GDP also increased from US$ 248 in 1994 to around US$ 738 in 2008. The accelerated economic growth during the period 2003-2008 resulted in the doubling of per capita GDP. One of the top priorities of the RGC continues to be the reduction of poverty, especially in rural areas. Through the successful implementation of the action plan spelt out in the "Vision and Financial

Sector Development Plan 2001-2010," now updated into the "Financial Sector Strategy 2006-2015" and the "Public Financial Management Reform Programme," the RGC achieved not only macroeconomic stability but also impressive growth over the last decade and raised living standards and reduced poverty headcount across the country.

Protecting the gains made so far and staying on the path to ensure future gains in reducing poverty has now some added risks due to the global financial crisis. If the current situation persists for an extended period, people who are just over the poverty line at present can fall below the poverty line. The RGC is therefore taking urgent measures to put in place safety nets through subsidies and targeted labor-intensive work programs, like the food for work program, to protect the most vulnerable and the poor from the negative impacts of external developments on the Cambodian economy.

Poverty Situation

The results of the CSES in 2007 show that poverty headcount index in parts of the country covered by the 1993-94 survey declined from 39% in 1993-94 to 28% in 2004, and to 24.7% in 2007. In the rural areas surveyed, poverty headcount declined from 43.1% in 1993-94, to 33.7% in 2004 and to 30.6% in 2007.

Over the three-year period from 2004 to 2007, the poverty headcount index for the whole country relative to the overall poverty line was reduced from 35% to 30%, at a rate of about 1.2% per year (Table II.2). The average growth in GDP during this period was 11% per year. The national poverty line for 2007 was Cambodian riel (CR) 2,470 or about US$ 0.61 per capita per day (at an exchange rate of CR 4,062: US$ 1 in 2007). The results showed a high concentration of the poor in rural areas. In 2007, only 0.8% of Phnom Penh City residents were considered poor. About 22 % of the population in other urban areas was classified as poor, while in the rural areas, the poverty rate was higher at over 34%. Of the total number of people who were poor, more than 92% lived in rural areas, compared to 7.5% in other urban areas and only 0.3% in Phnom Penh. The CSES results also showed a decline in poverty headcount in the following areas from 2004 to 2007: from 4.6% to 0.8% in Phnom Penh; from 25.8% to 21.9% in other urban areas; and from 39.1% to 34.7% in rural areas.

Table II.2: Poverty estimates by region

Region	1993/1994		2004		2007	
	Index %	% of all poor	Index %	% of all poor	Index %	% of all poor
Poverty line						
Phnom Penh	11.4	3.1	4.6	1.1	0.8	0.3
Urban	36.6	10.4	24.7	7.8	21.9	7.5
Rural	43.1	86.5	39.2	91.1	34.7	92.3
Cambodia	39.0	100.0	34.7	100.0	30.1	100.0
Food poverty line						
Phnom Penh	6.2	3.3	2.6	1.1	0.1	0.1
Urban	19.6	10.8	14.2	7.8	12.7	7.3
Rural	21.9	85.9	22.2	91.1	20.8	92.7
Cambodia	20.0	100.0	19.7	100.0	18.0	100.0

Source: World Bank 1993/1994; SIDA & MOP 2004; World Bank 2007.

Poverty and Forestry in National Policy

National Poverty Reduction Strategy

The 2003-2005 National Poverty Reduction Strategy (NPRS) serves as a comprehensive framework for poverty reduction. At the core of the anti-poverty strategy are measures to maintain macroeconomic

stability, shift resources to more efficient sectors, and promote integration within the global economy. Through a participatory process coordinated by the MOP, actions were suggested to improve rural livelihoods, promote job opportunities, ensure better health, nutrition and education, reduce vulnerability, improve capabilities, strengthen institutions and governance, promote gender equity, and focus on population concerns. With regard to strengthening institutions and improving governance, four critical areas are emphasized: (i) a judicial system that supports development and rights; (ii) a system of local governance that empowers people and communities; (iii) an administration that is an effective provider of public services and a trusted partner in development; and (iv) an environment where corruption does not impede development and social justice.

The 2006-2010 National Strategic Development Plan (NSDP) draws on the comprehensive Rectangular Strategy of the RGC and synthesizes various policy documents (Cambodia Millennium Development Goals or CMDG, NPRS, National Population Policy, etc.) and extensive consultations were held among many stakeholders. It provides the framework and direction for growth, employment, equity, and efficiency to reach CMDGs and well-focused and directed pro-poor and pro-rural development.

The Government's policies and strategies reflect a commitment to reduce poverty and inequality and improve the quality of life of the country's rapidly growing population, so that all Cambodians can enjoy the benefits of economic growth and participate in the development process. The government's priority poverty reduction actions, approved in December 2002, are (i) maintaining macroeconomic stability; (ii) improving rural livelihoods; (iii) expanding job opportunities; (iv) improving capacities; (v) strengthening institutions and improving governance; (vi) reducing vulnerability and strengthening social inclusion; and (vii) promoting gender equity.

The NPRS (RGC 2002) requires all sectors, including the forestry sector, to contribute to the national goal of poverty reduction. The success of the country in meeting CMDG 1 of eradicating extreme poverty and hunger is related to forest development. In the context of Cambodia where 90% of the population lives in the countryside and where approximately 57% of the land is covered by forest as of 2010 (Leng 2011), it was officially expressed that "Forests are Cambodia's most important natural resource for the county's development." Raised as a cause of major concern throughout the reviews, forest management options should be fully considered and balanced to ensure optimal forestry contributions to these major national development objectives. This will require security of rights to access and use of common property resources and an assessment of partnership options to improve rural livelihood from high-value forests. In addition, the CMDG 7 target is to maintain 60% land area as forest cover. In the revised Rectangular Strategy (2008), community forestry (CF) is prioritized as the principal vehicle for obtaining payments for carbon, through voluntary carbon markets and reduced emissions through avoided deforestation and forest degradation (REDD) mechanisms.

The Royal Government is strongly committed to achieve its prioritized goals and actions from 2009-2013 in the Fourth Legislature of the National Assembly by ensuring:

- Sustainability, peace, political stability, security and social order to promote the rule of law and protect human rights and dignity and multi-party democracy.
- Sustainable long-term economic growth at a rate of 7% per annum on a broader basis and more competitive capacity in the context of one-digit inflation.
- Poverty reduction at a rate of over 1% per annum and improvement of the main social indicators, especially education, health, and gender equity.
- Increased outreach, effectiveness, quality, and credibility of public services.

In the short-term, the RGC strongly encourages all development partners including the private sector, external development partners, nongovernment organizations (NGOs), civil society organizations, and private citizens who are able to provide financial support to communities adversely affected by the current economic crisis.

Forest Policy

The RGC endeavors to implement a coordinated set of laws, programs, action plans, and institutional arrangements for forest resources that are directed toward the achievement of national goals of environmental protection, biodiversity conservation, poverty reduction, socio-economic development, and good governance. A policy brief that aims to contribute to discussions on SFM in post-concession areas toward MDG 1 on poverty reduction highlights the need for clear and secure land and user rights for long-term investments in SFM, the uncertainty of the future of concession forestry, opportunities in the form of partnership forestry, and expansion of community forestry and small-scale private plantations (CDRI 2006).

The RGC declared its intention to reorient forest policy towards increasing reforestation activities through the participation of local communities, armed forces, and all levels of authority (RGC 2003). Furthermore, the government is strengthening its support to CF, which was mainly assisted and financed by NGOs. Many forest concessions were cancelled or suspended due to their unsatisfactory performance in terms of SFM, and some of the concession management plans are currently being reviewed and revised in compliance with the Forestry Law and new concession guidelines.

The RGC is trying to tackle the issues of deforestation and forest degradation by taking measures to improve forest management practices, to crack down on illegal forest activities, and to promote the participation of local communities in forest management activities, decision-making, and implementation processes under the supervision of the FA.

The RGC and people in Cambodia are faced with serious challenges to develop the national economy, alleviate poverty and, at the same time, ensure sustainability of the forest resources for future generations. The RGC does not have sufficient capacity to ensure the sustainable management and conservation of forest resources. Therefore all stakeholders and the Cambodian people need to take part in supporting the process. Collaboration with other countries, especially neighboring countries, is essential in sharing experiences and in coordinating on plans for economic development and measures for forest conservation. Local authorities, the private sector, local communities, research institutions, international organizations, and other relevant stakeholders will also serve as significant catalysts in the conservation of forest resources and sustainable development. Building and working with partnership is crucial to ensure the success of SFM.

The RGC adopted policies on the Development of Indigenous Peoples and the Registration and Use of the Indigenous Peoples' Community Land in Cambodia. The objectives are (i) to ensure effective administration of State land and the conservation of State public properties, including forest land, natural resources, and the environment which are under the management of various State entities; (ii) to expand and strengthen the national economic base through promoting private sector investment in agro-industry (e.g. rubber plantation), minerals, and others; and, (iii) to mitigate risks of conflict of interest between indigenous peoples and the appropriation of economic land concessions to protect the best interest of the country.

Forestry Reform

Major achievements and challenges in the implementation of the National Strategy Development Plan (NSDP) 2006-2010

The forestry-related laws and regulations were implemented with the collaboration of all concerned institutions to address forest resource management issues, such as prevention and control of illegal forest land grabbing. Reforestation and tree planting, CF establishment, forest boundary demarcation, wildlife and forest research and conservation, and the development of the National Forest Programme (NFP) were actively carried out as planned. To achieve the above goals in the forestry sector, the RGC is committed to implement a NFP with the following priorities:

- Strengthening of forestry management and conservation

- Promoting plantations as substitute for national forest demands by encouraging private investments and public participation
- Promoting forestry contribution to social and economic development
- Promoting forestry contribution to poverty reduction by strengthening CF initiatives and by involving local communities in forest exploitation plans
- Creating public awareness to enhance the replanting and use of community plantations for firewood and charcoal needs so as not to destroy forests.

The Forest Administration set up the Cambodian Forest Carbon Credit through the implementation of a sample project for carbon credit in the forest communities in Oudor Mean Chey. The initiative aims to tap the carbon market as a strategy to reduce poverty in rural areas and to mitigate the impacts of climate change and global warming.

Despite government efforts, illegal forest land clearing and land grabbing still persist. The Ministry of Interior plays an important role in issuing instructions to local authorities at all levels to strengthen related statistical data, monitor the movement and resettlement of newcomers, and to prohibit the allocation of forest areas for other purposes.

FA faces many challenges in carrying out its tasks, such as:

- lack of human resources and incentives for staff working in remote areas;
- dependence on forest by-products of people living in and around the forest areas, resulting in high pressure on the natural forests;
- difficulties in controlling illegal activities, such as illegal logging and forest land encroachment;
- difficulties in forest demarcation with encroachers destroying pole markers;
- lack of funds for forest research and development, forest management, and conservation; and,
- lack of offices and facilities for working.

Key policy priorities and actions: 2009-2013

FA continues to take action to implement the RGC's priority policies for the Fourth Legislature. The RGC's forestry policy aims to ensure SFM and the use of forests to improve the livelihoods of people living in rural areas and to contribute to economic growth. Besides banning logging for the present, the Royal Government's priorities until 2013 include establishing protected and biodiversity conservation forest areas, undertaking reforestation, formation of forestry communities, and carrying out proper boundary demarcation and strict measures to prevent, reduce, and eradicate illegal encroachments and occupation of forest land by private individuals.

The RGC considers forest communities to have an important role in forest management. In relation to this, the Royal Government of the Fourth Legislature will continue to monitor and evaluate the effectiveness and efficiency of this program in the improvement of livelihoods of the rural people, the sustainability of forest resources, and the expansion of forest communities. The Royal Government also encourages the private sector to establish commercial forest plantations in degraded forest lands based on agreed technical standards.

Further, the Royal Government will continue to monitor forest concessions to ensure that they comply with international standards by seeking external technical and financial assistance and by active and appropriate participation of civil society in monitoring. The government will continue to strictly enforce the Forestry Law and take serious measures against forestry crimes, and will continue to educate people to be aware of their responsibilities in protecting forests and stopping illegal forest encroachments.

Since forests are crucial to people's livelihoods, the RGC will enhance management efficiency of the

reserved forests and ensure their appropriate protection and development, including ecotourism, for employment generation and additional income for the people. Moreover, attention will be given to the management of the protected areas. The RGC will mobilize resources, support, and financing to participate in global efforts to address the challenges of climate change.

Past and Current Contribution of Forestry to Poverty Alleviation

Subsistence Use of Forests and Allocation of Tenure over Forest Lands and Resources

Traditional forestry

Indigenous and local communities in Cambodia have been using and depending on natural resources, especially forest resources, for their subsistence and livelihoods for generations. These communities often have long traditions of sustainable forest resource use and a wealth of knowledge and skills regarding forest resource and management.

Cambodia's natural resources provide a range of products and services to a majority of the population living in rural areas. Forests produce timber and a variety of non-wood forest products (NWFPs), and also perform important environmental functions, such as biodiversity habitat and protection of soil and water resources. Because a large proportion of the rural population in the country still live in or near forests, it is generally assumed that forest resources play a very important role in the livelihoods of a majority of Cambodia's population.

The RGC recognizes the traditional user rights of local communities and indigenous groups over forest resources. During the 1980s and the 1990s when forests were managed under the lower level of law called Anukret (Sub-Decree) No. 35, all forest uses for local people's consumption were allowed without the need for permit. Local uses included extraction of wood for house construction and collection of firewood and poles for making fences. Moreover, indigenous peoples have used forest areas near their homes as pasture areas for their cattle. Usually, during the six-month off-farm period, they would release their cattle into the forests for grazing. The latest Forestry Law 2002 clarifies traditional uses of forest products (RGC 2002). Shifting cultivation at the family scale, usually manual tree cutting and clearing, is considered by the law to be a traditional use. However, due to population increase and in-migration, shifting cultivation can cause serious problems of forest clearing. Other legal customary forest uses are the collection of dead trees and NWFPs. Customary user rights are also ensured in forest concession areas. Harvesting of trees traditionally used for resin tapping by local communities is prohibited.

The NIS survey in 2008 estimated that 82% of the households in the country live in rural areas and many of these households engage in the collection of forest products, in addition to rice-based agriculture and livestock production. Based on statistical results of the CSES 2009 conducted by the NIS, 78% of the men and 74% of women in Cambodia rely on forestry and hunting activities. Women play the main role in collecting fuelwood and important NWFPs, such as medicinal plants, poles, rattan, and wood. The year-round activities of women are very important for the daily livelihoods of local communities, as women in the rural areas are responsible for 80% of food production. More than 65% of the women in the country are farmers living within or near forests.

Some studies show that NWFPs are an important safety net for the rural poor. Firewood and charcoal are estimated to provide more than 90% of the total energy of the country. However, reliable statistical data on these products and the people engaged in their production are not available. One of the reasons is that NWFPs are mainly produced by a huge number of very small-scale producers across the country whose activities are not part of the formal sector.

Community forestry

In Cambodia, community forestry gradually developed since the mid-1990s through small pilot projects supported by the government and mainly by national and international NGOs. These projects showed that community forestry has considerable potential in protecting forests and enhancing their productivity and capacity to support rural livelihoods while, at the same time, stabilizing critical watersheds and ecosystems.

Community forestry is one of the priority areas to promote the forest sector in Cambodia. There are about 300 to 400 initiatives mostly supported by various NGOs. The Forestry Law and sub-decrees promote communities' participation in forest management, including the decision-making process for formulating management plans and internal rules. Throughout the CF planning process, local communities are encouraged to play a lead role in decision-making. Under the new organizational structure, the role of the local FA staff is to provide support, such as in providing technical assistance in the preparation of the forest management plans.

As provided under the Community Forestry Sub-Decree 2003, local communities that participate in CF projects have the right to manage and use forestlands in or near their villages for up to 15 years based on the agreement between the communities and RGC. The local communities can keep this secured land use rights as long as they abide by forest management plans that were agreed upon. A group can allocate their CF for different purposes, such as agriculture, protection, regeneration, production, and reforestation. They cannot, however, sell the land to a third party or divide it among themselves. Nonetheless, the Sub-Decree on Community Forestry does not include clear provisions about compensation for local communities if the State retakes the allocated CF lands for other uses. Through field extension efforts that explained the forestry by-laws, some community people have become aware of their rights in preventing the destruction of their resources. A lawsuit was filed against some violators of their management plans in the community. Further, active participation of women in CF management is encouraged, e.g. in their participation in the planning process and in their inclusion as members of CF management committees, as well as their capacity building and awareness raising, with assistance of international donors and NGOs.

The establishment of community forestry showed local communities that they have specific rights to participate in managing and using natural resources appropriately with the aim of contributing to upgrading the living condition of people and environment within the area (CFRP 2006).

The findings and recommendations of the Independent Forest Sector Review (IFSR 2004) based on research and consultations with forest sector stakeholders pointed out that CF should be continued and supported with a focus on developing an enabling environment to allow CF to be self-financing and self-sustainable in different settings. The IFSR also recommended piloting Partnership Forestry. The Agricultural Sector Strategic Development Plan 2006-2010 also stresses the importance of formalizing CF management. According to the economic model developed by IFSR, based on existing forest productivity and current levels of formal and informal fees, it is suggested that for a commune with 5,000 ha of reasonably good forest, the annual flow could be about US$ 150,000 (GFA II 2005). In 2006, Sub Decree No 79 or Nor Krar BorKar on Community Forestry Management was signed, which provides a basis for the formalization of CF.

The promulgation in November 2003 of the Social Land Concessions Sub-Decree by the Minister of Land Management Urban Planning and Construction, the main player in the registration and cadastral survey of all kinds of State and private lands, provides a mechanism whereby State lands can be transferred to poor people for residential and family farming purposes. However, the area for social land concessions is not defined yet. Land grabbing by local authorities and soldiers has become so critical that the Prime Minister issued an 11-point order to halt this practice.

Community forestry is based on the idea that appropriate involvement by local people in forest management will enhance the likelihood of sustainable use of forest resources and create alternatives for enhancing people's livelihood. In this regard, CF can be seen as an aspect of community development.

It is generally accepted that the existence of effective local organization is essential to the success of a CF program. Providing resources is not itself adequate to change a community's economic condition. The community must also have the capacity to organize and manage the use of available resources.

The implementation of CF in Cambodia to date is not able to contribute substantially to poverty reduction due to various factors. Forest-dependent communities and stakeholders have limited legal access to forest resources in terms of the extent or coverage and quality of forest resources. CFs are difficult to establish in suspended forest concessions and ELCs, regardless of community traditional use and dependence on forest resources in these areas. The relatively short duration of community rights to CFs (15 years only) implies the lack of guarantee of tenure security after 15 years elapse and the uncertainty in the evaluation criteria diminishes the incentives for communities to participate in CF management. The powers given to community forest committees to impose sanctions on illegal activities by outsiders are limited, and support of the FA is inadequate.

The community forestry program did not provide direct livelihood support to communities. In terms of economic benefits for the members, livelihood activities in CF are limited due to limitations in technologies, people's skills, and access to capital for organizations to engage in productive activities and add value to their forest products.

The success of CF depends on capable local organizations, but most of the organizations have not obtained full recognition by the government. The lack of tenure security reduces their motivation and incentive to actively participate in CF management. Also, the lack of legal status prevents communities from commercializing forest products to their full potential. The Cambodia Environment Management Project organized provincial and national CF networks in 1995 as venues for communities and other stakeholders to meet and share experiences. However, the networks were not sustained, and many became inactive when funding stopped. Also, either the assisting NGOs or the FA controlled the running of the networks. Further, the implementation of CF is in conflict with other land uses, namely, forest concessions, ELCs, plantations, agriculture, and mining. CF also suffers from the weak support and collaboration from institutions as well as the lack of capability of designated FA staff and lack of budget support for an extensive field program.

According to Sokh and Iida (2001), CF is increasingly seen as a viable strategy to improve livelihoods of the rural population and prevent further environmental problems by encouraging local communities to actively participate in the management of natural resources and in the implementation of SFM practices. Likewise, McKenney et al. (2004) showed the importance of community forestry in the livelihoods of forest-dependent communities given that forest products contribute approximately one-half of their household incomes and most forest activities are not legal.

Community-based production forestry

As a strategy toward SFM and poverty alleviation, the Community-based Production Forestry (CPF) program is an innovative form of forest management. The Wildlife Conservation Society in partnership with the FA is currently piloting CPF in the Seima area in eastern Cambodia. The site was designated as a conservation area in 2002. The system combines aspects of commercial forest management with community forestry and aims to demonstrate that a community-based enterprise can responsibly undertake commercial management of part of Cambodia's forests. The CPF initiative aims to combine biodiversity conservation with the maintenance of local livelihoods. Based on this model, community-based forest enterprises (CFEs) are to be set up at the village level, and these CFEs are then awarded timber harvesting rights. Contractors and other organizations undertake harvesting and marketing activities. Besides gaining tenure security and continued access to NWFPs, communities are to benefit financially from CFEs through direct employment in forestry operations and profit sharing. Income to the RGC will be through timber royalties and other taxes.

Cambodia Development Research Institute (CDRI 2006) reported that approximately 41.2% of all the households derive between 20-50% of their total livelihood value from the forests and almost 15%

of the households derive more than half of their total livelihood value from NWFPs. These figures clearly underline the importance of NWFPs to local livelihoods. The average absolute value of NWFP extraction for both consumption and sales is US$ 345 per year per household for households with medium income and US$ 280 per year per household for households in the low-income category. The report also showed that the value of collected forest products that are sold, traded, or exchanged for cash is surprisingly high, underlining the importance of NWFPs in the rural economy as a commodity group that is not only used as a "safety net." NWFP collection in Cambodia must be considered as a very important activity in the overall livelihood options for a majority of the rural people living in or near the forests.

The high value obtained from forest products as cash income points to the importance of trade and marketing. Very little is currently known about market linkages for NWFPs and there are very weak official channels and structures to accommodate this trade. It is therefore recommended that the trade and marketing structure of forest products be revised by removing restrictive license and fee requirements to encourage pro-poor trade and rural development, as outlined in the NPRS 2003-2005. Increased commercialization or marketing of NWFPs, however, also creates an increased need for effective and sustainable forest resource management systems.

Commercial and Industrial Forestry

Timber is the most valuable forest product in terms of the forestry sector's contribution to the economy, including earning foreign currency for the government. In Cambodia, large quantities of timber are used for the construction of houses and buildings and for the manufacture of furniture, bridges, wagons, and sleepers.

Forest concessions

During the 1990s and early 2000s, approximately 6.8 million ha were managed under a concession regime that contributed much less than expected (only 4-12 %) to the national GDP. The export of logs peaked in 1995 with about 590,000 cu m, then declined to 74,000 cu m in 2000, and was almost zero in 2007. The contribution of the forestry sector to national GDP is limited but heavily underestimates the

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The establishment of this tree plantation by a private company on its economic land concession in a commune in Kampong Thom province was met with protests from local community members over the encroachment of the ELC into their community forest area and crop lands.

contributions to rural livelihoods, which include NWFP collection, timber extraction for building houses and other subsistence-based products, income from unauthorized logging, as well as environmental services benefiting other economic sectors and the nation as a whole.

The forest sector needs rationalizing in terms of income generation. The concession forests area, community forests, and other production forest areas can add up to about 5.7 million ha. If estimated income is just US$ 8-10 per ha per year in timber revenue on average, there should be US$ 46-57 million in income. This potential income is not being realized at present, however. In addition, payments for the forests' environmental services through fees from ecotourism, income from carbon credits or other forest management efforts are being explored. These may provide income and other benefits more than logging and ensure sustainable revenue sources.

Almost one-half of the 4.5 million ha of production and community forests are under FA control. About 2.25 million ha can be classified as degraded forests with less production for the first 20 years. These can produce annually 0.5 cu m per ha of logs for a net value of US$ 54 per cu m (or US$ 60.75 million per year). The remaining 2.25 million ha of good and intact forest can produce 1.1 cu m per ha of logs that can have a net value of US$ 54 per cu m equivalent to US$ 133.65 million per year. Some investments in planting with natural regeneration potential will be needed.

Income for the FA, the RGC, or the economy as a whole depends on how the 10.8 million ha of forest lands are utilized. It is valid to compare the revenues from different uses of land that can be natural forests, plantations, or small-scale agricultural production. Essentially, even using conservative estimates, the forest sector can be managed along sustainable lines in accordance with the NFP and absorb NFP implementation costs while yielding a substantial revenue.

The projected revenue from production forests in the NFP Sustainable Financing Programme (Operational Framework) is rather low, considering the extent of the production forest land of 4.4 million ha (3 million ha of forest concession and 1.4 million ha of FA-controlled production forest). If there is US$ 10 per ha per annum net yield on average, there should be a total of US$ 44 million available in the form of royalties from timber (Fraser Thomas Ltd., 2009). This could balance the cost of the entire NFP. However, if US$ 10 per ha per annum is not possible, the economic viability of the current forest cover may be questionable (Ibid.).

It is worth noting that the forest sector has an estimated sustainable annual timber harvest in the area of 4-4.5 million cu m, according to the NFP Sustainable Forest Financing Programme (Operational Framework). Assuming that only 10% will be allocated for timber production (equal to 425,000 cu m) and that the annual domestic demand is presently in the region of 283,000 cu m (FA 2008), there is a significant export potential for certified timber.

Large areas of unmanaged yet productive forests can play a direct role in improving livelihoods and providing employment through forest management activities and NWFP processing enterprises. However, forests and forest lands are under pressure from different groups of forest users and processes, such as allocation for economic concessions and internal migration, illustrating the need for management within forestry and across other economic sectors. Financial modeling based on conservative estimates indicates that the forest can be self-financing while maintaining social and environmental functions in accordance with NFP principles.

Payments for Environmental Services and Carbon Payments

Forests provide a range of environmental services that provide benefits for communities within and outside the immediate area of the forests. In Cambodia, forests provide an important protection for watersheds. In particular, they perform essential functions in ensuring fish breeding grounds and in regulating water flow to farmers in the lowlands. Forests also provide a home to a significant number of rare animals. The Cardamom protected forest covers the largest tract of primary rainforest in mainland Southeast Asia, together with other wildlife sanctuaries such as Samkos and Aural Mountains (Meta 2010).

Mlup Baitong, an environmental NGO, has been working with the villagers in Chambok to establish a community-based ecotourism (CBET) initiative with the dual aims of sustainably managing natural resources and improving the livelihoods of the people. Situated on the borders of Kirirom National Park and the community protected area, the ecotourism site covers 161 ha, with waterfalls, bat caves, lake, and forests in the community protected area that can attract visitors. The CBET in Chambok was established in 2003 and a lot of activities were conducted for natural resource conservation, income generation, and community capacity building. With the community's cooperation and facilitation by the authorities, Mlup Baitong provided training courses to community members for capacity building on forest management and for raising awareness about the importance of natural resources and their relation to ecotourism.

Through capacity building activities, the villagers are more aware of the problems caused by deforestation. They are committed to protect the forest by conducting patrols to guard against illegal activities. Nine villages are part of the CBET project and they work together in patrolling the forest, marketing products, providing services to tourists, and managing natural resources, as well as building infrastructure such as roads and bridges and market stalls. Villagers patrol two to three times a week and report illegal activities to the FA. Through these activities, tourists are attracted to visit the plantation and the botanical garden located in the community. During visits, community members present the importance of ecotourism in their community and the conservation of natural resources. The CBET initiative is contributing to livelihoods by creating jobs for community members through related services and activities, such as homestays, plantation tours, ox-cart rides, food sales, and tour guides for swimming, hiking, and camping on the mountains.

The women in the community also formed a self-help group to save their earnings from the tourist visitor services. Chambok's community-based ecotourism has done well in natural resource management and in helping the community members improve their incomes. In 2006, the initiative was awarded a Certificate of Appreciation from the authorities and a medal from the Ministry of Tourism for their efforts.

Thirteen CFs in Oddar Meanchey province (covering over 60,000 ha) are being developed as the first pilot for marketing carbon in Cambodia. To promote forestry contribution to poverty alleviation, the FA set up the Cambodian Forest Carbon Credit through the implementation of this sample project for obtaining carbon credit for the forestry communities in Oudor Mean Chey as a strategy for rural poverty reduction and climate change mitigation.

Case Studies

The three cases that follow describe the contribution of rural villagers' use of forest resources–wood and NWFPs–to their subsistence and incomes (as the main source for the poorer members or as supplementary income activities), given the limited farming and off-farm opportunities in the communes. For the first two cases, community forests were established in recent years, allowing legal access by the villagers to forest products for their traditional use, along with the efforts by assisting partners to build the capacity of the CF members to manage the forest and benefit from the resources economically and socially. Part of the challenge is developing the skills of the people to add value to their raw forest products. For the first case, the villagers' access to forests near their village is no longer allowed after the forest area was allocated for economic land concessions. Compared to the ELC, the community forest is much smaller, but supports many households depending on forest products for their livelihood. On the other hand, the case of the third site describes a situation where the concession's operation ended and the villagers have since been harvesting forest products. Their access to the forest resources allowed some households to improve their living conditions and acquire some equipment, including a means of transportation. However, the unregulated exploitation of the forest is leading to forest degradation and the deterioration of their resource base. Some households that shifted from farming to charcoal-making became poorer because of the debts they incurred. Three ELC companies that cover almost half of the commune are now threatening the village.

Case Study 1: Community forest in Pro Ngil commune in Pursat Province

Description of the site

Pro Ngil commune is located in Kravarng district, Pursat province. The commune consists of seven villages: Pro Ngil, Ou Srav, Ou Baktra, Svay Pak, Say, Somrong Yea, and Kampeng. There are 2,023 households consisting of 9,898 people. Infrastructure and basic services in the commune are limited. The villagers have very limited links to the outside market. The farthest village, Say, is about 16 km away from the communal town. The road that will help the people transport their agricultural and forest products is under construction. The irrigation system is insufficient: a reservoir used mainly for agriculture and three lines of irrigation system cannot irrigate the agricultural lands completely. Educational attainment and capacity of the local people are low. The lone health center in the commune cannot provide adequate services for the entire commune, especially the distant villages. There is only one secondary school, and because of poverty, most of the children stop studying after they finish secondary education as they are needed to help in agricultural activities. Shortage of clean potable water and irrigation supply are among the main problems in the villages.

According to the 2009 annual communal report, about 87% of people are farmers. Because of water scarcity during the dry season, the farmers cannot farm or increase their crop yield even though they have enough land. According to the communal clerical assistant and the head villager of Ou Baktra, the average size of homesteads is 0.25 ha while the average farm size is one hectare. The average rice yield is 1.5 tonnes per ha but this decreased since 2008 because of water shortage and low soil fertility. Farming depends heavily on the rain thus the people can do only one cropping a year. About 5% of the households have orchard plantations with mango, jackfruit and other fruit trees, and some coconuts. Some households depend on growing vegetables and a few raise some livestock. It is estimated that 52% of people in the commune are poor, 23% are well-off, and 25% are in the medium category. The poor are considered to benefit mostly from NWFPs and tree-cutting for selling to support their livelihood. Other income sources are manual labor and wood carving.

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Charcoal is a source of fuel and cash for rural families. Wood stacked in the kiln to make charcoal is mostly sourced from nearby tree stands or forests. The high demand for charcoal allows rural households to earn cash but threatens Cambodia's diminishing forests.

Some NGOs, such as CONCERN, DANIDA, RECOFTC, and the Future of Children, and the local FA, are involved in the commune to promote SFM. Their activities include forest inventory, work planning, forest management, and tree seed projects.

Forest management

The commune used to be rich in valuable resources. Some villagers recalled that from the 1970s to the mid-1990s, forest use by local people was mainly for their needs in the village and for small-scale trade. At that time, their forests were largely intact. However from the mid-1990s to 2000, forest resources declined because of the increasing extraction of firewood for brick kiln and charcoal making, as well as wood for construction and carving. In 1999, six community forests were established for the management of the forest for sustainable use, especially for household use. There are a total of 1,625 CF members.

The forests in Pro Ngil commune administered by the Pro Ngil Forestry Administration Triage occupy a total area of 115,168 ha. Deciduous forests cover nearly 30% (33,646 ha), while less than 3% (318 ha) is degraded forests, and the rest is for other uses. The six community forests cover about 1.4% (or 1,668.8 ha) and the rest of the forest area is provided to an ELC.

Wood carving and the collection of firewood and NWFPs inside and outside the community forests are important sources of livelihood for a number of villagers. At present, these activities are reduced and woodcraft making almost stopped because of the lack of raw materials. The forest that the people were using was officially awarded as ELC to PHEAPIMEX in 2010, so they can only engage in traditional use of the communal forests, especially collecting NWFPs. Some people who rely on forest products inside and outside communal forests continue to use only the communal forests while others go to distant forests. Even though the ELC is outside the communal forests, these ELC forests still form part of the resource base of the people.

Forest utilization

People harvest forest products from the communal forests either for their household use or for selling. Almost 100% of the fuelwood is used for their household use. Tree poles are used for fencing houses and farms, while bamboo is used for making duck and chicken cages. Resin collected from inside and outside the communal forest is sold. A CF member who has a charcoal kiln collects the raw materials from his farm and other areas outside the communal forest, where he cuts trees for his kiln and also collects resin. Timber can be used either for personal construction or for selling to neighbors and other villagers. A villager whose family depends mainly upon forest resources related that her husband used to cut trees outside the communal forest to sell to the craft makers in the village and collect NWFPs only from the communal forest. At present, however, because resources in the communal forest are now reduced and a part of the forests was provided to the PHEAPIMEX Company, he has to go to another district, which is far from their home.

Only about 100 households in the commune mainly depend on collecting NWFPs, such as mushroom, bamboo, resin, vine, and charcoal, for their needs at home and for selling in the village for income. Women play an important role in collecting and selling NWFPs. During the rainy season, women collect mushrooms for food or for selling to their neighbors and other villagers. Men usually do the collection of firewood and charcoal processing, while the women do the selling.

The demand for trees for carving drives some villagers to cut the trees to generate cash. The local people involved in forest activities are mostly the poor who are landless or who may have a small piece of land.

Trading and marketing

NWFPs including resin, vine, mushroom, and charcoal are sold in the villages on a small scale. Resin is sold to the tradesman in the village who then sells these in Phnom Penh. Mrs. Phuong Ton, a resin trader, related that she always buys resin from villagers inside and outside the commune. Every year,

she can buy a total of two to three tonnes of resin to sell in Phnom Penh. However, the amount of resin has decreased because the villagers cannot collect anymore outside the communal forest.

There are four woodcraft shops in the commune. One of the owners, Mr. Kok Kung, produces tables, closets, chairs, and souvenir items in his shop. A tradesman buys his products and brings these to shops in Phom Penh and Siem Reap province. Mr. Kung buys wood and other raw material from villagers. The shops for woodcraft now face difficulties because the price of raw material has increased and there are fewer customers. Like the villagers who used to have free access to the forests, the production of the woodcraft shop owners is also adversely affected by the allocation of the forest near their village to PHEAPIMEX Company. This group of local people will now have to find other sources of income.

Contribution of forest incomes to household incomes

Farming is the main livelihood source in the commune but what people generally produce is not enough to meet their daily needs. Many families with smaller farms supplement their income by what they earn from collecting forest products or other jobs. Mr. Li Lor, for example, shares that from his one-hectare farm, he produces about two tonnes of rice, which cannot support his family. He therefore has to find other jobs, such as house construction and cow trading. Raising livestock provides a relatively high income for some of the households.

Some families earn money by collecting forest products far from their homes. They shared that their average gross income could reach US$ 200-300 a month, but were left with only US$ 50-75 a month after their expenses are deducted. They could incur lesser expenses if they cut trees in the forest near their houses. They can earn about US$ 125 a year from collecting and selling mushrooms and US$ 50 a year from resin. Charcoal making is their highest income earner, averaging more than US$ 250 a year.

In general, the study shows that forest resources are very important to the local people, as the main source of income for some, and as a source of supplementary income for others. Farming, livestock raising, and manual labor generate higher incomes than incomes from forest products. However, households who have little land depend heavily on forest resources for their household and cash needs. Before, people could obtain more income from forest resources (about US$ 200-300 a month on average) and enjoyed better living conditions. For instance, they could earn about CR 1 million a year from charcoal processing and firewood collection, depending on market demand. As such, some families were able to improve their houses (replacing thatch-roofing with tile-roofing), acquire some farming equipment, and also send their children to school.

Challenges and recommendations

Since 2009, the villagers have not been allowed access to forest areas they had been using for a long time and that are now designated as an ELC. Because of the lack of raw materials and the increase in price of wood, they were forced to discontinue their woodcraft activity. Income from NWFPs also decreased because the people could now collect them only from the communal forest. With less income, life is more difficult for a number of families. Those who depend on the forests have to find other jobs within or outside the commune.

The people are worried about deforestation, especially the loss of the commercially valuable tree species, Dalbergia cochinchinensis (rosewood), which is the main target of illegal loggers who are active in the area. Because of the demand for timber and charcoal, the forests in the area have been degraded. Forest degradation leads to less income for those engaged in NWFP collection, and their living conditions will suffer even further if the forests will disappear from the area. Another concern is that there may no longer be local high-value trees and enough stocks left for the next generations for their construction needs. The community forests established for the local communities are not enough for the traditional use of the communities and income sources, and are at risk of over-exploitation. The ELC does not seem to have any positive benefit for the villages in the commune. Deforestation has serious impacts on the villagers' livelihoods, such as the observed decrease in water supply that is in turn affecting their crop yield.

The people who depend on charcoal processing and selling NWFPs have difficulty in getting their products to the market and they get cheap prices for their products.

The high demand for forest resources in the area has led to the disappearance of wildlife, such as the tigers and elephants, and the loss of valuable trees.[1] At the present, there are trees with diameters of only 20 cm in the communal forest. There is a need to build the capacity of the villages for community forest management to strengthen their rights in protecting and ensuring forest sustainability. Livelihoods can be improved through providing opportunities to local people to shift to craft production using NWFPs. Other recommendations to improve the contribution of forests to people's livelihoods are identifying markets for NWFPs, providing training courses on making handicrafts from NWFP to add value to the raw products, establishing bamboo or rattan handcraft enterprises to reduce the cutting of trees for selling, increasing tree plantations in the area, and stopping illegal logging.

Case Study 2: Community Forest in Trapang Kbal Khmoach Community Forestry in Kampong Thom Province

Trapang Kbal Khmoach community forest is located in Trapang Kroal village in Salavisaiy commune in Kampong Thom province. This community forest is one of 10 CFs managed by the Sala Visaiy Forestry Administration Triage. It involves 80 families and covers 907.51 ha.

Rice farming in Kbal Khmach

There are 16 families with their own rice fields or small croplands in the forest area within the CF, covering a total of 10 ha. They tap a stream adjacent to the forest to irrigate their rice field and crops.

Based on observation, rice fields in the village are less fertile since these were opened and planted for the first time in the early 1990s. The yields are decreasing over the past decade. In the early 1990s, the rice fields had high yields ranging from two to three tonnes per ha when these were planted for the first time. Some fields, especially those closest to the natural forest area, that were planted with rice gave the highest yield of 3.5 tonnes per ha because of high soil fertility and enough rainfall. However, the rice yield decreased gradually to 1.5 tonnes per ha in 2000. This low yield could have resulted from lack of rainfall and reduced soil fertility.

The farmers in Salavisaiy commune can plant rice only during the rainy season because they solely depend on rain-fed rice farming. Toward the end of the rainy season, rainfall sometimes becomes scarce which can damage the crop. In response, the Salavisaiy commune council invested in rehabilitating the existing canals to store rainwater for irrigating their farms as the rainy season ends, in case of a drought. The capacity of the available irrigation system can cover only 20-30 ha of the rice fields in a village and can benefit only 11 out of a total of 19 villages in the commune. The people usually own land holdings ranging from two to five ha per family.

Most of the rice fields have no land tenure, issued by the village and commune chief. People who acquired their lands in the past obtained these through land allocation by the local authority and through encroachment into the forest land.

History of the Trapang Kbal Khmoach community forest

Some villagers and CF members related the background of the community forest in the village. Before 1980, the forest land was covered by evergreen forest that was abundant with different timber species and wild animals.[2] In the 1980s until the mid-1990s, timber extraction, NWFP collection, and extensive

[1] Among the valuable timber species that were cleared include: *Dalbergia bariensis*, *Pterocarpus pedatus*, *Dipterocarpus punctulatus*, *Xylia xylocarpa*, *Shorea siamensis*, and especially *Dalbergia cochinchinensis*.

[2] Many species of timber, such as *Sindora cochinchinensis*, *Anisoptera costata*, *Dipterocarpus obtusifolius*, *Vatica astrotricha*, *Melanorrhoea laccifer*, *Dipterocarpus tuberculatus* and some wildlife, such as the East Asian porcupine, slow loris, langur, red muntjac, common palm civet, fishing cat, wild pig, lesser mouse deer, and others used to abound in the forest.

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Members of the Trapang Kbal Khmoach community forest apply the skills they gained from trainings in making baskets and other handicrafts from rattan for their group enterprise.

wildlife hunting by local people gradually degraded the forest. Around the mid-1990s, they started encroaching into the forests, converting these into rice fields, croplands, and plantations. There was overhunting of wildlife, such as wild pigs, red muntjac (barking deer), snakes, Siamese hare, red jungle fowl, and other animals for food and trade. The evergreen forests were transformed into semi-evergreen and deciduous forests and fallow land. Continuing tree cutting and hunting activities by the people in the early 2000s resulted in further forest degradation, which led to the loss of some wildlife species in the area.

The establishment of Trapang Kbal Khmoach CF, as well as other CFs in Kampong Thom province, was initiated in 2003 with the help of the organization, Buddhism for Development. The CF members voluntarily participated to establish and support the CF initiative. The CF organization comprised 133 people (80 families). They organized the community forestry management committee, composed of five members who were selected by the group as prescribed under the Forestry Law. There are at present 10 CFs within the Salavisaiy commune, which has a total of 1,149 families. This year, 98 more families joined the CF organizations. Each member is required to contribute CR 200 per month (US$ 0.05) to support CF members who patrol the forests. The traditional use of forest resources is restricted for all the members and they have to request permission from the CF committee if they need a tree (or two) to build a house.

Forest resource and people's livelihoods

The forest is a source of various products, such as food products (wild vegetables, fruits, and occasionally meat), timber, poles, firewood, and traditional medicine, as well as environmental services including the role of forests in relation to improving soil fertility through soil surface decomposition and the humus soils that are transported to rice fields and plantations in lower areas.

Cutting trees and poles and collection of some NWFPs are done all-year round. Harvesting of some NWFPs, however, is short-term, depending on their seasonality. Different kinds of wild fruits can be harvested in the months of March to September. Mushrooms appear in June and July, while bamboo shoots are available in May to June.

According to a survey, around 40% of CF member families can earn some income from selling wild fruits and vegetables every year. Some families can earn CR 40,000-120,000 (US$ 1-3) or as high as CR 150,000 (US$ 3.75) from harvesting wild fruits. For example, Mr. Torn In, who is a member of the CF management committee, earned CR 120,000 (US$ 3) from collecting and selling wild fruits last year. It is usually the women who sell the wild products in the village or commune. Almost 80% of the families in the CF eat the wild vegetables and collect these from the forest nearby when needed. Some wild vegetables, when harvested in large quantities, are sold at the market in the village or in town. Honey can provide more income than wild fruits and vegetables. About 30 out of the total 98 families in the CF organization earn an income of about CR 500,000-800,000 (US$ 125-200) during the honey-collecting season. A villager reported to have earned CR 1,100,000 (US$ 275) from selling honey last year and this amount was considered the highest individual income from harvesting honey.

Firewood is used not only by the CF members, but also by all villagers in Salavisaiy commune, mainly for cooking and burning to protect their animals from insects. The average use of firewood by a family ranges from two to three carts per month (costing about CR 40,000-50,000 per cart). All 80 families belonging to the CF use the firewood they harvest for free from the community forest. As they get these for free, the families save the money they would have spent on buying firewood for their daily needs.

Based on a survey, about 50-60% of the families in the CF earned CR 200,000-500,000 (US$ 50-250) per month per family from selling firewood and poles. Before entering the community forest, the CF members must ask permission from the CF management committee. For requests to cut trees and saw wood for building a house, a member is required to submit an application to the CF committee and local FA officers. Many villagers use big and small poles to build fences around their houses, rice fields, and plantations to keep off wild animals. Today, hunting of wildlife species for food is rare because there are fewer wild animals and this activity has been declared illegal.

Wood and NWFPs are sold at Kampong Thom provincial market. Around 60% of the total forest and NWFPs (such as firewood, charcoal, small and big poles, sawn wood, and wild fruits and vegetables) supply the needs of restaurants and hotels at the provincial center. Some buyers regularly visit the villages in the commune but the quantities of local products are often too small to supply the market demand. The products manufactured from NWFPs, including bags, small and big round baskets, flat baskets, tables and chairs, and other handicrafts, are sold to traders from Phnom Penh and Siem Reap province who order these products for their shops. Similarly, honey and traditional medicines are sold to users in the commune and province and to travelers.

Income from forest products

Based on the estimates of CF members, there are 60-70% of CF members who depend on collecting and selling forest resources such as honey, wild fruits and vegetables, medicinal plants, firewood and big and small poles for selling. In general, the overall income earned is from CR 1,600,000-1,800,000 (US$ 400-450) per household per year, and this amount makes up 50-60% of the total income for a family. About 30% of the total families in the CF can earn additional incomes of about CR 2.5-3 million per year (US$ 500-750) from selling small and big poles and sawn wood.

On the other hand, based on the village head's estimation, the income from forest resources provides around 30% of the total income of a family. At present, around 15-20% of CF members can land seasonal jobs in a company that has invested in an acacia plantation in Kampong Thom province since 2007. They can earn more income for their families, thus, helping reduce pressure on the natural forests. Their wages are based on their workload, which can amount to CR 8,000-15,000 (US$ 2-3.75).

According to a survey done by Hasen and Neth for CDRI in 2006, the net conversion into cash of natural forest products used by people in Kampong Thom province was US$ 265 per year. From the forest each year, the poor could get 42% of their annual income or US$ 280, whereas families at medium level could get 30% of their annual income or US$ 345. These benefits from the forests were obtained through the sale of firewood, charcoal, resin, wild meat, fish, wild vegetables and fruits, construction materials, and honey.

Capacity building for CF members

Educational attainment among the younger members of the Trapang Kbal Khmoach CF and the population of Salavisaiy commune is relatively higher (having finished elementary or secondary education) than the older members. With the support of NGOs, CF members engaged in manufacturing NWFPs have undertaken training to develop their skills to braid rattan and to make other handcrafts. The development of their skills allows them to add value to their products and earn more than just selling these as raw materials.

Likewise, both the members and the management committee of Trapang Kbal Khmoach CF have participated in many extension activities and trainings, such as paving the firebreak, conducting forest inventory and patrols, managing organizational funds, increasing awareness of forest laws and other relevant regulations, and facilitating conflict resolution.

Trapang Kbal Khmoach CF benefits from the support of local NGOs such as Agence Française de Développement, Oxfam, Community Forestry International, and Balai Diklat Kehutanan, and government agencies such as the Forestry Administration, as well as the commune and district council. Other CFs from Kratie and Stueng Treng province and students of the Royal University of Phnom Penh organized by RECOFTC have visited to learn about the Trapang Kbal Khmoach CF's experiences. In many workshops in the province and Phnom Penh, representatives from the CF have also shared their experiences and lessons in how they are managing their organization These forms of interaction aim to establish partnership networks and find support from NGOs and other development partners to build the technical and financial capacity of the CF and improve people's livelihood by creating micro-credit services and obtaining livelihood support.

Challenges and recommendations

Trapang Kbal Khmoach community forest helps the members in addressing their poverty by providing materials for their subsistence and domestic use and income sources. Unregulated forest resource exploitation prior to the 2000s led to forest degradation. The CF was established in 2003 and has since been well-managed until now, ensuring better conditions of the forest resource to support and ensure the livelihoods of the members. The incomes derived from forest resources are variable depending on the quantity of forest resources, ways of collecting NWFPs, competition with outsiders, and market demand and access. Recommendations proposed by CF members to improve their organization and livelihoods include the following:

- Provision of trainings on manufacturing skill and marketing will improve their small enterprises through the integrated commune investment plan or CF development plan, since CF members lack professional skills to manufacture NWFPs into handcrafts and furniture.
- Provision of trainings on sustainable forest uses and management at the CF and commune level will improve their skills to harvest properly and maintain their resource base. Although people in the commune can exploit the forest and derive some benefits, they still do not know how to extract the NWFPs with minimum negative environmental impact.
- Investment projects are needed to integrate livelihood improvement into the forest-and-livelihood development plan at the levels of the commune and CF. Funding from government and development partners should be allocated mainly to establish and develop economic activities such as micro-credit, rice and animal banks, and other farming and marketing activities including integrated farming system, animal raising and production.
- Alleviating poverty depends not only on the forest but also on other sectors such as education, business, agriculture, health, and social networks. These should not be overlooked in commune investment and development plans, and must be integrated, assessed, and monitored well, and supported with sufficient funds and strong partnerships.

Case Study 3: Community Access to a Former Forest Concession in Reaksmei Samaki Commune, Kampong Speu Province

Study site situation

Reaksmei Samaki commune is located in the province of Kampong Speu, which lies to the west of Phnom Penh City. The topography of the province varies from large areas of lowland paddy fields in the east to a mixture of lowland-upland and upland forested areas in the west. In 2004, the Ministry of Planning classified Kampong Speu as one of the three poorest provinces of Cambodia. Its average population density of 102 people per sq km is higher than that of the entire country, which is 75 people per sq km.

The 2010 annual commune database shows that Reaksmei Samaki commune has 2,977 residents or 705 families and about 42% of the households are poor. The commune has two primary schools with 10 classrooms, but these are very limited in terms of capacity to accommodate more students. The commune has a total agricultural land of 2,611 ha for rice cultivation (NCDD 2009). Each household has a paddy field of at least 0.5-1 ha on average for wet-rice cultivation, but these do not have land titles yet. According to the commune chief, wet rice and farming rice yields are very low at approximately 1.5-2 tonnes per ha, and are not sufficient in meeting a household's demand for an entire year. Aside from farming, the people in the commune are engaged in livestock production, harvesting of wild food from the forests, and fisheries. Many households cut trees for fuelwood and for charcoal making. In 2002, the Lutheran World Federation organization helped in constructing the road going to the Reaksmei Samaki commune, as well as in providing vegetable seeds and livestock and other materials for livelihood alternatives to local people such as livestock and fish production, sugarcane planting, and crop cultivation.

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With the cash that a number of households generated from forest resources, they were able to acquire various means of transportation to bring forest products to the market. This situation led to the increasing degradation and even loss of surrounding forests.

Yearly, the forest resources in the Reaksmei Samaki commune are increasingly degraded due to unsustainable use by the local people and illegal logging. Now, almost half of total forest land in the commune has been converted into an ELC to plant oil palm and jatropha.

History of utilization of forest resources in Reaksmei Samaki commune

Before 1993, Reaksmei Samaki commune had a dense forest with lots of big trees, some having diameters bigger than 50 cm. Local people cut these trees to build their houses and to sell for household income. During the Khmer Rouge regime, explosive mines were widely scattered in the forests so the local people were afraid to go in to cut trees.

After the integration of the Khmer Rouge in 1998, the government removed the landmines. The government put the public state forest land under a forest concession and a private company began to log in the area. During the concession period (1998-2002), the company owner did not allow local people to enter the forest concession area to cut trees or even collect NWFPs for traditional consumption. The restrictions of the private company badly affected local livelihoods and resulted in poorer households. In 2002, the concession stopped its operations. In 2004, the poverty rate in Reaksmei Samaki commune was 50.9% based on the poverty data of the Aoral district data book in 2009.

By 2004, after most of the luxury trees[3] and good quality timber had been cut, the company stopped operating. Households living around or near the forest then began cutting trees in the forests to construct their houses and charcoal kilns. In 2005, a few traders would come to the commune to buy firewood and charcoal from the people. The firewood and charcoal market in the commune rapidly expanded, which allowed the community members and outsiders to earn money. Consequently, the traditional use of forest products was replaced by illegal forest harvesting though there were local households that continued to cut trees to produce firewood and charcoal on a small-scale, an activity considered as a form of traditional use.

After the concession period, some households abandoned rice farming and turned to charcoal production, expecting more income. In response, the commune authority recommended that households undertake rice planting and rice cultivation or charcoal production in the dry season. Some households also cultivated crops around their houses, such as maize, peanut, cucumber, cabbage, eggplant, pumpkin, jackfruit, mango, and pineapple.

In 2009, about 7,955 ha of the forest was allocated to an ELC company, Fortuna Plantation Ltd. The company signed a contract with the MAFF for a duration of 70 years. The purpose of the company was to invest in an oil palm and jatropha plantation.

Traditional use of forest resources

Article 40 of the Forestry Law recognizes the right of local communities which live within or near the permanent forest reserves to use all forest products and by-products (such as medicinal plants, pole trees, wild vegetables and fruits, resins, rattan and fuelwood) without acquiring a permit from the local forester. Harvesting depends on the seasonality of the NWFPs (Table II.3).

Table II.3. Seasonal calendar of forest resource gathering

Nonwood forest products	Monthly seasonal calendar											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1. Fire wood and charcoal												
2. Medicinal plant												
3. Wild fruit collection												
4. Mushroom												
5. Resin												

Source: Fieldwork in Reaksmey Sameakki commune, Aoral district.

As there is no medical doctor in Reaksmei Samaki commune, the people depend on traditional medicine, such as medicinal plants, based on their indigenous knowledge. They gather medicinal plants for household use during the dry season or as necessary. People collect mushrooms at the start of the rainy season (from July-August). Mushrooms, such as Kchor and Kngok mushrooms, are for household consumption only or for sharing with neighbors. Sokrom and Pchek mushrooms are collected for selling. Wild fruits are collected from the forest in the dry season from March to April. Examples of these are kuy (*Willughbeia edulis roxb*), ser moen (*Nephelium hypoleucum Kurz*) and

[3] Luxury trees are rare hardwood species that grow slowly and command high prices.

pong ro (*Schleichera oleosa [Lour.] Oken*). In the past, people would share with each other the meat of wild animals they hunted or trapped in the forest. Now, they hunt and trap illegally for selling as a source of income. The wild animals that local people hunt and trap include the Sunda pangolin, wild pig, reticulated python, Bengal monitor, and red muntjac. Selling firewood and charcoal is an important income source for the villagers that they traditionally practice during the dry season from November to June. Most people cut trees to produce charcoal in their kilns that are usually constructed behind their houses. They can produce on average approximately two kilns of charcoal per month. They also gather small pole trees and bamboo to construct fences, chicken cages, pigpens, and trellises for supporting plants or vegetables.

NWFP market and household income

Most charcoal producers transport their products to sell to individual households in Chheu Chrung, Trapeang Kroleung, and Kampong Speu province who can pay higher prices than those offered by traders in the village. There is a big market for charcoal is Phnom Penh City due to the demand among households and restaurants. However, households that do not have means of transportation sell charcoal to village traders directly. They can earn CR 500,000-1,000,000 (US$ 125-250) in a month. A small charcoal kiln can produce charcoal twice per month. The process includes cutting a tree, preparing the wood in the kiln, burning the wood until charcoal is produced, and preparing the charcoal for selling. A producer who obtains a loan from a trader usually gets a lower price of CR 300 per kg compared to the market price of CR 400 per kg if the producer has no loan from the trader.

Outside traders also buy certain NWFPs in the village, such as porpol buy bark for producing incense sticks, sokrom and phleuk mushroom. According to the village chief, sokrom and phleuk mushrooms are transported by middlemen to Phnom Penh City and then exported to China and Korea for producing medicinal products.

Table II.4: NTFPs prices and markets

Type of NTFPs	Price*/Kilogram	Market
Bark of Porpol Buy	CR 400	• Sold to traders from Trapeang Kraleung who come to the commune to buy products
Sokrom mushroom Phleuk mushroom	CR 1,500 CR 2,000	• Sold within the commune • Transported to Trapeang Kraleung for selling
Fire Wood	CR 15,000-18,000 /stack	• Sold within the commune
Charcoal	CR 300 – 400	• Sold in Chheu Chrung, Trapeang Kroleung and Kampong Speu if the farmer has advanced money from the trader

Source: Fieldwork in ReaksmeySameakki commune, Aoral district.
*Note: * CR 4,062 = US$ 1 (2007)*

The officer of the Tasal Forestry Administration Triage explained that while Article 40 of the Forestry Law allows local communities to have full right to barter or sell forest by-products without the need to obtain a permit if these activities do not pose a significant threat to the sustainability of the forest, a trader or any third party, who collects firewood or charcoal from the local communities for trading is required to get a permit for firewood and charcoal transportation after paying royalty and premium fees.

Forests play an important role in providing jobs and incomes to local communities that live within or near the forests if they are sustainably used. However, collection and sale of porpol buy bark and mushrooms are seasonal activities, i.e. when the mushrooms are in season or during periods when there is less farming work. The chief of the commune said that poverty will be reduced in his commune if local people engage in agriculture and gathering of NWFPs or other forest resources to increase their income.

Livelihood situation after concession period

Based on the commune's poverty data, the poverty rate in Reaksmei Samaki was reduced from 50.1% in 2004 to 42.4% in 2009. This shows that during these five years, when local communities in Reaksmei Samaki commune had free access to forest resources to earn money for their family, the poverty rate decreased by 7.69%. Now, many households in the commune own vehicles or machinery, such as motorcycles, oxcarts, or power tillers they can use to bring their NWFPs (firewood and charcoal) and agricultural products to the market. NWFPs provide additional income and have allowed some households to improve their houses.

Mr. Lon Yan, a charcoal producer in Reaksmei Samaki commune, said that his family did not have the money before to buy a power tiller that they could use to transport charcoal from the forest to the village or market. He needed to pay for the cost of about CR 50,000 (US$ 12.5) for each trip to bring charcoal from the forest to his house. Using his income from forest resources, he was able to buy a power tiller and he can now save what he would spend before on the rent of a power tiller to transport his charcoal to the market and can find buyers who offer a good price for his product.

Challenges and recommendations

With the forest increasingly degraded yearly, charcoal producers need to go far from the village to gather or cut trees. For example, one charcoal producer related that in 2004, his family would rely on cutting trees behind his house to make charcoal. Now, he needs to go as far as 10 km to get trees for his kiln. People are cutting trees illegally for firewood and charcoal production, which threatens sustainable forest use. The road that the government and the Lutheran World Federation organization developed connects the villages to the markets, allowing local households who own a car or power tiller to transport their firewood and charcoal products on their own to markets to get higher prices than they would otherwise get by selling to middlemen in the commune who offer lower prices. However, the road also seems to be contributing to forest degradation as traditional use of forest resources is gradually being replaced by commercial illegal tree-cutting activities by some local people.

Some households that have abandoned their agricultural lands and now collect forest products live a hand-to-mouth existence. There are community members who borrowed money from traders or middlemen to buy motorcycles or power tillers to transport their firewood and charcoal. This did not improve their livelihoods and instead they are faced with food insecurity and debts with increasing interest charges.

Three ELC companies cover almost half of the total land area in the Reaksmei Samaki commune. According to the commune chief, the concessions overlap with the villagers' agricultural lands. The villagers filed their complaint with the court to protect their claim to their land.

Results from the study show that forests can make a significant contribution to the welfare and livelihoods of local households in Reaksmei Samaki commune. Poverty reduction and gender equity also need to be understood and resolved at the political level, and integrated in SFM. To ensure sustainable use of forest resources in Reaksmei Samaki, establishing community forests should be explored with active participation from the communities in the commune for them to gain control over the forest resources and land tenure. The socio-economic and governance context of community forest resource use is as important to the contribution of forests to local poverty reduction as the nature of the local forest resource. The local forester of the Tasal Forestry Administration Triage recommended that the participatory approach to the management of the forests in the commune by local communities and other stakeholders is necessary.

Outlook for Forestry and Poverty Alleviation

There is a need to optimize the contribution of forests and the forestry sector to poverty alleviation and to the economy through enhanced forest management and technology. The majority of the population depends on access to forest products, especially for food, fuelwood, small-scale timber and pole

harvesting, resin tapping, fodder, and traditional medicines. Thus, local peoples' rights of access to forest resource utilization are fundamental. The contribution of forests to the national economy is not fully realized and the GDP share of the forestry sector continues to decline. The challenge is to capture revenues from extractive activities relating to forest and non-forest products and to fully account the values of biodiversity conservation and environmental services.

Economic Outlook: 2009-2013

In mid-2009, the economic outlook in the very short-term faced two important downside risks. The first was the uncertainties about the severity and duration of the global financial crisis and the ongoing economic recession in developed economies, as well as the potential impact of the swine flu epidemic on the tourism sector. The second risk was a very slow pace of economic recovery in developed economies. With timely responses by the RGC in relation to the severe global financial crisis, the downside risks and the negative impact on Cambodia's economic growth as well as on the wellbeing of people, especially the poor and vulnerable, were minimized. On the other hand, the swine flu epidemic did not expand to a level that was anticipated. The country now faces a daunting challenge of finding new markets beyond the US and the European countries to return to the high rates of economic growth, with significant poverty reduction that the country achieved over the last decade.

In the past five years, RGC's sustained efforts to strengthen fiscal discipline, to put in place an increasingly credible monetary policy framework, and the implementation of structural reforms helped to produce the best economic performance in Cambodia's history since 1993. Structural changes enabled a well-performing economy in the modern history of Cambodia since 2003. During the current crisis, the Cambodian economy shows a strong degree of resilience and flexibility. The RGC is confident that continuing to vigorously pursue the implementation of its policies will greatly contribute toward improving the economy.

To achieve the target growth rate by the economic sector for 2009 until 2013, the following capital investments in forestry-related sectors are needed: about CR 11.8 billion (US$ 2.9 billion) for agriculture, fisheries, and forestry sector and CR 488.3 billion (US$ 119 million) for the forestry and logging sectors (Ministry of Economy and Finance 2002). Until 2013, the contribution of the agriculture, fishery, and forestry sector to the GDP will slightly go down (from 4% in 2010 to 3.2% in 2013), while that of the forestry and logging sector will remain constant at 1.1%.

Rural Poverty Reduction

Poverty reduction remains a major challenge for Cambodia. Poverty declined slightly from 39% to 35.9% between 1993 and 1999, then to 30.1% in 2007 based on the poverty headcount index. A number of challenges need to be addressed in the years to come. It is clear that poverty and hunger eradication require a multi-faceted response addressing economic, social, and governance issues. In terms of economic policies, there is a need to ensure that the growth process is increasingly pro-poor, generating benefits for those in most need. Democratic reforms must be pursued, along with progressive decentralization. On the social front, measures of effective social protection need to be strengthened and human capacities reinforced. More generally, changes in the institutional environment are required to strengthen the role of civil society and the private sector in the development process.

In addition to chronic poverty, there are major challenges associated with vulnerability and insecurity, in particular food insecurity and vulnerability to floods and droughts. As the poor are more vulnerable to disaster, specific measures to reduce the effects of shocks as well as to improve people's capacity to respond are needed. The government's capacity to manage natural disasters must be improved and, more generally, the government must position itself to provide broader social protection to those in greater need. The challenge is to find innovative approaches which complement coping strategies of rural populations and to ensure that social assistance programs are directed to those in the direst need.

Cambodia's strategies to promote socio-economic development and poverty reduction are outlined in NPRS 2003-05. The Governance Action Plan complements these documents, setting the framework

for institutional reforms. Based on NPRS 2003-05, the RGC's comprehensive framework for poverty reduction, the anti-poverty strategy must adopt measures to maintain macroeconomic stability, shift resources to more efficient sectors, and promote integration within the global economy. Through a participatory process coordinated by the Ministry of Planning, a number of actions have been suggested to improve rural livelihoods, promote job opportunities, ensure better health, nutrition and education, reduce vulnerability, improve capabilities, strengthen institutions and governance, promote gender equity, and focus on population concerns.

Forestry Outlook

For guiding tools, the RGC has committed to a number of overall development and conservation strategies. These include the Cambodian Millennium Development Goal, National Strategy Development Plan, and the Rectangular Strategy for Growth, Employment, Equity and Efficiency, Governance Action Plan, Strategic Framework for Development Cooperation, the National Poverty Reduction Strategy, and Environment Protection Action Plan.

In addition, the RGC has formulated and instituted some general reforms, among others the Legal and Judicial Reform, Public Administration Reform, Forestry Reform, Fisheries Reform, Land Reform and Mine Clearance, and Armed Forces Demobilization. The Forestry Organizational Reform and Forest Policy Reform could be an opportunity to improve socio-economic conditions of local, provincial, and national livelihoods through improved attention, partnerships, and coordination of management. Lately, the Technical Working Group on Forestry and Environment has been established to ensure sustainable development and coordination of natural resources plans.

Retaining 60% of the country's land area under forest cover is the main target of the FA until 2015. The main responsibilities of the FA to achieve this objective are to stop forestland encroachment and illegal tree cutting, and attain SFM in a national and regional context of increasing demand for natural resources. This increasing demand is not only from within the country, but also from other countries in the region.

The community forest management approach to forest management is increasingly considered among government, NGOs, private sector agencies, and research institutions. The stakeholders believe that CF should be pursued to manage the remaining forests. With the existing Sub-Decree on CF, the remaining forests should be improved and perhaps increased in the immediate future. Because of their wood and NWFP needs, local people will make sure that their CF resources are continuously available for them and the future generations. The Annual Bidding Coupe (ABC), for domestic wood supply, allows harvesting of wood in areas under production forests where harvesting is permitted to meet local wood needs of domestic markets in wood and non-wood products. The FA ensures that forests should have the capacity to meet these needs. The ABC method can also take the lead in ensuring that forest harvests are under control. As mentioned earlier, due to the shortage in the FA's human resources, it is not realistic and effective for the FA to cover patrolling in huge forest areas and responsible companies in ABC can provide help to keep the forests under control.

Conclusion and Recommendations

Poverty estimates indicate that about 39% of Cambodians lived in poverty in 1993-1994, which decreased to 30.1% in 2007 (calculated as the poverty headcount index relative to the overall poverty line for Cambodia). Using the food poverty line, the poverty headcount index also decreased from 20% in 1993-1994 to 18% in 2007. However, there are significant regional differences in the poverty rate. Approximately 80% of the population depends on forest-related livelihood activities (CSES 2009).

Forests play an important role in poverty alleviation in Cambodia. Those in remote areas of the country are highly dependent on forest products for their daily needs. The forests are a resource base from which they harvest wood and other products for house construction and other subsistence needs or for cash generation to buy farming equipment and meet their other needs. Sometimes, agricultural and

forestry products are used first for household consumption, and the excess is sold in the local (village or commune) and provincial markets. At other times, the products are harvested purposely to generate cash for specific needs.

Since the forest is crucial for the livelihoods of the people, the RGC should enhance forest management efficiency of the forests and ensure their appropriate protection and development, including reviewing ELC allocation, allocating community forests, ecotourism for employment generation and additional income for the people. Moreover, attention should be given to the management of the protected areas. Based on data review and case studies from three field sites, we recommend the following:

- Forest resource management approaches need to prioritize direct access of local communities to benefit from forest resources, especially in high-value forest management areas and including protected areas.
- Commercial forest management option should be considered and optimized to ensure the forestry sector's contributions to poverty alleviation and socio-economic development.
- Improving the lives and livelihoods of the rural poor should be a top government priority, including equitable access to common property resources as a critical source of income security.
- The RGC should develop and deliver support services to rural communities, including community forestry and agro-forestry and support for the development of NWFPs for rural livelihoods and food security.
- Communities themselves must be closely involved in the development of systems and processes under which their forest will be managed and this requires the development of partnerships with other stakeholders.

References

Cambodia Development Research Institute (CDRI). (2006). *Management option in Cambodia*.

CDRI. (2006). *The value of forest resource to rural livelihood in Cambodia*. CDRI Policy Brief, Issue 02. Phnom Penh, Cambodia. Cambodia Development Research Institute.

Community Forestry Office (CFO). (2010). *Community forestry in Cambodia*. Forestry Administration Database.

Chinvin, L. (2011). *Forest cover monitoring assessment in Cambodia, Forestry Administration*. Paper presented at the TWG F&E meeting.

Community Forestry Research Project – Project Team (CFRP). (2006). *Cambodia's community forestry research project: Selected experiences and lessons learned*.

Council for Social Development (CSD), General Secretariat of Council for Social Development (GSCSD) and Poverty Monitoring and Analysis Technical Unit (PMATU). (2003). C*ambodia Millennium Development Goals*. Cambodia: Royal Government of Cambodia.

DPF. (2009). *Forestry statistics of Cambodia*. Forestry Administration.

Forestry Administration. (2008). *Cambodia forest cover: Forest cover map change 2002-2006*.

FA. (2010). *Cambodia forestry outlook study, Working Paper N° APFSOS II/ WP/ 2010/ 32*. Food and Agriculture Organization.

Heng, S. B. (2010). Private sector investment in Cambodian forestry. In M. Pescott, P.B. Durst, & R. Leslie (Eds.), *Growing green assets: Removing constraints to private sector investment in forestry in Asia and the Pacific*. Bangkok, Thailand: FAORAP.

Meta, B. C. (2010). Community-based eco-tourism: Livelihood cum adaptation strategy for Kampong Speu province. SEARCA, *Brochure, vol. 1, No. 3.*

Ministry of Economy and Finance. (2002). *Forestry Revenue Data*. Phnom Penh.

National Committee for Sub-national Democratic Development (NCDD). (2009). *Aoral district data book: 2009.*

National Institute of Statistics (NIS). (2008). *General population census of Cambodia*. Ministry of Planning, Phnom Penh, Cambodia.

NIS. (2009). *Statistical results of Cambodia socio-economic survey 2009.* Phnom Penh, Cambodia: Ministry of Planning.

Royal Government of Cambodia. (2002). *Second five-year socioeconomic development plan 2001-2005.* Phnom Penh.

Shahakarey (2011, February 18). Good evaluation for economic development in Cambodia by IMF. *KohSantepheap Daily.*

Sokhun, T. (2004). *National report to the fifth session of the United Nations Forum on Forest*. Forestry Administration, Ministry of Agriculture, Forestry and Fisheries.

Swedish International Development Cooperation Agency (SIDA) and Ministry of Planning (MOP) (2004). *A poverty profile of Cambodia*.

World Bank. (1993/1994). *A poverty profile of Cambodia*.

World Bank. (2007). *Poverty profile and trends in Cambodia*.

III

Assessment of the Contribution of Forestry to Poverty Alleviation in the People's Republic of China

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Introduction

Poverty is a global challenge and, in China, the spatial distribution of poverty and forests has a high degree of overlap, with poverty incidence higher in mountain areas. The study of forestry's role in China's poverty reduction has important practical significance.

Forest Resources

China started with a relative lack of forest resources. In 1978, 30 years ago, the reform and opening-up took place and, in the new century especially, the Chinese government is committed to the protection and development of its forest resources through the full implementation of national key forestry programs (NKFP). Consequently, China's forest resources continue to be recovered and increased, and the forest ecosystem and environment has gradually improved. Forest coverage has increased from 8.6% when the New China was founded (1949) to the current 20.36%. According to the 7th National Forest Inventory (NFI) in China (2004-2008) (SFA 2009a), the forest area now covers 195.45 million ha which comprises about 20.36% of the country's total land area. The total standing stock volume totals 14.91 billion m3 and the forest stock volume is 13.72 billion m^3.

Globally, forest resources in China showed the highest rapid increase. Since the 1970s, China has conducted seven NFIs (Table III.1), which indicate an annual average forest area increase of 1.36%, total standing stock annual average increase of 1.29%, and forest stock annual average increase of 1.32%. Plantations cover an area of 61.69 million ha, ranked first in the world.

China has entered a rapid development period for forest resources. Since 2000, relying on the NKFPs, China's annual new planting area has been more than five million ha. Total forest resources have continued to increase and the multiple functions of forests have been gradually revealed. The supply ability of forest products has been further increased, which has laid a solid foundation for socio-economic development and poverty reduction in forestry areas.

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Table III.1. Summary of past NFI results

Interval	Total standing stock (million m^3)	Forest area (million ha)	Forest stock (million m^3)	Forest coverage (%)
1st (1973-1976)	9532.27	121.86	8655.79	12.7
2nd (1977-1981)	10260.60	115.28	9027.95	12.0
3rd (1984-1988)	10572.50	124.65	9141.08	12.98
4th (1989-1993)	11785.00	133.70	10137.00	13.92
5th (1994-1998)	12487.86	158.94	11266.59	16.55
6th (1999-2003)	13618.10	174.90	12455.85	18.21
7th (2004-2008)	14912.68	195.45	13720.80	20.36

Source: SFA 2009.

Poverty Situation

The National Bureau of Statistics of China (NBS) defines poverty as a situation in which an individual or a family lacks basic materials and needs, and living standards do not reach acceptable minimum social living standards. The poverty line sets the lowest costs for the necessary consumption of goods or services for people to maintain their basic survival under certain conditions of time, space, and social development stage, also known as the poverty standard. In China, there are two poverty standards or levels. One is the absolute poverty level that is below the standard and is referred to as "extreme poverty." The other is the relative poverty level and refers to the level above absolute poverty, but with lower income, also known as "low-income population."

The current poverty standard of China was first estimated in 1986 based on consumption expenditure surveys of 67,000 rural households conducted by the NBS. After 1986, it was adjusted according to the changes in the rural price index. In 2009, China's absolute poverty standard for rural and low-income poverty standard were integrated into a single new poverty standard, which is about US$ 180 (RMB 1,196) per year, and equivalent to US$ 0.5 per day[1] net income per capita (Gu Zhongyang 2009).

In the implementation of the national poverty strategy in the 1990s, the Chinese government identified 592 national poverty-stricken counties (NPSC)[2]. From the spatial distribution, most of these poor counties are located in mountainous areas or high altitude mountains. There are 373 poverty counties of concentrated distribution in 13 zones, covering approximately 170 million ha, and affecting 119 million people, including a rural population of 104 million (Jia Ruoxiang 2011).

National Economy and Poverty Alleviation

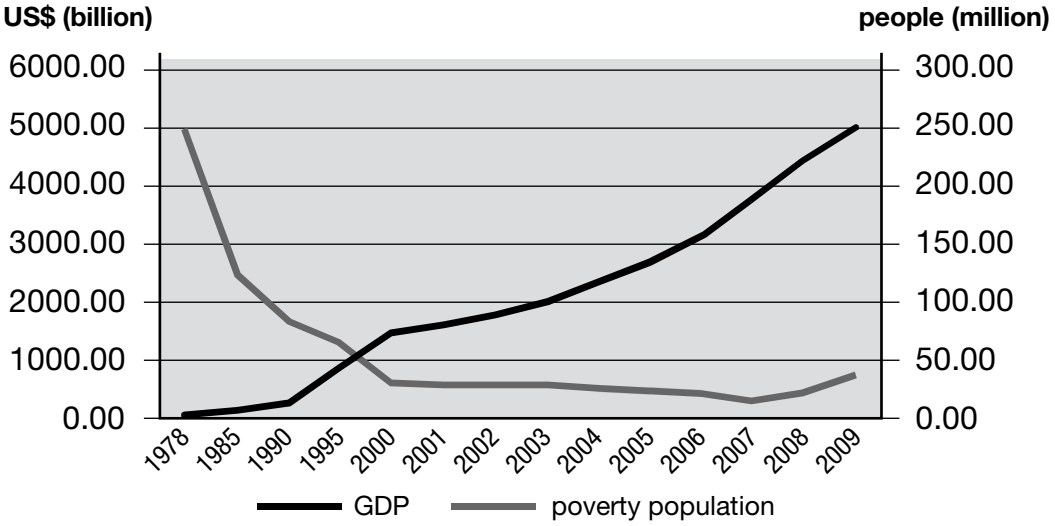
Since the start of the reform and opening up in 1978, China's economy has rapidly grown while rural poverty alleviation and development has also made remarkable achievements.

From 1978 to 2009, with China's annual gross domestic product (GDP) growth at 9.8%, the socio-economic development situation changed from solving the problem of basic living to achieving an almost well-off living standard. According to the preliminary estimates by NBS, China's GDP totaled US$ 5,880 billion in 2010 with an increase of 10.3% from that in 2009, and accounted for 8.5% of global GDP, ranking the country second in the world.

[1] The exchange rate in 2010 was US$1: US$ 6.7695.

[2] The classification of a national poverty-stricken county is approved by the State Council according to a county's poor population, net income per capita, GDP per capita, and financial revenue per capita.

Figure III.1 . China's GDP and rural poverty population in 1978-2009



With the sustained high growth of the national economy, poverty alleviation and development also made remarkable achievements. According to the national poverty standard, the rural poor population was reduced from 250 million in 1978 to 35.97 million in 2009, and poverty incidence went down from 30.7% in 1978 to 3.6% in 2009 (NBS 2009) (Table III.2).

Table III.2. China's rural poverty standard and poor population (1978-2009)

Years	Absolute poverty			Low-income poverty		
	Cut-off (US$)	Population (million)	Proportion (%)	Cut-off (US$)	Population (million)	Proportion (%)
1978*	14.77	250.00	30.7	-	-	-
1985*	30.43	125.00	14.8	-	-	-
1990	44.32	85.00	9.4	-	-	-
1995	78.29	65.00	5.4	-	-	-
2000	92.33	30.00	3.0	127.78	94.22	6.2
2001	93.06	29.27	3.2	128.81	90.30	6.7
2002	92.62	28.20	3.0	128.37	86.45	6.2
2003	94.10	29.00	3.1	130.29	85.17	6.0
2004	98.68	26.10	2.8	136.49	75.87	5.3
2005	100.89	23.65	2.5	139.45	64.32	4.3
2006	102.37	21.48	2.3	141.52	56.98	3.8
2007	115.96	14.79	1.6	157.62	43.20	3.1
2008	157.62	28.41	3.0	176.67	40.07	3.0
2009	176.67	35.97	3.6	176.67	35.97	3.6

Source: "China Rural Poverty Monitoring Report 2009" and other public information.
Note: The poverty standards of 1978 and 1985 were estimated according to that of 1986.

According to World Bank (WB) estimates in 2008, 67% of the global poverty reduction successes over the past 25 years happened in China. The WB indicated that since 1980, China's population that came out of poverty accounted for 75% of the total population that moved out of poverty in developing countries. The extent of poverty reduction in China comprised more than 90% of poverty reduction in the world from 1990 to 2002.

Although impressive, it must be noted that there is a big difference between China's poverty standard and the United Nations (UN) standard. Even under the new national standard in 2009 of per capita net income of RMB 1,196 (about US$ 180 per year, equivalent to US$ 0.5 per day), this is only equivalent to 40% of the UN standard of US$ 1.25 per day. China's poverty reduction task is still arduous.

During the Twelfth Five-Year Plan period, China will further increase efforts in poverty reduction. In 2011, the government will further raise the poverty standard to US$ 221.58 net income per capita per year, equivalent to US$ 0.61 per day (Wang Qian 2010). With this standard, the poor population in China will increase significantly than in 2009, as will the incidence of poverty.

Forestry and Poverty

China's poor population is mainly concentrated in the relatively undeveloped western regions, mountainous areas, desert areas, and hilly areas, comprising around 80% of the total land area. In the 592 NPSC, hills and mountain counties account for 86% (Chen Guojie 2004), located mainly in the western mountain areas, stone mountains, deserts, alpine mountains, the Loess Plateau and other harsh natural environment areas. Meanwhile, the contiguous poverty areas are often in important forest ecosystem function areas, such as grasslands, wetlands, desertification control districts, rocky desertification control areas, biodiversity conservation areas, water conservation areas, and other types of ecological function areas. These are all the forested regions or main areas of forestry ecological construction in China. In terms of distribution, mountain areas where the poor population is concentrated are also the concentrated forest resources distribution areas with 90% of forest lands and 84% of the forest stock volume.

Correlation research on poverty in China indicates that the reasons for the high degree of overlap of the spatial distribution of poverty areas and forested areas or ecologically fragile areas are as follows.

First, forested areas or fragile areas are often the places with poor infrastructure where local farmers face problems concerning clean water, electricity, and traffic. Second, local farmers work at marginal levels of productivity as they have only limited property rights to natural resources before the forestry tenure reform. Third, farmers lack the necessary knowledge and skills, with limited education. Fourth, most of the farmers are idle due to limited job opportunities. Fifth, the development of forested areas or fragile areas is restricted to protect forest resources. As the collective forest lands have been contracted to farmer households since the tenure reform, some farmers have managed forest resources and reduced their poverty. The NKFPs are considered to have improved the living conditions of local farmers and provided more job opportunities.

In summary, the spatial distribution of poverty areas and ecologically fragile areas has a high degree of overlap in China. Therefore, in the poor mountainous areas with forest resources, the need is to vigorously implement forestry ecological construction, push forest tenure reform, develop the forestry industry and other forestry projects, assist in fully exploring forestry's potential for improving the ecological environment, increase farmers' employment and income, and assert forestry's important role in poverty reduction. All these are of great practical significance for the implementation of China's poverty alleviation strategies.

Poverty Reduction and Forestry in National Policy

National Poverty Reduction Strategy

Since China's reform and opening up in 1978, the government has conducted an organized, planned, and large-scale development-oriented poverty reduction strategy in the rural areas with four development stages (Yang Zhanguo 2009):

1. System Reform Promotes Poverty Reduction;
2. Large-scale Development-oriented Poverty Alleviation;
3. Tackling Key Problems of Poverty Alleviation; and,
4. Large-scale Poverty Reduction under the background of balancing urban and rural development.

The first stage: system reform promotes poverty reduction (1978-1985): The main characteristic of China's poverty reduction strategy is to promote poverty reduction through system reforms, including the reform of the agricultural product distribution system and the household contract responsibility system.

During this period, the forestry system was also reformed. Collective forest lands were classified as private forest lands, contracted responsibility forest lands, and unified management forest lands by collectives that took responsibility for forest production.

The second stage: large-scale development-oriented poverty alleviation (1986-1993): In 1986, to promote poverty reduction, the state set up a special anti-poverty agency, the State Council Leading Group for Poverty Alleviation and Development. This agency shifted the traditional poverty alleviation mode of alms-giving to a development-oriented poverty reduction policy by a series of important measures such as establishing a special fund, making special preferential policies, and implementing credit policies for poor.

During this period, the main forestry policies related to poverty reduction included: implementing national shelterbelt protective forests programs such as the Three-north Shelterbelt Development Program, the Key Shelterbelt Development Program along the Middle and Upper Reaches of the Yangtze River to improve the living environment and production conditions in these ecologically fragile areas; lowering farmers' taxes and fees such as reducing the log tax for agriculture and forestry special products from 8% to 7%; and exempting rural collectives and farmers from paying charges for forestry governance, construction of forest regions, and greening fees.

The third stage: tackling key problems of poverty alleviation (1994-2000): In 1994, the Eight-seven-years Anti-Poverty Plan was established and aimed to get 80 million people out of absolute poverty in seven years to reach the target of 0.67 ha per orchard or economic crop per household. The Plan required the forestry sector to support the development of high-yield forests and a variety of forest products in poor areas. It was the first action program for development-oriented poverty reduction with clear and definite objectives, targets, measures, and a time limit. There were 592 counties identified as NPSCs and the central government increased financial inputs to these very poor provinces in the central and western regions. Meanwhile, it was emphasized that poverty reduction plans should be implemented directly in poor villages and individual households.

During this period, the main forestry policies that emerged and related with poverty reduction included the launching of the Natural Forest Protection Program (NFPP), piloting of the Conversion Croplands to Forests Program (CCFP) that emphasized the integration of comprehensive mountain development and poverty alleviation through forestry projects arrangements, implementing Forestry Development Projects in poverty areas using WB loans which covered more than 180 counties in 12 provinces.

The fourth stage: large-scale poverty reduction under the background of balancing urban and rural development (2001-2010): In 2001, the Chinese Central Government issued the framework for rural poverty alleviation and development (2001-2010). It pointed out the following ways to alleviate rural poverty: (i) solving poor people's basic needs for food and clothing; (ii) further improving livelihoods for poor people who have solved the basic needs for food, clothing, and capacity building; and, (iii) enhancing the construction of infrastructure facilities in poor areas and improving the environment and ecological situation to gradually change socio-economic and cultural underdevelopment in these poverty areas. Since 2006, the agricultural tax has been abolished nationwide and the tax burden on farmers reduced to zero.

During this period, the main forestry measures and policies related to poverty reduction included the formal start-up of programs such as the CCFP, NFPP and the Sandification Control Program for Areas in the Vicinity of Beijing and Tianjin (SCPAVBT) and in other NKFP to improve the environment and ecosystem and to adjust rural industrial structure. To drive local economic development, farmers' incomes were increased and their livelihoods improved through grain and cash compensation from the programs. The collective forest tenure reform (CFTR) was carried out

nationwide to contract the collective forest lands to farmer households to increase land productivity and farmer household income. Supporting policies were implemented such as the compensation system for forest environmental services and subsidies for forest insurance and micro-credit as well as lowering taxes and fees of forest management.

Poverty Reduction Policies of Forestry

From 2000, a series of policies and measures have been carried out to reinforce forestry's role in poverty reduction, among them, implementing national key forestry programs, undertaking collective forest tenure reform, and establishing the compensation system for forest environmental services.

Improving environment to promote farmers' employment and income by NKFP

After the Flood of 1998, the Chinese government launched several national, large-scale forest and ecologically-oriented programs including NFPP, CCFP, and the SCPAVBT. These programs covered all mountainous areas, desert areas, and soil erosion areas. Through planting, converting marginal farmlands (i.e. steep slope and degraded farmlands) to forests, grazing prohibition in fragile grasslands, local ecosystems and environments were rehabilitated. Farmers' employment and incomes increased through their participation in the project activities in ecological construction, receiving grain and cash compensation, migration, and ecosystem restoration.

NFPP plays an important role in poverty relief of state-owned forest region

Launched in 2000 with a budget of US$ 17.83 billion, the NFFP aims to combat environmental degradation, protect and improve the ecosystem, and help in the sustainable development of the national economy. The laid-off workers in forestry enterprises and forest farmers are major beneficiaries of the NFPP. Relevant policies include: (i) providing employment for workers and farmers through participation in forest management, forest protection, and ecological forest construction; (ii) establishing a social insurance system and providing funds for workers who join the insurance system; (iii) resettling laid-off workers and providing daily subsidies; and, (iv) rebuilding infrastructure and residential quarters in the forest region to improve people's living conditions. The NFPP plans to provide 384,000 jobs and resettle 621,500 laid-off workers. A budget of US$ 347 million from central government is planned for the residential construction and US$ 10.22 billion for infrastructure rebuilding in the forest region.

In 2011, China decided to launch the second phase of NFPP with a program period of 10 years from 2011 to 2020, covering 745 counties, and 167 forestry industry enterprises. The total central finance investment is US$ 32.4 billion. The measures relating to poverty reduction include forest resource protection, forest tending and thinning, continuous planting of forests for public benefit, improving living conditions, and providing an insurance system in the forest area (State Council Office 2010).

CCFP played an important role in enhancing household livelihood of land degradation area

Initiated by the Chinese government in 2000 in 2,291 counties covering 80% of the land, the CCFP aims to control soil erosion and the impact of sandstorms, alleviate poverty, improve people's livelihood, and change the land use. The duration of the program is 16 years (2000-2016) with a total budget of US$ 63.69 billion and targeting around 120 million farmers. Its main policies are:

1. providing grain and cash compensation to farmers participating in the program for eight years for forests for public benefit and five years for economic forests. The annual grain payment is about US$ 155 to US$ 233 per ha and annual cash payment is US$ 44 per ha. Farmers who implement CCFP will have ownership of forests on the cropland.
2. providing farmers US$ 110 saplings per ha;
3. optimizing arable land and enhancing land productivity;
4. developing alternative energy sources in rural areas; and,

5. implementing migration for ecological restoration to improve productivity and living conditions of farmers in the remote lithoid and alpine mountains where the ecosystem is fragile but is important to the nation.

Research Team

Croplands on sloping areas that were afforested under the Conversion of Croplands to Forests Program in Qinghai Province

SCPVBT played an important role in enhancing household livelihood and improving the environment in the vicinity of Beijing and Tianjin

To control desertification around the Beijing-Tianjin area and improve the environment, the Chinese government initiated the SCPVBT in 2001, implementing it until 2010. The total budget was US$ 8.25 billion and covered an area of 45.8 million ha. The activities included afforestation and forest management, grassland improvement, water conservation establishment, and integrated watershed management. The policies relating to poverty alleviation were:

1. providing compensation and afforestation funds to farmers participating in SCPVBT;
2. subsidizing measures taken to control sandification such as grass planting, enclosure grazing, banning grazing, pasture construction, cattle shed and greenhouse construction;
3. improving productivity and living conditions of farmers through small watershed management, reservoir construction and water-saving irrigation, basic farmland construction, water conservation measures; and,
4. arranging migration for ecological restoration and providing financial subsidies by the state in areas unsuitable for living .

CFTR contract long-term forest land management right to farmer households to improve their productivity and living conditions

Collective forest land is an important source of livelihood and production for farmers in forest regions. Occupying183 million ha, it accounts for more than 60% of the total forest land and covers 1.5 times as much land as the country's farmland. In 2008, the Chinese government fully implemented the CFTR around the country to contract the collective forest land to farming households, mobilize their interest in forest management, and improve land productivity. The CFTR played a major role in

alleviating rural poverty. Collective forest lands totaling 160 million ha were contracted to farmers households on a long-term basis. The program ensured that farmers would have considerable forest assets, with some households receiving about 2.67-3.33 ha. Farmers not only obtained forest lands but also increased their income by planting trees, managing crops and livestock farming under-forest, and engaging in forest tourism, and other productive activities. Meanwhile, the government supported good forestry development mechanisms by formulating new policies, improving service, and standardizing management to achieve forest growth, increase in farmers' income, a better environment, and a harmonious forest society.

Policies for reinforcing forest management and sharing the benefits

A series of preferential financial and tax policies were issued to support sustainable forestry development and to improve livelihoods of farmer households.

Establish the compensation system for forest's environmental services

The forests in China are divided into protected forests (non-commercial forest)[3] and commercial forests[4], and are managed under the classified management theory. In 2004, the Central government set up the compensation fund for the forest's environmental services (CFFES) for key national protected forests[5] with an annual government budget US$ 11.08 per ha. The CFFES fund for private forests was raised to an annual US$ 22.16 per ha since 2010 and continues to increase. Meanwhile, local governments also set up a local fund for compensation to local protected forests.

Reduce and remit tax and fees for forestry management

The fund for afforestation and silviculture was reduced from 20% to 10% of the total income from the sale of timber products to ease the farmers' burden on forest management.

Forest tenure mortgage for micro credit

In 2009, the Bank of China, the Ministry of Finance, the China Banking Regulatory Commission, the China Insurance Regulatory Commission, and the State Forestry Administration jointly issued the Guidance on Financing Services to Support Forestry Development in the Context of Collective Forest Tenure Reform. Micro-credit for farmers was supported and the duration was extended to 10 years. The duration for fast-growing and high-yielding forest, camellia forest, bamboo forest, energy forest, and related subsequent industrial development was extended to 15 to 20 years.

Pilot premium subsidies for forest insurance

From 2009, the central budget carried out pilot premium subsidies for forest insurance in southern China. The central government and the provincial government subsidized 30% and 25% of the premium respectively. Currently, the scope of the pilot area includes Fujian, Jiangxi, Hunan, Zhejiang, Liaoning, and Yunnan provinces.

Input in projects to improve people's livelihood in forest regions

To promote the development of impoverished state-owned forest farms and improve people's livelihood, the central government provided inputs in infrastructure such as water supply, road construction, and residential quarters rebuilding.

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[3] Protected forest (non-commercial) is defined as forests and shrubbery areas mainly for meeting the demand for protection of the environment, maintaining ecological balance, serving as sites for scientific experiments, forest tour, etc.

[4] Commercial forest is defined as the forest producing timber, bamboo, firewood, fresh and dried fruits and other industrial materials.

[5] It means forests, trees and woodland in the protection area where the ecological status is very important and a fragile environment.

Pilot subsidies for forest management

In 2009, the subsidy for forest management was taken as part of the central budget. An amount of US$ 73.86 million was invested to subsidize the tending of middle and young-aged stands. This subsidy was increased to US$ 295.44 million in 2010. During the year, the central government allocated US$ 29.54 million to the forest seed pilot and US$ 44.32 million to the afforestation pilot. However, the current afforestation subsidy is limited to key forest ecological projects.

Effects of Poverty Reduction Policies

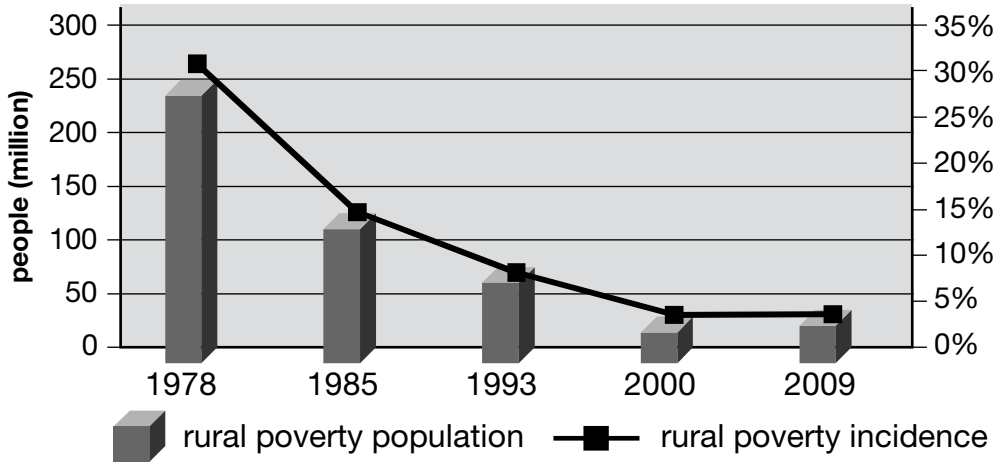
After 30 years of continuous efforts, China's rural poverty reduction has made remarkable achievements and progress in achieving the Millennium Development Goals. Some goals and sub-goals as halving extreme poverty, rolling back child mortality, providing universal primary education and safe drinking water have already been achieved, alleviating rural poverty significantly.

Through the first three stages of rural poverty reduction in China, the population in absolute poverty in the countryside decreased from 250 million in 1978 to 30 million in 2000, and poverty incidence from 30.7% in 1978 to 3% in 2000. During the fourth stage, the poor population rose to 35.97 million because the poverty standard rose from US$ 116 in 2007 to US$ 158 in 2009.

In recent years, the implementation of a series of important forestry policies such as NKFP and forestry reform has not only improved China's environment, but has also helped poverty reduction. The CCFP, for instance, not only effectively curbs soil erosion of the ecologically fragile areas but also benefits nearly 20% of the farmers with a grant budget of over US$ 26.59 billion. The CCFP plays an important role in rural poverty reduction.

Meanwhile, the forestry construction program funded through a WB loan is another channel for poverty reduction and is led by government with participation from concerned program entities (i.e. state-owned forest farms, collective forest farms, farmers, and forestry companies) and research institutes. Successfully completed in 2006, the "forestry development program in poverty areas" through a loan from the WB covered 216 counties in 12 provinces, and benefited 3.83 million poor. Income per capita increased to an average of US$ 84.60 and doubled after the program (Zhang Jianlong 2008).

Figure III.2. China's rural poverty population and changes of poverty incidence



Source: China Rural Poverty Monitoring Report 2009 and other public information.

Despite the progress in poverty reduction in the past 30 years, there have been many problems and challenges in rural poverty reduction in recent years. First, education, health and other basic public services lag behind, and the self-development capacity of farmers in poverty areas is weak. Second, limitations persist in the existing poverty reduction policies, such as the unsound evaluation system on poverty reduction and unregulated use and management of the poverty reduction fund. Third, the harsh natural environment seriously affects people's productivity and living conditions in some poor

areas. All these create pressure on rural poverty reduction, and there are some people returning to their previous poverty condition. About 62.3% of the rural poverty population in 2009 is composed of returnees to poverty (Wang Libin 2010).

Contribution of Forestry to Poverty Alleviation

China's poverty population is mainly concentrated in the mountains. At present, 86% of 592 NPSCs are located in mountainous areas and China's forest resources are located mainly in these mountainous areas. Therefore, the development of forestry is an important measure for poverty alleviation in these areas.

Traditionally Forest is Always an Important Means of Production and Livelihood for Farmer Households

Farmers can get timber, fuelwood, fruits, nuts, medicinal herbs, and other products from forests. According to an investigation in eight villages in Jilin Province by the FEDRC, logs and fuelwood are entirely consumed in farmers' households. On the other hand, fruits, nuts and other forest food are mostly sold, while medicinal herbs are entirely sold in markets. The consumption pattern of forest products in these eight villages is common in the country. For example, farmers' households consumed 9.3 million m3 of logs, 21 million m3 of fuelwood, 11.85 million tons of fruits and nuts, and 262.7 thousand tons of other forest food for their own use in 2009 (SFA 2009b).

From 2003 to 2009, Chinese farmers harvested 26.75-21.03 million m3 of fuelwood and 8.6-9.3 million m3 of logs annually from the forest (SFA 2003-2009b). This enabled farmers to increase their income of US$ 5.35 to US$ 7.38 per capita each year only through fuelwood and logs in the forestry region. In key state-owned forest regions, forest resources become more important for local people. According to related investigations, local households consume an average of five m3 of firewood each year and 10 m3 in some cool zones (SFA 2009c). Forests have benefited local people through an equivalent US$ 136.82 to US$ 273.63 per household from their utilization of fuelwood. Forestry income has become an important source of farmers' households. In 2009, forestry income comprises 32.56% of the household income of farmers and net forestry income, accounting for 25.79% of the total net income of each farmer (SFA 2009c).

Through CFTR, Farmers Acquire Forest Property and Increase Their Forestry Income

Before the CFTR, due to unclear property rights, farmers were unable to use forest lands and undertake forestry management. That they did not have access to forest resources and related benefits from forest management is one of the main reasons why farmers in collective forestry communities are poor. In 2003, China started the CFTR wherein farmers have the right to the forest land, the right to use, the right to dispose, and other associated beneficiary rights. Forest lands allocated to farmers' households increased rapidly. From 2004 to 2008, the proportion of the farmers' contracted forestland to total forestland increased from 20.32% to 32.08%.

Table III.3. Forest structure by ownership between the Sixth and Seventh NFI

		State-owned	Collective	Private
The 6th NFI (1999-2003)	Forested land (million ha)	72.85	64.84	35.10
	Proportion (%)	42.16	37.52	20.32
The 7th NFI (2004-2008)	Forested land (million ha)	71.44	51.77	58.18
	Proportion (%)	39.38	28.54	32.08

Source: Report of the 6th NFI and the 7th NFI.

One of most outstanding and direct results of contracting collective forest lands to farmers is the increase in farmers' household property. By the end of 2010, each farmer household received a value

of US$ 14.77 thousand of forest assets. The proportion of the farmers' annual forestry income to their total annual income increased from 12.96% in 2009 to 20% or more in 2010 in 2,550 counties which had CFTR. In key forestry regions, the proportion of farmers' forestry incomes increased astonishingly from 12.96% to more than 60% more.

Farmers Depend on the Forest to Improve Their Livelihoods

Rural forest processing industry supplies employment for local farmers. Township enterprises engaged in forest product processing and circulation are growing rapidly, creating employment opportunities, increasing household income for the farmers, and playing key roles in reducing rural poverty. According to the monitoring results on collective forest tenure reform by Forestry Economics and Development Research Center (FEDRC) in 2010, 118 wood/bamboo processing enterprises were established in 216 sample villages that employed 2,528 local farmers, as well as 554 other forest product processing enterprises that employed 1,883 local farmers.

Forest ecotourism is becoming a new employment chance for farmers. In China's rural areas, forest ecotourism stimulates new careers and creates employment for farmers. In 2009, farmers started different kinds of social tourism activities and employed 618,900 people based in forest parks. In Fujian Province, local farmers set up "forest homes"[6] and developed forest tourism. In 2008, the number of "forest homes" in Fujian province grew to 358. They received 1.67 million visitors, and created 3,100 job opportunities with a social production value of US$ 12.85 million. "Forest homes" have become new channels to increase income for local farmers in Fujian.

Non-wood forest products (NWFPs) have become a new "hot-point" to improve farmer's livelihoods. At present, a number of new forest industries are emerging as new opportunities for local farmers, such as under-forest cultivation, wildlife propagation and domestication, and forest bio-energy development in the forest region. For example, farmers in Qiupi village of Jilin province obtained a net forestry income of US$ 917 per capita (about 86% of total net income per capital) from planting ginseng and breeding bees and wood-frogs in the forests, significantly improving their living standards. According to China National Tea-Oil (*Camellia oleifera*) Industry Development Program (2009-2020), tea-oil management alone is estimated to provide a potential two million jobs for farmers in the long-term. It is also estimated that if one farmer possesses a tea-oil farm of at least 0.67 ha, income can be as high as US$ 2,954 each year when the tea-oil trees reach the stable production period.

Table III.4. Output of main non-wood forest products in 2004-2009 (in million tonnes)

	2004	2005	2006	2007	2008	2009
Fruit	69.59	82.52	88.63	97.21	98.15	111.82
Dried fruit	-	3.50	4.51	4.80	5.34	6.73
Forest beverage products (dry weight)	0.74	0.94	0.92	1.07	1.33	1.43
Forest seasoning products (dry weight)	0.29	0.36	0.36	0.40	0.43	0.47
Forest food (dry weight)	4.52	4.23	5.83	2.30	2.82	2.63
Woody herbs	0.58	0.75	0.96	1.06	0.95	1.53
Woody oil	-	-	-	0.97	1.05	1.22

Source: "Forestry Statistical Yearbook of China" 2004-2009.

Note: All kinds of economic forest products are listed in Table III.5.

[6] "Forest homes" are new business entities of farmers' households taking advantage of good forest resources and the landscape to create eco-friendly tourism such as recreation, eating, housing, hiking, shopping for local specialty products, making full use of forest animal and plant resources for visitors outside the rural areas.

Table III.5. List of economic forest products

Type	Main products
Fruit	Apple, citrus, pear, grape, peach, apricot, lychee, longan, kiwi fruit, etc.
Dried Fruit	Walnut, chestnut, jujube (dry weight), persimmon (dry weight), mountain almond, gingko, hazelnuts, cashews, etc.
Forest beverage	Raw tea leaves, cocoa beans, coffee, etc.
Forest seasoning	Pepper, star anise, cinnamon, etc.
Forest food	Dried bamboo shoots, edible mushrooms, wild vegetables, etc.
Woody herbs	*Eucommia ulmoides*, *Phellodendron amurense*, *Magnolia officinales*, *Lycium chinense*, Cornel, etc.
Woody oil	Oil seed, Olive, Shiny-leaved yellowhorn, etc.

The Development of Forestry Industry Provide Ways for Poor People Getting Rich

The forestry industry is one of the important components of China's national economy. It plays a very important and distinct role in creating employment for farmers, increasing their income, and boosting the rural economy. China's forestry industry is developing rapidly. In 2009, the total output value of the national forestry industry reached US$ 258.51 billion. The average annual growth during the year was 19.87% of that in 2003. The rapid development of the forestry industry has increased farmers' incomes and created job openings for a large amount of labor surplus in the rural areas. According to the estimation of the State Forestry Administration (SFA), the forestry industry has created job opportunities for 45 million people, which can accommodate 37.5% of the total rural labor surplus.

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Small family-owned wood processing shop that employs some villagers.

Industrial timber base construction is one type of forest industry closely linked to farmers. For example, integrating the forest base with leading pulp and paper industries in Guangxi province involves the use of many different management models. Some leading enterprises cooperate with farmer cooperative organizations that organize resource supply by farmer households. Other enterprises build their own forest bases and receive resource supply from farmer households. Some forest farms operate their forest base, while farmer households also manage forest bases for leading forest enterprises, and so on. Through these models, farmers supply industrial timber to leading enterprises, enabling them to get jobs and increase their income. From 2001 to 2004, Guangxi set up helping poverty industries that directly benefited 359 villages, 1,461 administrative villages and 181,200 farmer households (including 139,500 poor farmer families) by offering jobs and increasing incomes through new "integrating forest

base with leading pulp and paper industry" projects with a forest area of 84,000 ha (Li Yuning 2005). At the same time, industrial timber base construction drives the development of man-made board industries, and further creates job openings for farmers.

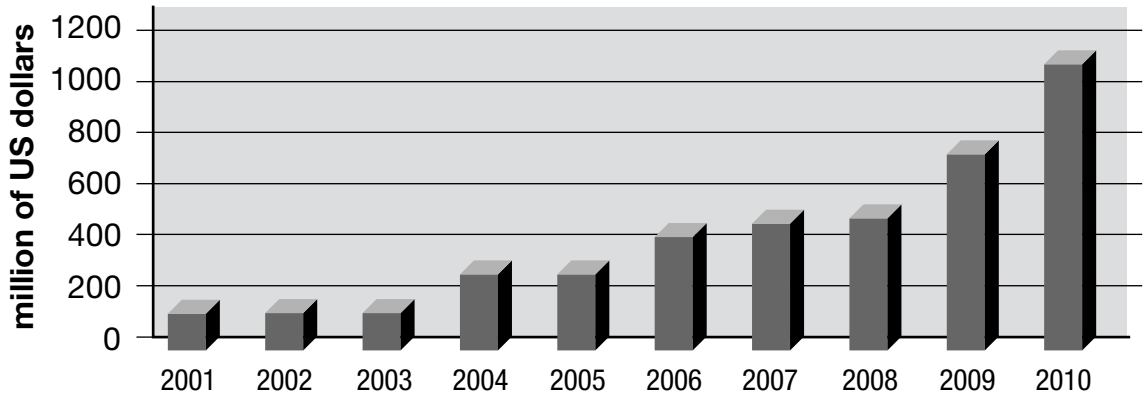
PES Benefits Farmers from Forest Management and Protection

Since 2004, China has adopted the compensation policy for protected forests around the country and has subsidized planting, tending, protecting, and managing the protected forests for environmental services. The compensation fund for national and provincial protected forests is taken from the budgets of central government and provincial governments, respectively. From 2001 to 2010, the Central CFFES expanded its coverage of national protected forests from 13.33 million ha to 69.33 million ha, and increased payments from US$ 1,477 million to US$ 11,197 million. By the end of 2010, cumulative investment by the central government reached US$ 4.38 billion, of which 61.75% was distributed to collective or private forest owners (SFA 2010d). At the same time, almost all the provinces in China established provincial CFFES. Up to now, the local protected forests in China occupy about 77 million ha. Excluding Hong Kong, Macao, and Taiwan, a total of 28 provinces have established provincial CFFES for PES and their cumulative investment has reached US$ 1.95 billion.

Besides PES, China's NKFP also offers other subsidies for management, protection and construction of protected forests. For example, the CCFP subsidizes farmers with grains, seedlings, and cash. Basically, these CCFP subsidies make up 10% of the farmers' annual income. In 400 counties in western China where CCFP is implemented, the proportion of subsidies to total income of farmers is even higher. In some counties in Ningxia Province and Yunnan Province, the proportion reaches 45% or more (Wang Rui 2010).

Furthermore, local governments established PES in different regions, watersheds, and industries to meet the protection requirements of ecosystems. For example, Fujian Province established and implemented PES integrating different watersheds. According to this policy, people in the upstream area should get PES for their forest management for public benefits from funds raised from hydroelectric development in downstream area. From 2005 to 2008, Fujian Province raised US$ 59.09 million as special budget to support comprehensive ecological improvement in Jiulong, Minjiang and Jinjiang Rivers.

Figure III.3. Central Forest Ecological Benefit Compensation Fund, 2001-2010



Source: SFA 2001-2010.

Capability of Forestry Management and Service has been Improved

All the staff and workers in forestry can be divided into three types: staff in the state forestry system, employees in the non-state forest processing industry, and seasonal and temporary farmer workers.

The staff in the state forestry system are those workers serving in state forestry enterprises, state-owned forestry farms, state-owned nursery gardens, forestry stations, timber inspection stations, seedling stations, pest control stations, desertification controlling stations, natural reserves, wildlife protection

stations, and others. In addition, staff working in enterprises and entities administrated by the state forestry system in state-owned forest regions or others are traditionally regarded as staff in forestry operation systems. In 2009, this group reached 1.36 million in total.

Employees in the non-state forest processing industry are those working in the secondary industry, especially wood processing, bamboo or rattan processing, furniture making and papermaking. In 2007, it had 1.33 million employees.

Seasonal and temporary workers are farmers who pick up jobs from seasonal forestry production, silviculture, or forest management activities[7]. Seasonal workers consist of two kinds of farmers: the self-employed farmers and those employed by enterprises or collective economy organizations or other people temporarily. In recent years, China increased afforestation and invested more in forestry and needs four million seasonal farmers for afforestation (equivalent of 800 million person-days) activities.

Case studies

The case studies selected are located in the counties of Ningshan, Anhua, and Ledu and illustrate separately the contribution of traditional forestry, commercial forestry, and environmental services to poverty alleviation. In these counties, officers of the forestry bureau, agriculture bureau and poverty relief office, local farmers, village cadres, and forestry entrepreneurs, were interviewed through a workshop.

Contribution of Traditional Forestry to Poverty Alleviation: Ningshan Case

Ningshan is located at the southern foot of middle Qinling Mountains that is part of the watershed of the Yangtze River and Yellow River. Ningshan's economy is underdeveloped and it is both a provincial key forestry county and a NPSC. In 2010, its total area is 216,000 ha with a population of 74,000. Around 82.7% of the population lives in rural areas, and 38.9% is poor. The county's GDP is 1.16 billion yuan and the net income per local farmer is 3,812 yuan, lower than the average of the country by 38.9%. Its total forested area covers 184,720 ha with a forest stock volume of 11.82 million m^3. The ecological forests that mainly provide ecosystem services have an area of 160,490 ha, taking up 78.6% of the total forested areas.

In Ningshan County, farmers heavily rely on forest resources where they traditionally obtain timber, fuelwood, food (such as fruits, wild vegetables, mushrooms and fungi), herbs, and animal hunting. Timber production is the main source of income for farmer households and is an important material for housing, charcoal, furniture, and tools for farming, etc. The income from timber production and wood processing accounts for more than 70% of the total income. Since 1998, local farmers have transformed the mode of forest management from logging to cultivating under-forests for NWFPs as a result of the logging ban policy by NFPP. From 2007, CFTR was implemented in Ningshan County and 204,000 ha of collective forest lands were contracted to 17,000 local farmer households. An average of 12 ha of forest areas with 558 m^3 of volume and forestry assets equivalent to US$73,855 were allocated to every household.

With support by the government, local farmers devote much of their time to non-wood products in their contracted forest lands. For instance, Zhang Liyou, a farmer in Ningshan County, contracted 20 ha of chestnut forest areas, cultivating more than 30,000 bags of mushroom on tree branches from his own grafted chestnut forest lands. He also raises chickens under forests and grows konjak mannan[8] and other edible plants and herbs in forests. In total, his income from forestry can reach US$ 20,680 a year, an increase of US$ 14,771. Zhao Guocheng, a poor farmer who had to migrate

[7] Seasonal forestry production activities include afforestation, tending of young forests, forest tending, forest management and wood and bamboo cutting. Due to limited data availability, this study only cites the number of workers in seasonal afforestation.

[8] Konjak mannan (glucomannan) is a perennial herb and a fiber said to improve glycemia and other associated risk factors in coronary heart disease in Type 2 diabetes.

A number of farmers who have been allocated forestlands engage in chicken raising, mushroom production and other income generating activities under the trees they planted or are managing.

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for a job before CFTR, now grows zhu ling (*Polyporus umbellatus*, a valuable medicinal mushroom that grows in forests 1,100 meters above sea level) in his 12.4 ha of contracted forest land. His annual average income is approximately US$ 3,000, higher than his previous income. A typical example to show the contribution of traditional forestry to poverty alleviation is Chen Jinghe, a poor farmer who earned less than US$ 200 per capita per year by planting crops. In 2008, his family contracted 36.2 ha of forest lands during the reform. Now, he gets US$ 148 per year by leasing 13.3 ha of forests to a tour company for eco-tourism, and US$ 3,545 by growing mushrooms on other forestlands. The income of his family doubled compared to his previous income from the traditional way he managed the forest area.

In the case of Ningshan, traditional forest is an important resource for local farmers for both subsistence livelihood and increased incomes. Traditionally, farmers rely on forests for multiple living and production materials. The implementation of NFPP does not reduce the degree of farmers relying on the forest but changes the mode of forest management. Before NFPP, the income of farmer households from timber was more than 70% of the total. Currently, income from fruits alone accounts for more than 50% of the total. Under CFTR, farmers enjoy the management rights to contracted forest land and can manage forest resources by multiple modes to get multiple forestry products. Forest resource multiple uses for commercialized management directly changed the state of operation of farmer households, increased their incomes, and improved the livelihoods of local farmers. Under CFTR, the population living in absolute poverty decreased to 12,000 (33%) from 18,000.

Contribution of Commercial Forestry to Poverty Alleviation: Anhua Case

Anhua County is located in central Hunan Province. Its total land area covers 495,000 ha with 1.08 million people, of which 80.86% comprise the rural population. There is a labor force of 182,700 engaged in forestry production, accounting for 39.4% of the rural labor force. Anhua County is a NPSC and in 2010, rural per capita net income was US$ 394.27, only 51.8% of the national average in the same period. There are 247,600 poor people, and the poverty incidence was 25.33% in the county.

According to 2009 data, there are 373,000 ha of forested land with a forest volume 12.16 million m^3, and forest coverage of 76.17%. The economic forest area in the county is 79,000 ha, accounting for 20.1% of the forest area. The area of oil-yielding trees is 25,700 ha; the medicinal woody area, 20,000 ha; the tea area, 10,500 ha; the fruit forest area, 12,000 ha; and the rest of the forest areas, 10,800 ha. In 2010, the total output value of the economic forest, planting, and cultivation under crown cover was US$ 267.38 million. Economic forest, planting and cultivation under crown cover drove the average income of local

farmers to increase to over US$ 310.21, accounting for nearly 80% of the rural per capita net income. The economic forest output value was US$ 168.40 million, raising the average income of farmers to US$ 202.38. Output value of planting and cultivation under crown cover was US$ 98.97 million, bringing up average farmer income to more than US$ 107.83.

Luo Jiean is an oil-tea camellia (*Camellia oleifera*) grower. He has transformed 0.2 ha of low-yield oil-tea camellia forest into a high-yield forest with an annual production of 250 kilos of tea oil. In addition to his family use, tea oil is sold and revenue can exceed US$ 886.33, which accounts for 40% of their household income. With stable income from tea oil, Luo Jiean's families now belong to the middle-income level in the local community. Wang Shuhuai manages tea garden and fruit orchard of over 40 ha. In forest lands, he breeds chickens, and the chicken manure fertilizes the forest land which enables him to obtain high income, from his forest produce, organic tea and fruit orchard. Annual gross incomes from the tea garden can reach as high as US$ 73,860-88,630, while those from forest breeding as high as US$ 29,540. Wu Xianzhong plants economic forest species in his contracted forest land, and Chinese herbal medicinal species under forest. He continually studies cultivation technology and engages in the development of new varieties, but also hires technicians from the county to improve his forest management techniques. For example, his normal papaya production is 2,250-3,000 kg per ha, but production in his papaya garden can go as high as 37,500-45,000 kg per ha. His papaya garden has become a "famous special fruit garden" in Anhua county. Currently, his forest land hires more than 100 farmers seasonally, and 30 to 40 farmers in the long-term, providing job opportunities for local farmers.

The Anhua case study clearly shows the role that the economic forest can play in increasing farmers' income. The living standards of all farmers engaging in economic forest are above the local average. There are various contributions of economic forestry to local farmers. First, forestry has widespread impacts among farmers in forestry areas. Economic forest planting by CCFP benefits 369,000 people in the county, accounting for 44% of the total rural population. Second, economic forestry contributes greatly to increasing farmers' income. Just two kinds of revenue from economic forest, planting and cultivation under crown cover, account for 80% of farmers' per capita net income. Development of planting and cultivation under crown cover achieve an excellent combination of forestry and animal husbandry, which not only protect forest resources but also improve farmer livelihoods. The local farmers believe that the development of economic forest, planting and cultivation under crown cover, are the best and the fastest path for farmers to get out of poverty.

Contribution of Ecosystem Service Oriented Forestry to Poverty Alleviation: Ledu County Case

Ledu County is located in the Eastern Qinghai, in the middle and lower reaches of Huangshui River. Its total land area is 261,460 ha with 281,400 people, and the agricultural population is 84.44% of the total. According to 2010 data, the farmers' rural per capita net income is US$ 676.86, which is 22.59% lower than the national level. Therefore, it is a NPSC. Ledu County now has 185,640 ha of forest land. But forested land is only 19,600 ha while shrub forest land is 71,500 ha, accounting for 10.39% and 37.92% of the total land area, respectively. The forest coverage is 24.7%. The total standing stock volume is 2.31 million m^3, of which forest stock volume is 1.63 million m^3. With a fragile environment and frequent natural disasters, Ledu County is one of the areas in Qinghai province experiencing serious soil erosion. Responding to these ecological conditions, several KFPs implemented in Ledu since 2000, such as CCFP, NFPP, and TNSDP have increased the area of forest and shrubs, prevented soil erosion, improved local ecosystem, increased the income of local farmers, and boosted livelihoods.

The CCFP covers the largest area in the county, involves the largest population, and has the greatest impact on farmers. As of 2009, the county had a cumulative 43,450 ha of forest lands by CCFP, as a result of afforestation on 16,820 ha of farmlands and 23,970 ha of barren hills, including 2,670 ha of enclosed hillsides for natural afforestation. The project involved 30,110 households and 126,110 people. Slope lands with 16,670 ha were effectively treated, and the forest area increased by about 40,000 ha of which economic forest was 8,930 ha, timber forest, 1,600 ha, and Caragana sp lands, 667 ha. A

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A newly established oil-tea camellia plantation

total of 650 biogas digesters and 2,000 firewood saving furnaces were constructed which decreased the consumption of forest resource. The grains for ecological compensation amounted to 78 million kg, living subsidies to US$ 20.09 million, funds for forest management and protection to US$ 5.02 million, and subsidies of seedling to US$ 4.43 million, with more than 130,600 farmers getting their compensation directly from the government. In 2008, incomes of farmland household of CCFP reached US$ 479.05 per person, which was US$ 199.93 more than that in 2000 in the county.

Xiaying Village, in Xiaying Township, a Tibetan Autonomous Township in Ledu County, is a case that is deriving benefits from PES. The village suffered years of drought in the past with rare harvests. Thus, farmers' lives were very difficult. When the CCFP was instituted in 2000, farmers' living standards began to improve tremendously, along with the ecosystem and environment. Li Caidan, a 62-year old Tibetan, owned 1.93 ha farmland before the CCFP and converted 1.53 ha of farmland to forestland. From 2001, he got compensation each year, and in 2010, got US$ 366.35 from PES, which accounted for about 20% of the total family income. The old man said that before the CCFP, the harsh environment and droughts resulted in bad harvests (only 1,125-1,500 kg of grain per ha), which were barely enough for maintaining a family. But now, the compensation can meet his family's food demand and the family's income has apparently increased since additional labor is no longer needed to work on farmlands and he can work outside the county to earn more money. His family now has a television, refrigerator, other household appliances, and motorcycles. In 2009, his house was renovated. For forest farmers like him, life is getting much better.

Guo Sangjie is a 49-year old Tibetan and his family is a poor household in the village. His family had 2.07 ha of farmland and converted 1.87 ha to forest land. He received US$ 417.76 for compensation in 2010, which accounted for 25% of the family total income. Before CCFP, they could barely maintain their daily needs and had no time to take care of his mother and the children since he and his wife were busy working on their farmlands daily. Under CCFP, he has been able to work outside the county and now earns about US$ 738.61 a year. His wife can now take care of the family. Although the livelihood of his family is still difficult, the smile on Guo Sangjie's face reflects much hope about his future.

Zhu Zengcang, 74 years old, gets national special care subsidies every year. His family has 1.60 ha of farmland, of which 1.33 ha have been converted to forest land. He said that before CCFP, he could only get a subsidy of about US$ 42.6 a year from the primary national special care, and his family mainly relied on farmlands to maintain their life. Their life was so harsh that they could not afford new clothes. After converting their farmland to forest land, he now gets about US$ 369.3 from PES every

year and his national special care subsidy is about US$ 443.16. These compensation and subsidy meet his family's basic needs and their life has improved a lot. His family has bought a large 25-inch color televsision set. The old man now is in high spirits.

The Ledu case shows that CCFP has contributed a lot toward improving farmers' lives. First, CCFP has changed the mode of production of local farmers. A large number of farmers have gotten out of farming work to obtain a job outside the county, which broadens their income sources. Second, the vegetation is protected, the ecosystem and environment improved, and the scale of natural disasters reduced significantly. Third, farmers' morale has changed and they are now in high spirits. Rural civilization has also been promoted. Before CCFP, the women in the village knew nothing about the "Women's Festival". But now, such movies are shown in the village, and women dine together to celebrate their holiday.

Outlook for Forestry and Poverty Alleviation

Year of 2011 is the starting year of the Twelfth Five Plan of National Economic and Social Development (2011-2015) (The "Twelfth Five" Plan) and the key year of China's poverty alleviation. Markedly reducing the poor population is one of the targets of the "Twelfth Five" Plan. The Outline of China's Poverty Alleviation in Rural Area (2011-2020) (The Outline) aims to eliminate extreme poverty in the next 10 years and is the first task in China. The target is to notably decrease the poor population in 2015 and eliminate extreme poverty in 2020. Large areas with concentrated poor populations are especially considered as major areas for poverty alleviation and more funds should be invested in those areas.

In China, the poor area is basically the forest region or area of NKFPs. During the "Twelfth-Five Year," Chinese forestry development with ecosystem maintenance and protection as the main body of strategy intends to fully implement forest tenure reform, formulate more preferential policies on developing forests, and promote the beneficial interaction between ecosystem maintenance and forestry industrial development for enriching people through forest development. Therefore, the forest region continues to be the key area and forest farmers the main object for poverty alleviation in China. The development of forestry is forecast to contribute to China's poverty alleviation much directly, more so in the next five years.

First is the construction of "ten ecological forest-belts" with component activities in controlling desertification, combating and preventing the natural hazards from windy sand, mountain torrents, and mudslides in major ecologically fragile areas. This is planned to ensure the country's ecological security and improve the environment where poor populations live during the "Twelfth-Five" period.

Second is developing "ten leading forestry industries" to increase farmers' income, ensure and improve people's living conditions in the "Twelfth-Five" period. The main measures involve supporting the leading forestry industries to gradually strengthen forestry's role in assisting farmers and developing counties, and contributing to the national economy. The Forestry Rejuvenation Program (2010-2012) emphasizes optimization of the forestry structure and reinforces forestry's role in the employment and income growth of farmers, targeting 57 million employees in forestry in 2012.

Third is to comprehensively start forest tenure reform to stimulate the development of the forestry industry and alleviate poverty in forest region in the period of "Twelfth-Five." Main components include further implementing CFTR, commencing the pilot reform of state-owned forestry farms, continuing the steady reform of key state forest regions by protecting and cultivating forest resources to create jobs, and building up a social security system to increase employment and improve the social welfare of people in the forest region.

Fourth is to improve forestry policies that will lead to people's increased incomes through forestry development. In the period of "Twelfth-Five," the government will reinforce its support to forestry

development and protection through afforestation subsidy, improving species quality, thinning and tending middle and young age groups of forest, wetlands protection, compensating the damages caused by wild animals through forest insurance, forestry finance and taxation aid system, improving the harvest system, and establishing a forestry social service system. All these aim to provide farmers a forestry development platform and policy guarantee to increase farmers' employment and income, contributing to poverty alleviation.

Recommendations

To further promote the role of forestry in poverty reduction, we recommend the following suggestions.

Speed Up the Infrastructure Construction in Forestry Areas

Infrastructure is critical in improving rural production and living conditions, develop the rural economy, and increase farmers' income. Government should further invest in the construction of roads, electricity provision, and water conservation through CFTR to improve production and living conditions in rural areas.

Increase Science and Technical Inputs

Science-technology popularization and application should be one of the leading strategies to poverty relief. The government's public service function of introducing, popularizing and demonstrating forestry techniques should be fully used to assist farmers. Forestry professionals and technicians should be trained regularly and encouraged to actively provide technical services in poor rural areas. Policies must encourage government and non-government science and technology research institutes, and rural cooperation organizations to participate in projects towards poverty alleviation.

Encourage the Industrialization of Forestry

Industrialization of forestry is key in promoting forestry development and assist in increasing farmers' income. Forestry products with high value potential and its markets should be industrialized to form a regional leading specialty industry in a relatively large-scale area to enhance the added value of forestry products. Large- and middle-scale processing industries of forestry products with large market shares could be encouraged to source their raw materials from poor rural areas. This can provide services and markets for poor farmers before and after production and form a systematic industrialization management of the forest resource, production, and trade. Scaled-up and professional wholesale markets for forestry products from poor rural areas are then set up to further assist farmers' incomes through forestry.

Strengthen Forestry Cooperation Organizations

Forestry cooperation organizations (FCOs) are non-government organizations self-organized by farmers to ensure their rights. But FCOs have limited management capacity and few experiences. Government should help develop and strengthen FCOs through policies enabling FCO involvement in afforestation, science-technology popularization, financing, forest insurance, and information. Cooperation between farmers and forestry processing industries should be encouraged at different levels to enlarge the scale of forestry production, effectively decrease production costs, have free-flowing information and production plan, to enhance market competitiveness of local farmers and increase their incomes.

Further Improve the Forestry Financing System

A well-developed forestry financing system guarantees the capital from forest production and its expansion in rural areas. Due to the relatively high costs of forestry production, farmers do not have

enough capital to invest, leading to low inputs and constraints to forestry production. Fund sources should be explored such as forest property mortgages, discounted interest rates, petty loans, credit guarantee systems, and farmers' joint guarantee. Increasing capital will reinforce farmers' interests to develop and invest in forest production. Simplifying the loan process and decreasing financing costs are also helpful in increasing forest investments.

References

Chang Hong. (2009). *China's Gini Coefficient has reached 0.496 in 2006*. Retrieved from http://bbs1.people.com.cn/postDetail.do?id=91285563

Chen Guojie et.al. (2004). *China mountain development report 2003*. Beijing: Commercial Publishing House. Retrieved from http://news.163.com/10/0818/14/6ECI0H4Q000146BD.html

Daxinganling Forestry Bureau of Inner Mongolia. (2010). *Compilation of Forest Tending Subsidies Pilot*.

Gu Zhongyang. (2009). *Poverty standards in China this year will be raised to 1,196 yuan per capita net income*. Retrieved from http://nc.people.com.cn/GB/8978248.html.

Guidance and Coordination Team of Yichun State-owned Forest Tenure Reform, (2008). *Forest Tenure Reform Practice and Research in State-owned Forest Regions*. China Forestry Publishing House.

Libin, W. (2010). *China poverty alleviation trend emerging in saddle since 2001*. Retrieved from http://news.xinhuanet.com/politics/2010-10/17/c_12668774.htm

Li Yuning. (2005). *Poverty alleviation and development made Guangxi take place gratifying changes*. Retrieved from http://gx.people.com.cn/GB/channel4/200503/07/288181.html

Li Zhou. (2004). *Research on poverty of rich forest areas*. Beijing: China Social Sciences Publishing House.

Liu Can. (2005). Research on community forestry system performance and poverty reduction: Efficiency analysis and case comparison. *Economic Science Press*.

MoFA. (2010). *The report on the implementation of Millennium Development Goals in China*. Retrieved from http://dqs.ndrc.gov.cn/hjbh/kcxfz/default.htm

National Bureau of Statistics (NBS), Department of Rural Social Economic Survey. (2009). *China rural poverty monitoring report 2009*. China Statistics Publishing House.

Office of Fast Growing Forest Plantation. (2010). Developing the fast growing forest plantation to ensure national timber supply. *China Green Times*.

Ruoxiang, J. (2011). New distribution structure of main poverty areas and new ideas of poverty alleviation and development. *China Development Observation*. 7.4.

State Council Office. (2010). *State council executive meeting decided that the second phase of natural forest protection project will be implemented next year*. Retrieved from http://www.gov.cn/ldhd/2010-12/29/content_1775235.htm

State Forestry Administration (SFA). (2004). *Report of forest resources in China: The sixth national forest inventory*. China Forestry Publishing House.

SFA. (2009). *China forestry statistical yearbook (2003-2009)*. China Forestry Publishing House.

SFA. (2009). *Report of forest resources in China: The seventh national forest inventory*. China Forestry Press.

SFA. (2009). *Report for monitoring and assessment of the socio-economic impacts of China's key forestry programs 2009*. China Forestry Publishing House.

SFA. (2010). *China forestry development report 2010*. China Forestry Publishing House.

SFA & Department of Rural Forestry Reform and Development. (2010). *Compilation of important documents and policies and regulations of collective forest tenure reform*. China Forestry Publishing House.

Wang Qian. (2010). *Poverty standards will be increased to 1,500 yuan per capita net income*. Retrieved from http://www.infzm.com/content/53950

Wang Rui. (2010). *27.67 million hectares cropland converted into forests for 10 years in China with 430 billion yuan by the Central Government*. Retrieved from http://www.china.com.cn/news/txt/2010-08/18/content_20736134.htm

World Bank. (2009). *From poor areas to poor people: The evolution of China's poverty reduction process*.

World Bank Country Report. (2001). *China has overcome rural poverty. Beijing*: China Financial and Economic Publishing House.

World Bank. (2009). *From Poor Areas to Poor People: the Evolution of China's Poverty Reduction Process*.

Yang Zhanguo & Yu Yueyang. (2009). *Rural Poverty Reduction for 30 years in Contemporary China (1979-2009)*. Beijing Social Science.

Yuning, L. (2005). *Poverty alleviation and development made Guangxi take place*. Retrieved from http://gx.people.com.cn/GB/channel4/200503/07/288181.html

Zhang Jing. (2008). Speech in the National Conference about Forestry World Bank and Asia-Europe Loan Project Management and High-yield Forest Construction.

Zhang Jing. (2010). *Comparison and application of the basic life needs' evaluation model of urban poverty population*. Northwest Population.

Zhang Qingxia. (2007). *The relative poverty of Zhejiang Province: The evolution trends, structure and influencing factors (PhD dissertation)*. Zhejiang University.

Zhanguo, Y., & Yueyang, Y. (2009). R*ural poverty reduction for 30 years in contemporary China (1979-2009)*. Beijing Social Science.

Zhongyang, G. (2009). *Poverty standards in China this year will be raised to 1,196 yuan per capita net income*. Retrieved from http://nc.people.com.cn/GB/8978248.html

IV

Assessment of the Contribution of Forestry to Poverty Alleviation in India

K. Balachandran Thampi*

Introduction

India has about one-third of the world's poor people—the largest by any country. Within the country, the 'bottom millions' are not spread uniformly across the states and, within states, across the regions. These regions include tribal and forest areas with large numbers of poor people. A significant proportion of the poor and forests occupy the same space. Development strategies have bypassed these historically marginalized groups and deprived regions, thereby perpetuating a variety of 'interlocking disadvantages' that limit people's opportunities to improve their livelihoods (IFAD 2011). Studies indicate that forests in India play a significant role in all aspects of poverty reduction as they make people less poor, enable them to escape from poverty, and prevent those on the margins from becoming poor. However, the extent to which the forest resources or forestry alleviate poverty is not well-documented, though the body of literature provides a number of case studies in different resource or poverty situations. Nor is there adequate exploration of the links between forestry and poverty reduction in the national poverty alleviation strategies which continue to form the central theme of development planning since independence.

Who are the poor in India, and where do they live? What do they do for a living in forest areas? What pathways and forest resources do they use to improve their livelihoods? This paper attempts to examine inter alia some of these questions. Many of the quantitative relations, accessed mainly from proxy national-level studies and case studies, would need to be further fine-tuned and documented by future research due to limited relevant data, especially on social and economic issues related to forests.

Overview of Forestry Resources and Poverty Situation

National Forestry Sector

Forestry represents the second largest land use in India after agriculture. The Forest and Tree Cover of the country is 78.37 million ha which constitutes 23.84% of the geographical area and includes 69.09 million ha (21.02%) Forest Cover (FC) and 9.28 million ha (2.82%) Tree Cover (TC) (FSI 2009)[1].

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[1] Based on the *State of the World's Forests 2011* published by the Food and Agricultural Organization (FAO), the extent of forest cover in the country is 68.43 million ha (FAO 2011). In this report, FSI figures are used to allow disaggregated analysis at country level.

Classifying FC based on canopy class[2], 8.4 million ha constitutes Very Dense Forest (VDF), 31.9 million ha Moderately Dense Forest (MDF) and 28.8 million ha Open Forest (OF). Nearly 42% of the forest cover is in the OF category and generally treated as degraded forests. Despite increasing pressures, mainly due to unregulated and illegal fuel wood and timber harvest, excessive grazing, forest fires, shifting cultivation and encroachments, India's FC shows an increasing trend in the last decade—3.13 million ha[3] from 1997 to 2007 (FSI 2009) due to increased afforestation/regeneration efforts and people's participation in forest protection. India is one of the very few developing countries to report an annual change rate of 0.5% increase during the period 2000-2010 (FAO 2011).

The Tropical Moist Deciduous Forest (34%) and Tropical Dry Deciduous Forest (30%) constitute the dominant forest types of the country. Based on ecological diversity, forests are classified into 16 types and 251 sub-types ranging from tropical rainforests in the south and the northeast to the dry alpine forests in the northwest Himalaya (MoEF 2006b).The growing stock of wood in India's forest and tree cover is estimated at 6,098 million m^3, comprising 4,499 million m^3 inside forest area and 1,600 million m^3 outside the recorded forest area. The average per hectare growing stock in forests is 58.46 m^3 (FSI 2009) with only 0.7 m^3/hectare/year productivity against the world average of 2.1 m^3/hectare/year (MoEF 2009).

There are four distinct regions where the country's forests are distributed—North East India, Western Himalayas, Central India and Western Ghats. Six of the 28 states in India contribute about 50% of India's FC. Of the total 593 districts, 124 are categorized as hill districts where the FC forms about 40% of the geographical area. Around 84% of tribals, who form the most disadvantaged section of the society in India, live in forest areas and have close cultural and economic links with forests (Mehta and Shah 2003). The 188 tribal districts of the country, though occupying only 33.64% of the geographical area, have 59.72% of the total FC of the country.

Forest areas administered solely by the state forest departments comprise 65% while 27% is managed by community groups through Joint Forest Management (JFM)[i], but still largely administered and controlled by government. Only 8% of the forest land is managed by private individuals on farms or by large forestry firms (World Bank 2006). The level of public ownership/administration in India is relatively high compared with other developing countries in the region where a significant portion of the forest areas is under community forestry.

Over the years, JFM has evolved to become the principal forest management strategy in India. JFM programs currently span all 28 states, involving 106,482 village committees with 23.71 million members and covering more than 22 million ha of forest land (MoEF 2006a). The program involves about 37% Scheduled Tribes (ST) and 20% Scheduled Caste (SC) members[4].

Precise estimates of wood production and consumption in the country are not available and estimates vary considerably. The overall annual production of logs from forests (excluding fuel wood) and Trees Outside Forests is estimated at around 14 million m^3, whereas consumption is estimated to be 17 million m^3, with the gap in supply met through imports (MoEF 2009). The 2006 National Forestry Commission Report estimates India's round wood production to be about 240 million m^3, of which 75% is the estimated share of fuel wood. In a recent estimate (Pandey in FAO 2010), wood fuel production was assessed to be about 261 million m^3 in 2005, against industrial round wood production of 46 million m^3.

The total economic value of forests in India, as per strict definition of GDP, is always underestimated as many goods and services from the forest are not traded in formal markets. The official contribution of forestry to India's GDP in the last decade was generally in the range of 1-1.5%. Some argue that the

[2] Canopy density: >70% Very Dense Forest; 40-70% Moderately Dense Forest; < 40% Open Forest

[3] Due to changes in resolution and quality of data, interpretation and classification, the decadal data may not be strictly comparable, but they have been significantly factored in by suitable adjustment.

[4] ST and SC are categories protected under the Constitution from social injustice and all forms of exploitation and, for providing special care for their development and empowerment.

value of forests reflected in the System of National Accounts represents less than 10% of the real value (Prasad 2006a). Further, various studies (Chopra et. al. 2002,Verma 2000, in MoEF 2009) assessed the contribution of forestry to be many times higher than the conventional GDP assessment.

Poverty Situation in India

Poverty in India is conventionally defined in terms of income poverty, i.e., inadequacy of income to provide a defined minimum level of calories estimated at 2,400 per person per day in rural areas and 2,100 in urban areas. The official poverty line currently in use is Rs 356.30[ii] (US$ 7.80) per month in rural areas and Rs 538.60 (US$ 11.80) in urban areas in 2004-05 (Press Information Bureau 2007). The official poverty estimate by the Planning Commission of India puts 27.5% of the population living below the poverty line (BPL) in 2004-05 (rural at 28.3% and urban at 25.7%) when the total population was 846 million. With the recent national census (National Census 2011) estimate of total population at 1,210 million, the number of poor people in the country could well be about 330 million, if the same proportion of the population falls below the poverty line. Many studies consider the official poverty estimate at 27.5% of the population an underestimation. Recent assessments based on different approaches have produced different figures on the percentage of population below the poverty line. Head Count Ratio (HCR) ranges from 27.5% to around 80% of the population under different approaches[iii]. Notable among them is the report of the Suresh Tendulkar Committee appointed by the Planning Commission of India, which puts 37.2% of the population (rural at 41.8% and urban at 25.7%) below the poverty line. Using the World Bank's international standard of per capita expenditure of PPP US$1.25 per day, the proportion in poverty is even higher at 41.6% in 2005 (CPRC 2011). India is also home to the largest number of 'hungry' people in the world (IFPRI 2010) ranking 67th out of 84 countries in the 2010 Global Hunger Index.

Official statistics show that poverty measured in terms of HCR declined from 54.9% in 1973-74 to 27.5% in 2004-05, but the pace of poverty reduction over the past decade has been slow.

Poverty declined by 12.4 percentage points over the decade from 1977-78 to 1987-88, but by only 8.5 percentage points between 1993-94 and 2004-05. Hence, income poverty in the country declined only by less than one million a year over a time span of three decades (Planning Commission 2006), with the rise in population also offsetting some poverty reduction gains. This slowdown in the pace of poverty reduction indicates difficulties in addressing hardcore poverty, much of which is likely to be chronic in nature (Bhide and Mehta 2008 in CPRC 2011).

Of the 301.7 million below the poverty line in 2004-05, 220.9 million (73.2%) reside in rural areas and are concentrated in certain regions and among particular social groups. About 65% of the poor in India live in eight of the 28 states. The poorest states are predominantly rural and agrarian, generally with challenged systems and governance. Even within states, regional imbalances prevail. For example, rural Orissa (officially the poorest state in India) recorded a poverty ratio of 48.01% in 1999-2000 but, for the southern region, this was 87.05% (Padhi et.al. 2006). Similarly, the poverty ratio is higher for the SC and ST categories (CPRC 2011). Estimates for 1993-94 and 2004-05 indicate that, against a decline in poverty for the whole population in India from about 37% to 27%, the decline among the rural tribal population was less impressive, i.e. from 51.9% to 47.3% (Planning Commission 2008).

States that have large numbers of poor people include those with large tribal and forest areas, much of which are in the central and eastern 'poverty heartlands' of the country and in semi-arid areas. Comparing the seven poorest states with the national average (Table IV.1), the data reveal that these poor states generally have a very high proportion of ST population (four states), a substantially higher proportion of BPL among ST/SC category (six states), higher forest cover (five states), and lower HDI scores (six states).

Table IV.1. Head count ratio, ST population and forest area in 7 poorest States - 2004-05

State	HCR%	% of ST population	% of BPL in SC/ST population	FC as % of GA of the State	FC of state as % of India's FC	HDI score
Orissa	46.4	22.13	45	31.38	7.07	0.537
Bihar	41.4	0.91	56	7.23	0.98	0.507
Chhattisgarh	40.9	31.76	60	41.33	8.09	0.549
Jharkhand	40.3	26.30	39	28.72	3.31	0.574
Uttarakhand	39.6	3.02	17	45.80	3.55	0.652
Madhya Pradesh	38.3	22.30	49	25.21	11.25	0.529
Uttar Pradesh	32.8	0.06	40	5.95	2.08	0.528
India	27.5	8.20	34.8	21.02	100.00	0.605

Source: Planning Commission (2008) and own calculation.

The Millennium Development Goals (MDGs) reflect the multiple dimensions of poverty and recognizes the need to go beyond income poverty by using indices of human development and overall welfare—literacy, education, health, and lack of basic needs such as drinking water. The poverty alleviation strategies in India recognize the need for multi-pronged approaches essential for poverty reduction (Planning Commission 2006). Of the 18 targets to achieve the MDGs, 12 are relevant to India. Table IV.2 gives the country's progress on important targets.

Table IV.2. Millennium Development Goals: Summary of progress

Target No.	Target Description	Progress signs	Sign description
1.	Halve, between 1990 and 2015, proportion of population below national poverty line	Δ	Δ: Moderately or almost nearly on track considering all indicators Θ: Slow or almost off-track considering all indicators ΔΔ: On-track or fast considering all indicators ΘΔ: Slow or off-track by some indicators but fast by other indicators (including cases where composite targets are involved) ΔΘ: On-track or fast by one main indicator but slow by another main indicator (including cases where composite targets are involved) Φ: Pattern of change not discernible due to lack of sufficient data
2.	Halve, between 1990 and 2015, proportion of people who suffer from hunger	Θ	
3.	Ensure that by 2015 children everywhere, boys and girls alike, will be able to complete a full course of primary education	ΔΔ	
4.	Eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education no later than 2015	Δ	
5.	Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate	ΘΔ	
6.	Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio	ΘΔ	
7.	Have halted by 2015 and begun to reverse the spread of HIV/AIDS	Δ	
8.	Have halted by 2015 and begun to reverse the incidence of malaria and other major disease	ΘΔ	
9.	Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources	ΔΔ	
10.	Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation	ΔΘ	
11.	By 2020, to have achieved, a significant improvement in the lives of at least 100 million slum dwellers	φ	
12.	In cooperation with the private sector, make available the benefits of new technologies, especially information and communication	ΔΔ	

Source: Millennium Development Goals - India country report 2009: Mid-Term Statistical Appraisal, Central Statistical Organization, Ministry of Statistics and Programme Implementation, Government of India.

Poverty Alleviation and Forestry in National Policy

National Poverty Reduction Strategy

Since independence in 1947, the central goal of development and planning in India has been poverty reduction. Over the past six decades, there have been systematic efforts to reduce poverty in India. These include increasing economic growth, direct attacks on poverty, land and tenancy reforms, participatory and empowerment approaches, and provision of basic minimum services (Mehta and Shah, 2003). During the first two decades after independence, it was widely believed that economic growth would automatically reduce and eliminate poverty. However, it was found that the fruits of development did not reach the masses and there were large numbers of deprived and deserving communities whose basic needs remained unmet (Kaushik 2007). The planners later recognized the importance of distributional policies and considered it necessary to have targeted programs for employment generation and income support for those who had been left out. A series of programs based on a three-pronged approach to attack poverty and unequal distribution was initiated which included the creation of income-generating asset base for the rural poor, generation of opportunities for wage employment, and area development programmes in poorly developed regions with arid land, rain-fed, drought-prone, tribal, hill, and desert areas (Ibid). The 1990s saw changes in the development strategy. Poverty was recognized as a multi-dimensional deprivation of a set of capabilities in health, education, literacy, etc. The last decade witnessed a shift in strategy to initiate enabling a 'rights based approach' to development, backed by statutes. The enactment of the Right to Information Act, Mahatma Gandhi National Rural Employment Guarantee Act and Right to Education Act are important steps in this direction. Enacted rights legislation thus far adopts a mixed supply and demand-driven approach. For example, information and employment have to be demanded while education is compulsory. It must be noted that the establishment of rights in law may not, by itself, resolve the problems facing governments across India in implementing poverty-reduction policies and programs.

Box IV.1. Rights-based approach and poverty reduction

Right to Information: Gives the right to access government documents. A transparent administration would help improve the implementation of poverty alleviation programmes.

Right to Employment: Guarantees 100 days of labor per household in a year at the prescribed minimum wage. The poor benefit through wage employment, income and asset generation.

Right to Education: Provides free and compulsory education for children in the age group 6-14 years. Education is important in the long run for escaping poverty, acquiring new skills, accessing benefits and realising other rights.

Forest Rights: Gives right of ownership of forest land up to 4 ha cultivated by tribals and traditional forest dwellers and community forest rights over forest resources. Ownership rights on land and access to forest resources will benefit the poor people in many ways.

Right to Food: This legislation is still to be enacted, but in the final stages. The proposal guarantees food grains at very low rates and provide better nutrition and health.

The main thrust of India's policy on a poverty-alleviation strategy has been the use of economic growth as a driver to provide employment and income support directly to the poor (CPRC 2011). Over the years, a large number of poverty-alleviation programmes have been implemented (Table IV.3). Direct responses to poverty have included the: provision of wage employment; support to asset building and self-employment; food, nutrition, skills, education, housing and income support; and subsidies for especially vulnerable groups. Programmes with universal coverage, such as rural water supply and sanitation, rural electrification and rural infrastructure, have also benefited the poor directly or indirectly (Ibid). Recognizing the limited economic opportunities and concentration of poverty in certain parts of the country, area-based interventions have also been implemented[5].

[5] Drought-Prone Area Programme, Desert Development Programme, Integrated Watershed Development Programme, Hill Area Development Programme, and Backward Regions Grant Fund are specifically targeted schemes.

Table IV.3. Major national poverty alleviation schemes and their focus

Programme/ scheme	Focus of the scheme
Employment	
Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)	Legal guarantee for 100 days of employment every year to adult members of any rural household willing to do unskilled manual work at the statutory minimum wage. Employment will be given locally within 15 days of application; if not, daily unemployment allowance will be paid. For 2011-12, the government has provided an outlay of Rs.400 000 m.
Nutrition	
Targeted Public Distribution System	National food security system that distributes subsidized food and non-food items such as wheat, rice, sugar, and kerosene to India's poor through a network of Fair Price Shops (FPS) established in several states across the country.The outlay provided for PDS in 2011-12 is about Rs. 605 730 million.
Integrated Child Development Services	To improve the nutritional and health status of children in the age -group 0-6 years; to reduce the incidence of mortality and malnutrition. The services include supplementary nutrition, immunization, health check-up, pre-school non-formal education and health education.
Education	
Mid-day meals scheme	To improve the nutritional status of children in primary classes and encourage them to attend school regularly, and providing nutritional support to children.
Sarva Shiksha Abhiyan	'Education for All' movement for achievement of universalization of elementary education, making free and compulsory education to children of ages 6-14. The objectives include bringing all children to school to complete five years of primary schooling.
Health	
National Rural Health Mission	To reduce Infant Mortality Rate (IMR) and Maternal Mortality Ratio (MMR); provide universal access to public health services such as women' health, child health, immunization, and nutrition; provide access to integrated comprehensive primary healthcare etc
Infrastructure and basic services	
Pradhan Mantri Gram Sadak Yojana	To provide connectivity to the rural areas with a population of 500 persons and above. Rural roads promote access to economic and social services, and increased agricultural income.
Indira Awaas Yojana	To help in the construction of houses for the ST/SC, freed bonded laborers, minorities in the below poverty line category and other below poverty line non-SC/ST rural households.
Integrated Watershed Management Programme	To restore the ecological balance by harnessing, conserving and developing degraded natural resources such as soil, vegetative cover and water. Enables multi-cropping and the introduction of diverse agro-based activities.

Sources: Web sites of various Ministries of the Government of India.

Although the economy grew at about 8% during the last eight years, it is widely acknowledged that lack of inclusiveness has contributed to substantial chronic poverty and at its core are strong geographical and sociological dimensions. While GDP has more than doubled since 1991, malnutrition indicators have improved by only a few percentage points. Per capita availability and consumption of food grains has declined since 1996. The percentage of underweight children remained stagnant between 1998 and 2006 and the calorie consumption of the bottom half of the population has consistently declined since 1987. There are also massive unmet needs in addressing health problems. The performance on gender equality and child and maternal mortality has been disappointing, although the MMR has declined significantly (Saxena 2010 and Hogan et. al. 2010 in CPRC 2011). There are several reasons underlying this performance. These include lack of good governance and decentralization, faulty program designs, difficulty in accurately identifying poor households, lack of effective delivery systems, corruption, inadequate capacities, poor awareness and low empowerment of the people.

Historically, forestry issues have never been high on the national political agenda and, consequently, in the national poverty alleviation strategies. Forestry coverage is limited within most of the Poverty

Reduction Strategy papers. Furthermore, the national poverty reduction schemes are predominantly universal. There is also no serious exploration of the links between poverty and forestry sector processes. If at all poverty issues are dealt in the forestry sector, these are incidental, superficial, and simplistic with unfounded generalizations.

National Forest Policy

Pre-independence (before 1947) forest policies were marked by a combination of high dependence on extensive regulations, treating forests as a resource to be exploited by the state. The dominant concern was to manage the forest resources of the country primarily for meeting the colonial needs, with little concern for the forest communities who made their living out of their forest resources. Commercial exploitation of timber to feed the British industrial development and the expansion of colonial rule were paramount. This led to conflicts between forest-dwelling communities and the ruling classes for rights over the natural resources (MoEF 2010). Independent India's first Forest Policy of 1952 recognized the protective role of forests and stipulated that the country should aim to bring one-third of its total land area under forests. Later, recognizing the ecological importance of forests, three key initiatives were adopted between 1952 and 1988:

1. the enactment of the Forest Conservation Act of 1980 regulating conversion of forests for non-forestry uses,
2. the recommendation of the National Commission on Agriculture in 1976 for large-scale plantations on degraded forest areas and social forestry to meet the timber and firewood requirements, and,
3. the enactment of the 1972 Indian Wildlife (Protection) Act providing impetus to wildlife conservation.

The current forest policy is the National Forest Policy 1988 (NFP 1988), which introduced the people-centric approach in the realm of forest management. NFP 1988, while espousing elements of sustainable forest management, also lays emphasis on strengthening the role of communities in forestry stewardship, representing a major shift in forest management intentions (World Bank 2006). It changed the focus of forest management from a high "timber and revenue orientation" to ensuring "environmental stability, maintenance of ecological balance and meet[ing] the subsistence requirements of local people" by strengthening the people-forest link (Nayak 2002). In spite of the laudable intentions, the implementation of this policy could not fully succeed in altering the concerns of top-down governance and alienation of forest-dwelling communities, and in meeting the growing needs of forest communities.

The 1990s saw the emergence of Joint Forest Management (JFM) in the country, encouraging State Forest Departments (SFD) to involve communities directly in forest management. JFM now is the principal forest management strategy in India with a focus on people-centric conservation efforts. The salient features of the program include access to forest lands and usufruct benefits to the villagers organized into a village association. Beneficiaries are given the rights to non-wood forest products (NWFPs) and a portion of the proceeds from the sale of timber, with the responsibility to protect the designated forest area. The spread of JFM, despite several shortcomings, helped in regenerating forests and sharing the benefits with communities. However, some argue that in most of the states, the program was extremely dependent on government funding[6], giving rise to serious questions about its sustainability. It is also argued that JFM increasingly fell into the trap of project-mode implementation, luring international funders and external assistance to support large forestry JFM projects (Nayak 2002). The 'jointness' in JFM is seriously limited in the field and the day-to-day decisions in many states that are, by and large, controlled by the local forest official. The silvicultural decisions rest with the SFDs and their focus remains on tree planting/regeneration, thereby adversely affecting groups such as graziers, and failing to meet even firewood or NWFP augmentation goals (MoEF 2010).

[6] Examples are the funding under the National Afforestation Programme, Externally Aided Programmes and State Plan schemes.

The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006 (popularly known as the Forests Rights Act or FRA) is widely considered as watershed legislation in independent India. The purpose of the law is to correct the "historic injustice done to forest-dwelling communities." Communities have been cultivating/occupying forestland and using forest produce for ages but with no tenure security and recorded rights. FRA provides two main sets of rights. These are land rights (private and/or communal) and community rights, including collective management of common (or community) forest resources and common property resources. The FRA for the first time formally admitted that the rights of forest people were denied in the past and the new law attempts not only to correct this but also to give prime importance to the role of forest communities in forest governance and management. As of March 2011, more than 3.09 million FRA claims were filed, 2.61 million claims settled, and more than 1.16 million titles distributed[7].

Contribution of Forestry to Poverty Alleviation

Forest Communities and Forests

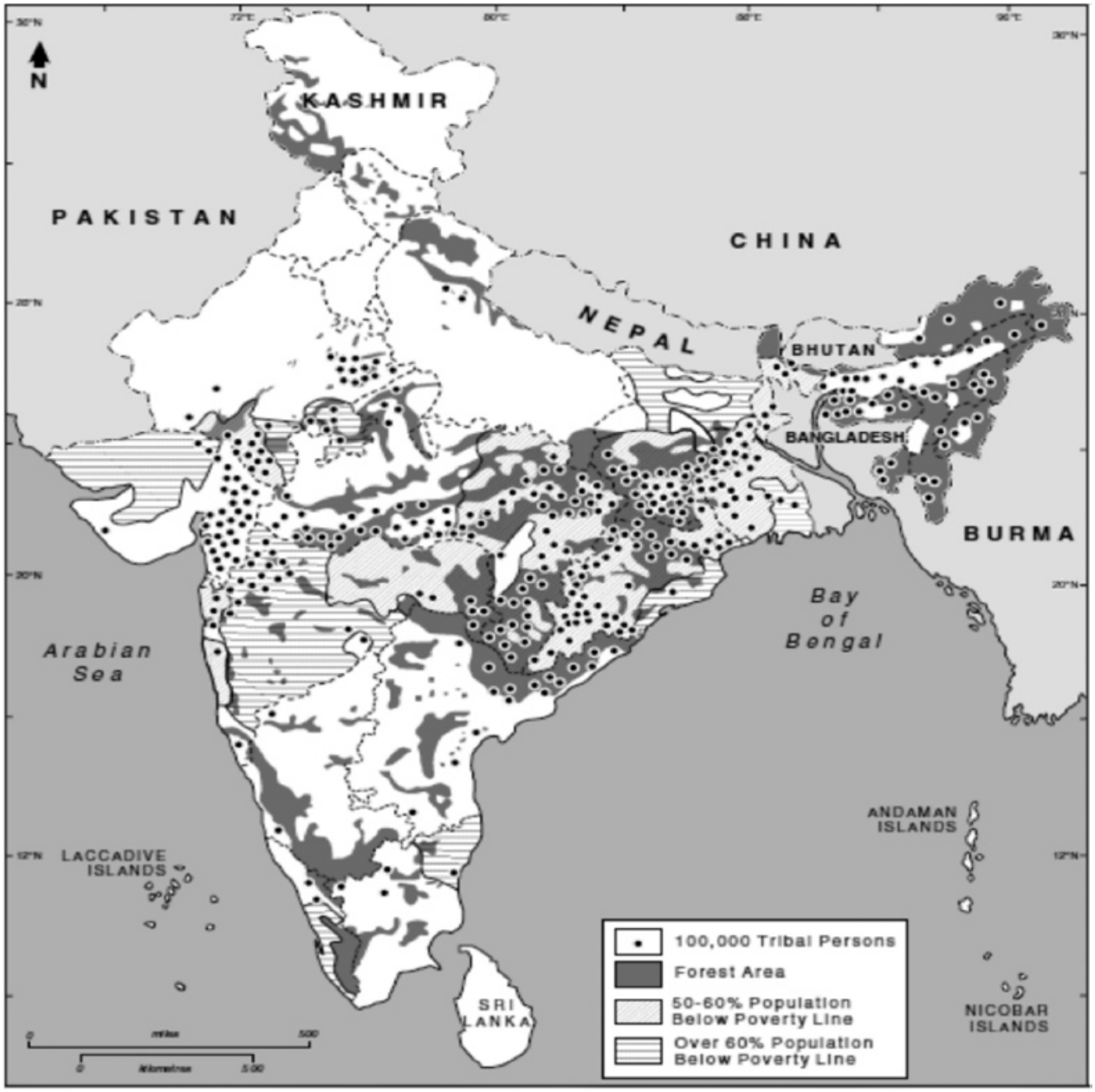
Forest-dependent communities in India, like those in other developing countries in the region, have a deep and intimate relationship with forests in all facets of their life—social, cultural, economic and spiritual. No precise estimate of the number of people living in and around forests is available. The Forest Survey of India (FSI), based on 1991 census data, estimated that 29% of villages (170,379 villages), with a population of 147 million, have about 50% of forests in the country (MoEF 1999). Assuming that the same percentage of people still live in and around forests at present, the total population living near forests would be about 210 million[8] based on the 2011 census data. The other figures reported in various reports range from 100 million to 500 million (World Bank 2006; MoEF 1999; MoEF 2006c; MoEF 2009).

Studies show that generally, poor people and forests occupy the same space (Poffenberger et. al. 1996; World Bank 2006; Mehta and Shah 2003).They also show that there is a strong association between the location of tribal people (who tend to be among the poorest people) and the location of forests. If the forested areas, tribal areas, and the areas with chronic poverty are mapped, there is a significant degree of overlap (Figure IV.1). FSI 1997 data show that about two-thirds of the total forest cover is in the tribal districts of the country, and the incidence of poverty among the tribal people is more than 50%. Eighty-four percent of India's tribals live in forest areas (Mehta and Shah 2003). Shah and Guru (2004) explain that the incidence of poverty is higher than the overall-India estimates for the majority of forest-based states and the pattern is more or less the same in 1993-94 and 1999-2000. A recent study (Shah 2010) indicated that spatial concentration of poverty among seven states accounted for nearly 80% of the rural poor in India and that 15 out of 20 poorest regions remained in the list of the poorest regions from 1983-2000. Majority (nine out of the 15) of the poorest regions are forest-based (Shah and Guru 2004). The question of whether poverty in a particular poor region is high mainly because of their social identity (SC/ST group) and marginalization or whether it is more because of their forest dependence and physical isolation, was analyzed in the case of the poorest region in the country, Southern Orissa. The study found that regional characteristics (i.e. the forest-based nature) of the southern region are more significant than tribal characteristics (Shah 2010). This might be due to the lack of access to basic services for the communities or because of their capability constraints in not being able to use the natural resources for their economic development.

[7] Web site of Ministry of Tribal Affairs, Govt of India: http://www.tribal.nic.in/writereaddata/mainlinkFile/File1276.pdf

[8] The total population of India in the 1991 census was 846 million. The 2011 census puts the total population at about 1.2 billion.

Figure IV.1. Coincidence of forests, poverty and tribal populations



Source: Poffenberger and McGean (1997) in Baginski, S. et.al. 2009.

Subsistence Use of Forests and Community Forestry

Subsistence use of forests

Forestry goods and services are gifts from nature for the poor and these include a wide diversity of products (food, fuel, forage, building materials, small timber, medicines, etc.) for home consumption and sale, in addition to conserving the soil fertility of agricultural lands and providing fresh water, land for shifting cultivation, etc. These resources also help the poor minimize the risk exposure through diversification of income sources, provide a source of gap-filler income in between agriculture seasons, and act as a safety net during calamities (Angelsen and Wunder 2003). India shares these subsistence uses of forests in common with many developing countries in the region. However, there are no macro-level analytical studies available to specifically assess the contribution of forests to the subsistence and income of forest-dependent people or their degree of dependence on forests. Consequently, one needs to probe the trends in other related studies, particularly on common

property resources (CPR)[9]. It is estimated that in India, such common-property land resources are about 70 million ha. Chopra and Gulati (2001) estimate that the forest department-owned common pool land resources are about 25 million ha and a large part of the remaining area also consists of forest ecosystems and qualifies under the broad heading of forestry. Thus, the contribution of CPR to poverty alleviation would be a good indicator of the contribution of forestry as well.

One landmark study on CPR was done by the National Sample Survey Organization (NSSO 1999). The study pertained to the role of CPRs in the life and economy of the rural population and was based on data collected on the extent of common-property land resources and gathering of different items from the CPR such as fuel wood, fodder, and other forest produce. A household survey was carried out with a random sampling of 78,990 rural households in 5,242 villages. The NSSO study showed that 38% of the households were residing in villages with forests within reach while 54% of the households were proximal to either forests or other common-property resources. Forty-eight percent of rural households reported some collection from the forests and common-property lands. As expected, the dependency of people on fuel wood was highest at 66%, followed by fodder at 34%. The important finding was that the contribution from CPR to annual household income at the national level was Rs693 (US$ 16.30). The contribution to incomes differed according to the economic condition of the households. The rich derived 23% of total income from CPR; the middle group, 52%; and the poor group, 54%. This shows that the forests/CPR constitute one of the last battlegrounds for the rural poor in India and are critical to their livelihoods.[iv]

There are also a number of case studies and reports in the body of literature assessing the contribution of forests to the livelihoods of forest communities, sometimes with contradicting data. These studies show wide variation in their assessments that are contextual depending on the socio-economic conditions of the people, resource endowment of the forests, opportunities for livelihoods from non-forestry sectors, and relative access to rights and tenure. While no generalization can be attempted based on these studies, they throw light on the relationships communities have with their neighboring forests for livelihood. Highlights of some of the case studies and reports are given on Table IV.4. These studies and reports are by no means exhaustive nor do they pinpoint any single trend in the assessment on the contribution of forestry to poverty alleviation. The degree and nature of dependence by people on forests differ from one community to another. Studies also reveal that villages closer to towns rely less on forest for livelihoods and more on agriculture and wage labor. On the other hand, villages in more remote areas rely more on agriculture and forest resources.

Table IV.4. Summary of findings of selected case studies/reports

Highlights of Findings	Source
• Forests meet nearly 40% of the energy needs of the country and about 30% of the fodder needs of the cattle population. 270 million tonnes of fuel wood, 280 million tonnes of fodder, over 12 million m3 of timber and huge quantities of NWFP are removed from forests. The total value of fuel and fodder could be over Rs. 300 000 million per annum. NWFPs account for more than 70% of the opportunities for self-employment for the forest dwellers. 50% of the workforces on forest plantations are women and tribal peoples.	Singhal et. al. (2003)
• In Jharkhand state, fuel wood supplied an average of 86 % of energy needs. Fodder from the forest provided about 55% of input requirements for domestic livestock. On an average, gross values were Rs 2,356 (fuel wood) and Rs 8,507 (fodder) per household per year. In Assam state fuel wood supplied an average of 79 % of energy needs. Fodder from the forest provided about 64% of the feed requirements for domestic livestock. On average, gross values were Rs 2,440 (fuel wood) and Rs 10,992 (fodder) per household per year.	World bank (2006)

[9] "Common-property resources" constitute resources for collective use, which exclude private property and include community pastures and forests, wastelands, common grounds, drainages, ponds, rivers and other common resources for which well-defined property regimes may or may not exist.

• In Andhra Pradesh 66 % of small and marginal farmers would be unable to cultivate their land without forests providing fodder to cattle. About 60% of NWFP collection goes unrecorded as it is consumed or bartered by the 15 million people living in and around forests. About 75 % of forest-dependent people in Bastar district, Chattisgarh state, supplement their food with tubers, flowers and fruits. In the Andaman and Nicobar Islands, several tribes subsist wholly on food derived from forests and the sea. In Maharashtra, tribal groups living near forests derive about 30 % of their diet from forest products.	Prema Gera (2002)
• In a study conducted in about 5000 ha in Mayurbhanj District of Orissa and covering 5864 households it was found that forests' contribution to overall livelihood was 33%. The total economic value of products from forests and TOF is close to Rs.10400/household/year of which subsistence and commercial use account for 62% and 38% respectively. Firewood for subsistence formed more than 50%—3.9 tons/household/year.	Singh, K.D. (2009)
• According to various studies, 67% of NWP gatherers are women and 13% children, contributing 20-24% of household income. 60 tribal villages in Madhya Pradesh state are totally dependent on NWFP collection for their livelihood. NWFPs provide about 40% of total official forest revenues and 55% of forest-based employment.	Ram Prasad in MoEF (2006)
• 50% of the households living in the selected coastal villages own animals and about 82% of these use mangroves as fodder, about 24% of households use mangroves for fuel wood and about 10% of them use it for construction. Each household on the average extracts 257 kg of fuel wood annually from mangroves.	Hirway, et. al. (2004) in ESPASSA (2008)
• Nearly 49% of the fuel wood and small timber requirement of the country comes from farm forestry sector. Annual turnover of fuel wood trade could be as high as Rs. 765 000 million and is a source of livelihood for over 11 million people, making it the largest employer in the Indian energy sector. Nearly 400 million people living in and around forests in India depend on NWFPs for sustenance and supplemental income. In some studies, household income from NWFP collection was assessed at an average of 40%, the range varying from 11% to 53%. A study reported that about 60% of the tribal population living in the forests of Andhra Pradesh, Madhya Pradesh, Bihar and Orissa states depends on forests for food. In selected Orissa villages, the share of total household income from sale of NWFPs averaged around 19%.	MoEF (2006)
• For sustainable agriculture in one ha area, 2.5 ha forest (vegetation) is essential. One hectare of agricultural field receives about 25-30 kg of nutrients through run-off, litter and animal dung in the forests. Forestry activities generate employment of approximately 240 million person days per day in the primary and secondary sectors. Out of 445 million cattle in the country, nearly 270 million cattle graze in the forests at present, the total number of men looking after the grazing of these cattle comes to 27 million.	Dhyani, S.K.et. al. (2007)

Allocation of tenure over forest resources

In India, the forest is not simply an ecological entity, but a complex socio-ecological construct. Absence of credible community rights and tenure security are considered by many as critical elements in reducing poverty among forest communities. Appropriate mechanisms for ensuring rights and tenure security can provide (in ideal settings) better governance, access to resources, conflict management, capacity building, livelihoods improvement through socially relevant planning and resource management, equity (including gender equity), participation, and cultural integrity. However, one has to keep in mind that rights to and tenure on forests, on their own, may not guarantee poverty reduction unless augmented by enabling policies and actions in other spheres of governance outside the forestry sector.

The JFM policy speaks about the right of local communities in the management and use of forest resources. However, the JFM resolutions which are state-specific are silent about tenure issues on

forestland, causing uncertainty and restricting the development of an effective partnership with village communities. Some argue that JFM only gives the message of short-term stakes and leads people to plan for short-rotation production plantations (Nayak 2002). Adding to the uncertainties is the apparent conflict between JFM organizations and traditional or Panchayati Raj Institutions[10] and the bodies under the Panchayat (Extension to Scheduled Areas) Act[11], which claim institutional and jurisdictional space over forests vis-à-vis JFM Committees[12]. It is also to be noted that many of the salient intentions on community-based forestry in NFP 1988 have not yet been reinforced through a legislative framework. Even the legitimacy of the JFM notifications is often challenged as they are mostly not issued under any Rule or Act.

Presently, almost one-third of the forest area is officially under JFM and managed by around 106,000 village institutions. In the community-based forest management practiced through JFM, communities do not own the land and resources and their participation is dependent on government's call. The current JFM model appears to sit somewhere in between the NFP 1988 and the PESA with shared roles, responsibilities, and benefits (World Bank 2006). There have been several positive impacts of the JFM program, namely, improvement in the regeneration of forests, better relationship between the forest departments and local communities, increase in income of participating communities, additional employment opportunities and share in income from the forest[13]. However, many believe that the JFM itself is not sufficient to address the complex and multi-dimensional nature of poverty among the forest communities (MoEF 2006).

The most important value of JFM is not just delivering certain goods and services or just protecting the forests and sharing benefits, but in offering a platform. People's participation gives a sense of collective identity and, in many well-functioning JFM areas, people become better-equipped to play a more active role in governance and economic development.

A few recent studies are illustrative. Hiware Bazar village in Maharashtra state, a drought-affected village in the past was characterized by multiple deprivations in terms of income, health, and education; very low agricultural and livestock productivity; and heavy biotic pressure on forests due to fuel wood collection, grazing, and subsistence collections. The formation of a village institution for integrated natural-resource management transformed the village beyond recognition in a period of 10 years and the per capita income of villagers increased 30 times. Another example of JFM as an institution leveraging the resources for economic development is from the Jharkhand state (Dr. V.K. Bahuguna and Dr. Anup Bhalla[14], personal communication, May 2011). Of the 15% share of the JFM committees they receive from bamboo and thinning, 30% is kept as a revolving fund for income generation and development activities in hundreds of villagesv. An empirical study in West Bengal state (Das 2008) compared the villages under a JFM program and non-JFM villages. The study found that the addition of forest-derived income in the JFM households reduced income inequality by about 12%, all else being equal. Per capita net real income from forest sources showed a major increase for all categories in JFM villages compared to non-JFM villages, with the rate of increase of forest income higher for

[10] PRIs form the third tier of the decentralised three-tier governance structure mandated under the Constitution. Among the 29 functions recommended for decentralization, three relate to forestry, viz. social forestry, fuel wood plantations and NWFP. The Panchayats (local self governments) are considered central to the development of villages.

[11] The Panchayat (Extension and Schedule Area) Act (PESA Act), is applicable to predominantly tribal areas specified in the Constitution. These areas are intended to be governed as 'village republics.' Under PESA, ownership of natural resources, including NWFP, rests with the tribal communities.

[12] JFM Committees are village-level institutions of forest communities constituted democratically for the protection and development of forests and sharing of the benefits arising out of the managed forests, including NWFPs.

[13] For example, it is estimated that over 40 million person-days of work was created through JFM-related activities during the six years (1994-2000) that the Andhra Pradesh Forestry Project was operational (Mukherji 2004). In just four states (Andhra Pradesh, Punjab, Tamil Nadu and West Bengal), JFM groups received Rs 62.59 million through benefit sharing mechanisms in 2000-01 (GoI 2002).

[14] Dr. V K Bahuguna is the Expert Member (Forestry) National Rainfed Authority of India and Dr. Anup Bhalla is Addl. Principal Chief Conservator of Forests, Chattisgarh State.

landless and marginal landholding households. The JFM program has been found more beneficial for households belonging to the BPL category in all JFM villages. There are many such examples across the country where JFM has contributed to poverty reduction in varying degrees, mostly to the poorest.

Many people consider that access to land and forest resources through FRA will deliver tangible rights to the poor. The FRA has the potential to provide opportunities for the development of the disadvantaged sections of the population, apart from the de-escalation of tensions that have arisen due to the loss of customary rights (Dasgupta 2010). The potential of FRA to impact positively on poverty reduction is in two ways. First, securing tenure and legal ownership of the land in their possession for cultivation will help poor households in accessing credit from formal institutions, in engaging in long-term planning and land-based development, and in accessing a range of incentives for land-based activities[15]. The other potential is through securing tenure on community forest resources (CFR). Though *de facto* access to CFR is usually available to the communities, *de jure* access could open up opportunities including those for long-term enterprise activities, linking with markets and leveraging productive investment for resource-based development. However, the success of FRA will depend on its implementation, particularly in the context of a heterogeneous and culturally diverse society. Furthermore, poverty and deprivation as experienced by forest communities are not merely due to tenure insecurity in forestry sector but also from the multiple and interlocking disadvantages across many sectors.

Commercial and Industrial Forestry

The contribution of commercial forestry to poverty alleviation is difficult to estimate due to lack of relevant information at macro and micro levels. Data is scattered in different departments and ministries, industry associations, and other groups, and there is a lack of aggregated information at the national level. Published information is often outdated and contradictory, and the lack of organization and the operations of the forestry-related commercial activities in the informal sectors make data capture even more difficult. Although the informal sector plays an important role in the economy, its role is often poorly understood or appreciated. However, available estimates and analyses for certain specific enterprises and categories help in gaining an understanding of the sector, which may reflect the status of the commercial forestry sector in general. A more comprehensive field-based survey is required to collect in-depth and up-to-date information. Available information, though inconsistent, strongly indicates that commercial forestry plays an important role in poverty alleviation, income generation, and employment.

Small-scale forestry enterprises (SSFEs)

The bulk of commercial forest product processing in India is carried out by small-scale forestry enterprises (SSFEs). These are characterized by a diversity of products and markets at every level (from barter at the local level to export to international markets), and are governed by a range of policies cutting across many sectors of the economy. SSFEs are, by nature, location-specific and determined on the basis of the availability of resource, labor and markets[16]. These enterprises are mostly small, often household-based; predominantly rural and seasonal; labor-intensive and use simple technologies; require very low capital inputs; accessible to low-income and socially disadvantaged groups; provide direct benefits to the local economy; and heavily involve women. While it is difficult to make generalization for the entire SSFE sector, there are certain features of the sector that are clearly discernible which indicate their contribution to poverty alleviation. Some features of the SSFE sector in India are given below, mostly drawn from the study by Saighal and Bose (2003):

[15] For example, under MGNREGA, the development of the land of BPL households is an eligible activity and members of the land owning household can work in their own land and earn wages.

[16] For instance, most safety matches are manufactured in Tamil Nadu state, while the bulk of sports goods are manufactured in just two cities in Punjab state.

- Wood working is a traditional industry in India, producing furniture, doors, windows, panels, sports goods, handicraft, shoe lasts and heels, textile mill accessories, automobile body building, agricultural implements, etc. It is estimated that the wood processing industries process about 24 to 30 million m^3 of wood per annum, the bulk of which is processed by SSFEs. Ninety-eight percent of the sawmills are small and they produce as much as 82% of the sawn timber. Eighty-two percent of the safety matches production is in the small-scale and cottage sectors and around 85% of the sports good units are in the small-scale sector.
- A case study of the small-scale informal forestry sector in Rajkot district in Gujarat revealed that 98% of forest-based enterprises were operating informally with 92.5% engaged in manufacturing automobile bodies and 38% in manufacturing items, such as packing boxes, furniture and fixtures. In the informal sector, 92% of saw mills and 93% of raw material were used.
- There are many very small wood-using enterprises that cater to local demand. For instance, it is estimated that 2.1 million bullock carts, 50 million yokes, 100 million wooden ploughs and 30 million wooden seeders are constructed each year. Most of these demands are met by local artisans who utilize local raw materials and traditional skills.
- The beedi[17] industry is an SSFE generating significant employment. It is estimated that 30-40 million people are directly or indirectly involved in the beedi industry, many of whom are beedi leaf collectors and beedi rolling workers. About 550 billion pieces of beedi are sold annually in India. The World Bank estimates that the beedi industry provides 106 million person-days of employment in collecting activities and 675 million person days in secondary processing (World Bank 2006). Some other estimates put over 30 million people indirectly dependent on the beedi industry (Business Line Internet Edition, 19 January 2001). Beedi rolling workers are women while beedi leaf collection is very valuable for the poor, especially the tribals. The leaves are collected during the summer months, which comprise otherwise a lean season for employment. It is estimated that 350,000 tonnes of leaves are harvested annually and 4,700 tonnes are exported (MoEF 1999).
- Nearly half a million people are employed in safety-match making, sawmilling, and wood carving. The number of people indirectly involved in the industry is much higher than those who are directly employed. In Saharanpur District of Uttar Pradesh, it is estimated that while 50,000-87,860 people are directly involved in the wood-carving industry, there are about 350,000 people who depend indirectly from the industry (WWF 2003).
- There are a large number of industries based on NWFPs, such as beedi, lacquer ware, brooms, essential oils, katha and cutch, tannins, resin and rosin, cane and bamboo furniture, herbal medicines, cosmetics, etc. Some studies indicate that NWFP-based SSFEs alone provide up to 50% of the income to 20-30% of the rural labor force in India. Landless and poor women often form a significant proportion of the labor force in many SSFEs.
- It is estimated that NWFPs worth Rs 350 billionaire are used annually in India and the government revenue from NWFPs is around Rs 20 billion, nearly 50% of the total forest revenue. Total NWFP exports (raw materials as well as finished products) were estimated at US$ 480 million in 1991 (MoEF 1999).
- India is an important producer of lac[18] and lac products. The production of lac is about 15,000 metric tonnes. It is estimated that in Channapatna Taluka of Karnataka state, over 35% of the workforce is engaged in lacquer work (Bahuguna and Shiva 2002 in Saighal and Bose 2003). Annual production in 1991 was estimated at Rs 30 million, of which

[17] *Beedi* is a local cigarette made by rolling tobacco inside leaves of the Coromandel ebony tree (*Diospyros melanoxylon*) locally called *tendu* or *kendu*.

[18] Lac is produced from the secretions of a tiny insect *Laccifer lacca*, a parasite in a number of wild and cultivated plants.

70% was exported. It is estimated that lac exports in 2001-02 were worth Rs 652 million (Ibid.).

- There are a number of SSFEs manufacturing bamboo and rattan-based (cane) products such as table mats, trays, lampshades and other household articles. Reed bamboo-based traditional industries, such as mat and basket weaving, play a crucial role in the rural economy. Many tribes and ethnic groups earn their living through bamboo handicraft work. Bamboo mat board manufacturing units have also been established. It is estimated that bamboo-based SSFEs provide livelihoods to more than 300,000 rural people in Kerala state alone (Bhat n.d.). There are around 2,000 small- to medium-sized rattan-based industrial units in India employing over 200,000 people.
- The domestic market for Indian systems of medicine and homeopathy is estimated at about Rs 40 billion (World Bank 2006), the bulk of which is generated in rural areas through the traditional practitioners in unorganized sector.

The above listing is far from exhaustive. There are many other SSFEs in the country with a diversity of products and producers. One important trend seen is that the contribution of the household-based SSFEs to the livelihoods of the rural poor is perhaps even more significant than that of the organized sector. An idea of the immense contribution of forest products can be gauged from the fact that an estimated 600 million tonnes of forest produce valued at Rs 300 billion is collected annually from India's forests (MoEF 1999).

Wood-based industries

The wood-based industry in India is an age-old industry that produces a range of processed and non-processed products, including sawn wood, composite panel products, and pulp and paper. Sawn wood is the single largest category, and consumption is about 29 million m^3 (Pandey and Rangaraju 2008). About 70% of the timber is used in the construction sector. Sawn-wood uses include packing, furniture, and numerous other uses. The saw-milling industry has undergone much expansion without a change in orientation. Much of the preliminary sawing is still done at the felling sites by hand, although this has completely disappeared from reconversion industries. Eighty percent of the wood converted into sawn wood comes from hardwood species and the rest from coniferous species. It is estimated that there are over 60,000 small sawmilling units catering to local needs and use low-level technologies (Ibid). Usually, the product reaches the sawmills in log form or as sleepers pre-sawn by hand in forest areas.

The composite wood industry in India goes back over 100 years when many factories were set up in North East India procuring raw materials from the rich natural forest and consequently causing deforestation in many areas. The policy shift prohibiting green felling from natural forests and the highest court's orders against indiscriminate felling of trees from forests by traders and contractors, especially in the North East, prevented this sector from expanding. Raw-material shortage hindered the growth. The challenge to the sector is in overcoming the shortage of high-quality logs which may constrain the long-term growth prospects. The plywood and panel, and wood-processing industries form the third most important contributor to the housing sector. It is estimated that there are about 62 large and medium-sized plywood mills and over 2,500 small-scale units, most of which are located in the north. The thriving agro-forestry sector, especially in the states of Uttar Pradesh, Haryana, and Punjab supplies large quantities of poplar and eucalyptus wood to these industries. As a result, the panel-producing industry is growing at a rate of 35% per annum in India. Imports also help in providing raw materials. In view of the robust demand growth, strong primary wood substitution pressure and regional variations, composite panels will be one of the most rapidly evolving forest industries in India. However, supply of raw materials will be the main challenge.

The pulp and paper industry is the most important cellulose fiber-based industry in India, with turnover exceeding US$ 2.5 billion. It is considered to be one of the highest consumers of forest-based raw materials. The industry provides direct employment to 0.2 million people and indirectly supports one

million people. There are more than 380 mills, with installed capacity of 0.5 million tonnes. Most mills are small by international standards. The sector has a growth rate of around 8% per annum. The major issue confronting the sector is shortage of good-quality fibrous raw material. Every tonne of paper production requires about four tonnes of harvested pulp wood, and current supply cannot even meet the demand of the existing mills. With a very low per capita consumption of paper in India at about five kg (compared to world average of about 50 kg), the sector offers tremendous potential for farm forestry. It is estimated that about 0.6 million ha of plantations is required to sustain the industry at current levels of production (Pandey and Rangsraju 2008).

Reliable estimates about the contribution of forest industries to poverty alleviation are not readily available. This sector mainly contributes through employment generation in rural areas. Majority of sawmilling units are in rural areas and directly give employment. The pre-sawing in forest areas and homesteads adds to the employment potential in remote locations. Employment is also generated when trees are harvested and transported to saw mills. Generally, the composite wood industries are not located in rural or in remote locations. While employment generated in this sector may, inter alia, contribute to poverty alleviation, it may not be as socially relevant as in pulp and paper industries or, to a lesser extent, sawmilling, in terms of addressing the poverty of forest communities or remotely located populations. The pulp and paper industry contributes to poverty alleviation mainly through indirect employment. Harvesting of pulpwood from forests and transport to the mills involve huge labor. This provides employment to poor people living deep in forest areas and remote areas and addresses the spatial poverty and sociological poverty.

Payment for Environmental Services

Though market-based approaches such as payment for environmental or ecological services (PES) are increasingly applied to achieve conservation objectives all over the world, this is in an exploratory stage in India. Traditionally, environmental services are considered free services provided by nature and, therefore, their economic values are ignored or underestimated when used for alternative options. However, many believe that creation of markets for ecosystem services can promote conservation and support local livelihoods since it rewards the resource owners and managers for their role as stewards in providing these services. In India, though not all programs may conform to the true regime of PES, there are a number of initiatives that incentivize conservation of forests and ecosystems for providing environmental services. The incentives include carbon payment for projects under the Clean Development Mechanism (CDM), levy as Net Present Value for forests diverted for non-forestry purposes, compensatory payments from federal government to states, and small-scale arrangements for payment to communities for protecting ecosystems.

Payment for carbon credits under the CDM is one vehicle for PES in India. Of the 29 projects registered by the CDM Executive Board under the afforestation and reforestation activity, six projects are from India (Table IV.5). These are predominantly small-scale projects for tree planting as part of the restoration of degraded lands, which may in the long run provide benefits to local communities. Similarly, REDD plus has the potential to deliver conservation benefits to poor communities, though it could lead to elite capture of benefits and exacerbate conflict over land tenure. Some see the potential of REDD plus as a mechanism for reducing poverty as questionable, as ultimately it is contingent on how REDD plus is structured and how the benefits are shared at the national, sub-national, and community levels.

Table IV.5. Registered projects under CDM - AR activity

Title of project	Features	Reductions*
Small scale cooperative afforestation CDM pilot project activity on private lands affected by shifting sand dunes in Sirsa, Haryana	The project area is spread across eight villages located at the north-eastern fringe of the Indian Thar Desert and affected by shifting sand dunes. The proposal of the Haryana CDM Tree Farmers Society is to establish 369.5 ha of mixed forests in the lands belonging to 227 farmers and earn carbon credits from growing trees. Other purposes include stabilizing the sand dunes, improving soil and alleviating poverty by providing more employment opportunities.	11596
Reforestation of severely degraded landmass in Khammam district of Andhra Pradesh, India under ITC social forestry project	The ITC Bhadrachalam Ltd, a private company, initiated the project activity through the local NGOs of Andhra Pradesh. The degraded lands owned by the rural poor are developed for raising plantations with Eucalyptus. Apart from providing finances for the project, the company also distributes improved planting stock and provides technical support to the farmers. The project has been able to create more than 3000 ha of plantations which will help in alleviation of poverty by generating additional income from the proceeds of the wood sale.	57792
The international small group and tree planting program (TIST), Tamil Nadu, India	The project is for reforestration of 106 ha in three districts in Northern Tamil Nadu and involves 111 Small Groups, 1,200 members, 175 project locations. The main species planted are *Casuarina equisetifolia*, *Eucalyptus grandis* and *Tectona grandis*. In addition to generating carbon credits, the project helps poor people in many ways—reuce soil erosion, enrich the soil and provide other benefits, including edible fruits and nuts, medicines, windbreaks, firewood and timber.	3594
Improving rural livelihoods through carbon sequestration by adopting environment friendly technology based agro forestry practices	The project is to raise tree plantations on 1607 ha of degraded farmlands belonging to 1590 poor farmers in Orissa and Andhra Pradesh states. In addition to carbon benefits, the project will provide multiple benefits to farmers in terms of timber, firewood and non-timber forest products.	4896
Himachal Pradesh reforestation project-improving livelihoods and watersheds	The project is located in the Mid-Himalayan watershed in 12 districts of the state of Himachal Pradesh. It seeks to restore about 4000 ha of degraded forest, community and private lands through three plantation forestry models (Restoration forestry, Community forestry and Farm forestry) and involving the local communities. The carbon revenues accrued from the project will be transferred to gram panchayats (local self government) and individual participating farmers through a pre-project agreement between project implementing agency and gram panchayats.	41400
Bagepalli CDM reforestation programme	The purpose of the project is reforestation of 8933 ha degraded private uncultivable lands, fallow lands or marginal croplands in Karnataka state with local mixed species trees. In addition to sequestering carbon, it will generate income to the farmers, improve soil, control water erosion and provide other environmental benefits.	92103

Source: UNFCCC web site.

A type of compensatory payment provided by federal government to states for conservation is through the Finance Commission Awards. The 12th Finance Commission (2005-10) for the first time recognized the need to incentivize conservation efforts by the states and earmarked Rs 10,000 million for five years. Funds are provided for conserving the present stock of forest resources and the state can utilize these funds for alternative economic activities, compensating the economic constraints caused by the conservation of forest cover. The 13th Finance Commission Award is in operation and an amount of Rs 50,000 million is provided as 'Forest Grant' for five years, of which 25% has to be spent for forest development and 75% for development purposes in a selected location within the recipient state. Since the grant is not specifically targeted to the poor, this may help in poverty alleviation only in a limited way.

Whether these incentives will help reduce poverty is neither documented nor analyzed in depth. The benefits are also always linked to how resources are controlled and used. With an unclear tenure and user rights regime, the poor may not, by design, benefit from these incentives. In fact, if a conservation practice encourages a less labor-intensive procedure, the poor and landless may be disadvantaged. In any case, the poor may realize benefits "more by accident than design," and reducing poverty is not an explicit objective of these conservation incentives.

There are also other small-scale PES initiatives that have benefitted local communities. In some parts of the country, the concept existed even before the term "PES" was introduced. The case of Sukhomajri village in Haryana state dates back to the 1970s. In the past 40 years, this PES initiative generated high economic returns for the once-poor community[vi]. The Shimla catchment forest in Himachal Pradesh State with more than 1,000 ha of very dense forest was established in the early 20th century exclusively for securing the catchment and to protect 19 springs and streams that supplied drinking water for Shimla town. Mawphlang Lyngdohship in Meghalaya state, is another example of how new resource management partnerships are creating a win-win situation for local communities and those interested in investing in a better global environment[vii].

Public Sector Forestry

In India, the forest is still largely administered by the government. Only about 8% of forest land is managed in the private domain. The level of public ownership in India is very high, compared with other developing countries with significant forest areas under community forestry programs (World Bank 2006).

Forestry is in the Concurrent List[19] of the Indian Constitution and is a shared commitment between the state and the central governments. The forestry-trained manpower at the state and national levels has defined functions and responsibilities. At the national level, the role of the Ministry of Environment and Forests (MoEF) is mostly in providing policy, strategic, and legislative support while the SFDs are the custodians of the public forest resource, carrying out the normative, regulatory, silvicultural, and protection functions. Often, they also perform an enterprise function through forest resource production, processing, and trade. Most of the states set up forest development corporations (FDCs) with responsibility for the production activities of the public forest estate. These corporations operate as autonomous business entities.

The organizational structure of the government focuses mainly on traditional forest management functions. It is similar across most states, with the Head of Forest Forces at the top reporting to government and coordinating the functional units headed by senior officers of Indian Forest Service. Divisional Forest Officers (DFO) are the senior professionals operating at the district/sub-district level. Below the DFO, there are field units headed by the Range Forest Officer (RFO) and supported by Foresters and Beat Forest Guards. There are more than 100,000 forest personnel in the field units up to RFOs and about 3,000 Indian Forest Service Officers in the higher positions from DFOs.

There are also a number of specialized public institutions directly linked to the MoEF. These include the network of institutions under the Indian Council of Forestry Research and Education, the Indian Institute of Forest Management, Indira Gandhi National Forest Academy, Wildlife Institute of India, FRI University, and FSI. Further, there are several universities and institutions engaged in research on biology and socio-economic studies relating to forests. The state forest departments also established several state forest research institutions, forestry schools and forestry research entities that carry out R&D and training.

[19] As per the Concurrent List of the Indian Constitution, the Central and State governments can legislate on forestry. However central government legislation is binding in all states and overrides the state laws if there is any variation.

Case Studies

Case Study 1: A Traditional Forest Village in Khapsadera, Orissa State

Khapsadera is a traditional forest village in Orissa, the poorest state of India with a population of 337 belonging to 62 households, 87% of which are categorized as ST and 13% as SC. These categories are constitutionally protected for redressing the historical disadvantages these people have experienced. Eighty-five percent of the population lives below the poverty line. Manoranjan, a project officer working with an NGO summed up the villagers' lifestyle, "The people are very simple and very hardworking with minimal needs and desires." The opportunities for livelihoods are also minimal, and agriculture and forests are their two lifelines. Their lives are organically linked to the neighborhood forests with which they have a day-to-day interaction like a family member or friend. An elderly villager commented, "We know our trees like they are part of the family and the forest is like our backyard. We grew up collecting food, fodder, and fuel wood from these areas all our life." Like in other parts of the state, the forest is revered as sacred and precious that provides for their daily subsistence and livelihoods.

Sharda Gautam

Community members discuss and share about the challenges they face in preventing further depletion of forest resource base to ensure the sustainability of their livelihoods.

High dependence on forests for survival

Villagers are highly dependent on the forest for fuel wood, NWFP, timber for housing construction, and for making simple agricultural implements. Major NWFPs harvested from the forest include nuts, berries and leaves of mahua (*Madhuca indica*), tendu (*Diospyros melanoxylon*), sal (*Shorea robusta*), harida (*Terminalia chebula*), bahida (*Terminalia belerica*) and several other medicinal plants which provide them with cash income for other daily needs. Livestock is treated as part of the family and the animals help out in agriculture work. Raising livestock depends on forests for grazing and fodder. Agriculture is rain-fed and weather elements affect production. During the dry months, people's dependence on forests is even greater and during droughts, the forest is the only safety net for them. It is interesting to note that even though people in Khapsadera are marginally poor, there is no household that goes without two square meals a day. A village woman said, "The basics are always fulfilled, thanks to the jungle. The food may not be nutritious but we never go hungry." A young man, who could not make it beyond the school level and is now ploughing his fields, agreed, saying, "Our basic requirements are fulfilled by the forest and the little patch of land we cultivate."

Left to themselves – government poverty schemes not reaching the village

The experience of the villagers with poverty alleviation schemes of the government is disappointing.

Situated in a remote area, the delivery of the schemes is filled with operational problems apart from leakage, inaction, and lack of awareness. The only schemes from which people seem to benefit are the MGNREGS (a scheme guaranteeing 100 days of labor in a year under a statute) and the PDS scheme (public distribution of food grains at subsidized rates). About 50% of households benefit from MNREGS and more than 85% of the households from the PDS scheme. By and large, the village continues to be on the margins of development in other aspects related to multi-dimensional poverty. The facilities for child and maternal care, health, education, infrastructure and communications are meager, and villagers have to go long distances to avail themselves of the services.

Quest for survival - Quest for livelihoods

It is estimated that the villagers from Khapsadera depend on about 200 ha of the reserve forests for their livelihoods, while the forest department estimated that only about 60-70 ha is meaningfully used by people. The quantity of forest products that the villagers collect varies from season to season and also depends on the availability of non-forest employment and opportunities. While the villagers with more land collect forest resources for their agricultural needs and livestock, the poorest villagers collect more for their subsistence needs. The mahua tree, besides forming an important source of livelihood, has been an integral part of the social and cultural life of the tribal community. Mahua provides food for the people and livestock, flowers to make the local brew, and oil from the seeds for household use. Siriya Mahji, SHG Leader & Village Health Animator, said, "The mahua tree is our lifeline. She is our Goddess Laxmi, who protects and helps us survive in the worst of times."

Tendu or kendu, also called the 'green gold' of Orissa, is another tree that is economically very significant to the villagers. The tendu leaves are used to roll beedi (country cigarette), providing significant cash income to communities, though seasonal. The leaves are picked by the locals, tied in bundles, and sun-dried before these are sold to a government-controlled organization. Sal tree leaves are used in making leaf plates, a source of income to many households, although small.

Based on discussions with villagers, it is estimated that about 16,000 kg of mahua flowers and 40,000 kg of tendu leaves are collected from the forest in a year, apart from large quantities of sal leaves, grasses, and other products. The total value of major NWFPs collected is about US$ 18,200. The village is entirely dependent on fuel wood for cooking, and almost all households collect fuel wood from forests, mostly by the women. About 50-60 kg of fuel wood is collected and used by each household per day to meet their energy requirements. Livestock is largely dependent on forest grazing and fodder collection from forests. The degree of dependence on forests depends on the social structure of the village, as the less privileged in the village are the ones who highly depend on the forests. If anything happens to forests in the future—positive or negative—it will be the poorest among the villagers who will feel the highest impact.

Depleting forest resources

The villagers are well aware of the importance of the forests in their livelihood and their inextricable relationship with forests. They are concerned about the depletion of resources, smuggling by the timber 'mafia,' and their continued marginalization as poor people. They are also concerned about illegal timber collection by smugglers from outside their village, forest fires, and overuse of the forests as these have resulted in the degradation of their forests over time. They feel that forest degradation will ultimately affect their livelihoods and threaten their survival.

On the other hand, the local forest official has a different story. The forest guard has confided that the local villagers (tribals) help the smugglers in identifying and cutting timber from the forest as they are well acquainted with the area. The villagers also use forest fires for clearing the forest floor to collect mahua flowers and to have new and tender tendu leaves. As the villagers and the forest department blame each other for the forest fires, the end result has been the increasing degradation of their forests over the years. Gibardhan Mirdha, a middle-aged man recounts, "The stream used to flow so smooth and full when I was a child, but now it seems to flow in trickles. We do not even have enough water for

our land." All agree that forests have been increasingly degraded over the years and some species like amla (goose berry) have become almost extinct in the forests due to fire and over exploitation.

Trust deficit and institutional failure

The villagers are unable to organize themselves to protect the forests against timber smugglers or to conserve the resources through collective action and self-regulation. Over the years, it has become a 'free riding' situation, depleting the same resources on which their livelihoods depend. There is limited capacity to establish sustainable relationships and institutions. Earlier attempts to organize themselves were not successful. Even after more than two decades of JFM initiative, Khapsadera village has yet to establish the village sanrakshan samitis (the village level institution under the JFM framework, also called the JFM Committee or JFMC). In 1996, the JFMC was created, but slowly faded in 1999, as people stopped participating in meetings. There was a trust deficit between the villagers and the forest department. Villagers were not taken on board and there was inaction and no sharing of information or participation in decision making. The villagers did not know what was happening and did not see much gain from the JFMCs. The JFMC collapsed in 1999. The local official of the forest department agreed that there were a lot of issues pertaining to forest management in the area involving the people.

With increasing awareness contributed substantially by some NGOs, more involvement of the people with the forest department is now visible. The villagers have started supporting the department to protect forests. For example, by providing timely information and by regular monitoring, the villagers have reduced timber smuggling by more than 60%. Tulsiballav Dash, after working closely with the villagers of Khapsadera and the forest department, believes that community forestry and ownership of resources are needed to provide subsistence and build people's confidence to conserve these resources.

The case with FRA, which vests land and resource rights to the tribals and traditional forest dwellers, IS similar. Tulsiballav Dash feels that people have not been aware of FRA. The attitude of authorities also has not helped. Dash emphasizes the need for increased awareness on the FRA and its implications on the tribal livelihoods. The villagers believe that their lack of participation in FRA has essentially been due to the complicated procedures and the antagonism of the concerned departments (the revenue officials in particular). As a result, neither individual claims nor community claims from the village under FRA have been submitted. Mami Pradhan, the woman Sarpanch (Head) of panchayat (local self government), observed, "FRA is good and will give land to the tribal community, but we are not fully aware of the benefits." The local forest department and the revenue department officials are apprehensive as the wrong implementation of the FRA will lead to encroachments and misappropriation of forest land.

The benefits of JFM or FRA have not really reached the village. The local Forest Range Officer, Patel, observes, "In view of the existing problems regarding forest land and resources, JFM is the only way to promote forest conservation and management. The revenue department, police, panchayat, village leaders should come together to discuss the issues and overcome the problems." Villagers and civil society have different views on JFMCs in the area. Sarpanch Mami Pradhan views that ownership and management should be with the villagers and the panchayat for better, effective, and efficient forest management.

Conclusion

The story of the Khapsadera village is illustrative of the spatial and sociological dimensions of poverty in the forested regions of India. The village is characterized by interlocking disadvantages. Forestry by itself will not address the poverty in this remote village consisting entirely of SC and ST populations. Affirmative actions are called for in a number of sectors especially relating to human poverty measures such as infrastructure, education, health, and other basic human needs. Governance and delivery systems need to be improved. Above all the capacity of people to understand, to be aware, and to access

various rights, entitlements, and benefits has to be enhanced. There should also be a deliberate focus on the need for developing enabling forestry and local governance institutions.

Forest is one of the key lifelines for the people of Khapsadera village. It keeps them from falling into chronic and more severe poverty, and helps them cope with difficult situations during dry periods and drought. The critical 'upfront' intervention needed in this village is building the capacity and enhancing people's awareness to access the rights, responsibilities, and privileges arising out of national policies (such as JFM and FRA) and the potential of enabling institutions. At present, there is no facility for people to organize themselves for community action. The forest department should be pro-active and facilitative in institutionalizing community-based forest management in the village and in implementing the FRA. The people's trust deficit in government needs to be resolved. New opportunities can be developed to take forestry beyond subsistence, especially those relying on NWFP resources. The earlier these opportunities for forest-based development are explored, the better for the people and forests in Khapsadera village.

Case Study 2: Contribution of NWFPs to Poverty Reduction in a Forest Village in Orissa State, India

Geographically, Kuanrpur village lies in the tribal belt of Mayurbhanj district of Orissa state, in a remote forest location inhabited mainly by tribals (60% of the population). In terms of the Human Development Index (HDI) and per capita income, the district counts among the least developed districts of India. The old people consider Kuanrpur village to be about 100-150 years old, as they can trace back their families to three filial generations. The village has 123 households, with 400 residents living on either side of a canal, which is the mainstay of the village's agricultural economy.

Importance of forests for the people

The district supports a high forest cover of about 45% of the land area. The older generation shares the nostalgia of an entire block that was once a dense forest. The passage of time and degradation brought about by the in-migration of tribals and non-tribals from neighboring states gradually cleared the forests as settlements took over. With low per capita income and limited livelihood opportunities, the forests, particularly NWFPs, play a major role in providing cash income to the villagers from non-farm sources. The importance of NWFPs is not limited to providing cash income to the poor. NWFP resources share an organic and evolutionary relation with the people—a relation intertwined in their culture and beliefs. According to Ranjan Samal, the Ward Member from the village in Gram Panchayat, people mainly derive their income from the primary sectors like agriculture and NWFP collection. Although there are different government schemes for people living below poverty line, the people in Kuanrpur are not getting the real benefits due to leakages. For the people of this village, the forest plays a very important role especially for the landless and smallholders. They use the forests for a variety of purposes ranging from collecting medicinal herbs to grazing livestock.

Forest management

Historically, ownership and management of forests in Kuanrpur rested with the government. Until the end of the 18th century, local communities had free access to the forests and forest products. Later these forests were considered as a source of state revenue, and rules were put in place to regulate forest product extraction in the area. The forest department was then created and forests in the area were categorized as reserved forests and protected forests. Subsequently, in consonance with the Indian Forest Act, several rules were issued imposing restrictions on user rights of communities. The late 1980s witnessed a large number of local NGOs actively promoting community forest management in the district. Minnati Kisku, treasurer of newly formed Marshal Cooperative[20], traced the genesis of community participation in forest management:

[20] This is a cooperative of villagers recently formed for NWFP management and trade.

> The forest around the village was degraded due to illegal cutting promoted by buyers of logs from outside. Villagers formed a village protection committee and followed the traditional practice of thengapali[21]. Later, the village protection committee was converted into the Village Sanrakhsan Samiti (VSS) under JFM by the forest department. However, the forest department neglected the village and the VSS became inactive. Only the Panchayat Forest Act enacted in 2001 provided some relief to the villagers as it permitted the collection of 67 NWFPs from forests.

Brindavan Bindhani, a landless villager added,

> In the Panchayat discussion, we were told that we can make a claim over the forest land where we have been living traditionally. But the process and conditions required for getting the claim are very rigid and cumbersome. No one in the village up till now got a land claim because of this. Well-off families may not need forest land for survival, but we, the poor people, need it badly.

Forests for livelihoods

Livelihood options available to the people revolve around the forests, agriculture, and wage labor. Agriculture, commercial sale of NWFPs, and wage labor provide the main income opportunities for villagers, the proportions of which vary across socio-economic groups. The contribution of agriculture (mainly rice) is about 30-40% while that of commercial NWFPs is about 25-30%. With an average farm size of two acres and the majority of farmers being smallholders, the villagers rely heavily on forests for meeting many of their needs. They collect firewood, logs for ploughs, bamboo for the construction of houses, thatching grass and fencing wood from the forests. *Sal* (*Shorea robusta*), *mahua* (*Madhuca indica*), *kusum* (*Schliechera oliosa*) and *chironji* (*Bachanania clauzen*) are the most economically relevant trees to the people.

Sharda Gautam

Collected NWFPs in the hamlet are packed and transported to distant markets.

Brindavan Bindhani captured the forest-livelihood links aptly:

> Forest occupies a very important role especially for poor families. The favored tree for us is mahua or mohul. Mahua flowers are used as food supplement and cattle feed, and seed oil for lighting and cooking. Poor people cannot afford to buy costly allopathic medicines and therefore often rely on forests for alternative natural cure. Forests are the main fuel sources for cooking needs as poor people cannot purchase modern cooking fuels like LPG. Kerosene provided through the village PDS is not sufficient to meet family requirements. Every family uses about 50 kg of fuelwood per week, valued at about Rs 4,000per year. Furthermore, 90% of our livestock graze in the forest.

[21] The *thengapali* practice of protecting the forests involves two persons guarding the forest at night with a thick wooden stick. The forest regenerated because of protection. Villagers formed a fund to which every family contributed. Money thus collected was given as token of gratitude to the two persons doing *thengapali*.

Every year, on the occasion of Raksha-bandhan (an important Hindu festival in which a sister ties a small thread on her brother's wrist and the brother promises to take care of his sister), the villagers tie threads to the trees as a symbol of their love and affection for the forest. They expect that the trees will protect them from all unforeseen calamities.

Dynamics of NWFP collection

NWFPs provide subsistence and income to people especially during the lean seasons. NWFPs also provide food for the communities and more employment for people than wood products do. While the poor and very poor households, who are usually also the landless and marginal farmers, depend on NWFPs mostly for income and domestic consumption, the well-off families use NWFPs primarily for household use. *Mahua* seeds are collected mostly for consumption in the form of oil and a very limited quantity is sold for cash income. More than 200 days of the year are spent collecting *sal* leaves which they use for making *khali* (*cups*) and *dwipatri* (*plates*). Sal leaves and seeds are collected by the poorer households while the *mahua* flower is collected by all, mainly the well-off households. This is primarily because *sal* leaves and seeds are found in the thick of the forest whereas *mahua* trees grow not only on forestland but also on thicket land.

A similar pattern exists in the sale of the forest products. While the poorer households sell their products without storing and waiting for price increases during off-season, well-off households with financial and physical capacity can store their products while waiting for better prices. The former do not have much choice and normally sell to the village *kuchias* (traders), as they are in urgent need of cash. Weights and measures used in the sale of products are different across socio-economic classes. While the well-off class use standard weights and are cautious about the accuracy of measurements, the poorer class sell majority of their produce in "basket" weight, often considerably lower than the standard weight.

The major NWFPs (*mahua*, *sal* and *chironji*) contribute about Rs 210,000 annually to the villagers. The quantity of NWFPs collected by the tribals generally depends on the economic status—the very poor and poor tribals with small landholdings collect a greater quantity of NWFPs but are forced to sell a greater proportion of the collected NWFPs rather than consume these at home. This has implications. For example, medicinal herbs which were easily available in the past in forest areas are becoming extinct and are being sold rather than consumed in the household. While collection is the primary responsibility of women, decision-making on selling is generally a man's prerogative.

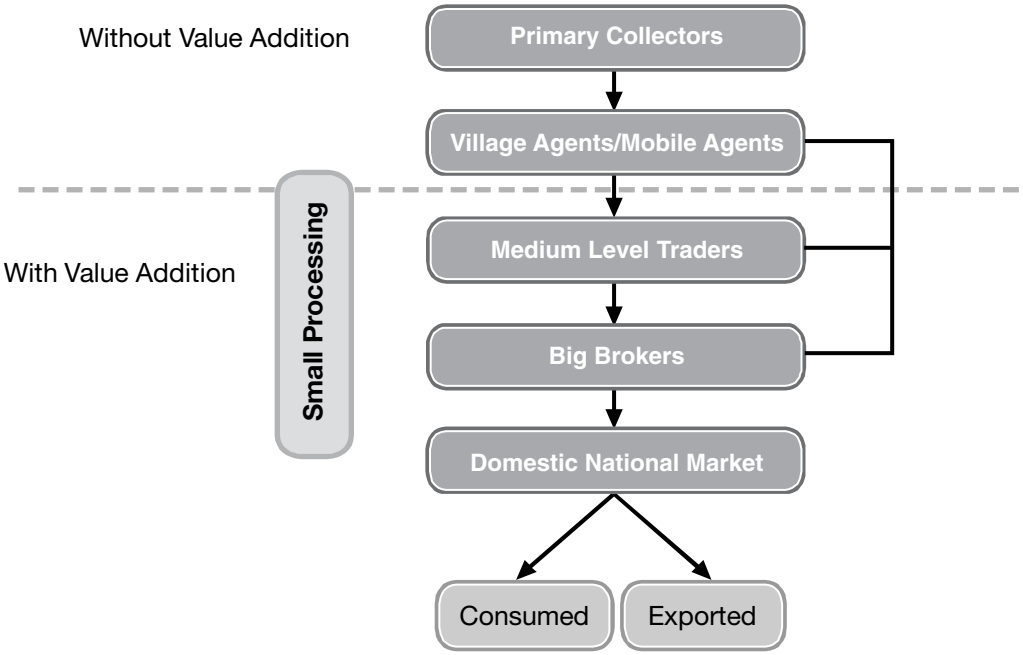
NWFP trade analysis

The NWFP market within the village is essentially a buyers' market with little or no bargaining opportunity for the primary collectors. The role of two NWFPs, namely, *mahua* flowers and *sal* leaves, is very important in the life of the people: these are traded in the local markets for cash. Although these NWFPs contribute significantly to people's livelihoods, the real economic value of the efforts put into collection does not reach the primary collectors. The value chain for the NWFPs in the village is illustrated in Figure IV.2.

In the case of *sal* leaves, value-addition takes place locally and the finished product is transported to distant trading locations, whereas products like *sal* seeds and *mahua* flowers reach the adjoining trading hubs in Chattisgarh and Jharkhand states and even to national markets like New Delhi, Kanpur, and Chennai. Sal seed is even exported to countries like Germany as a substitute for cocoa butter.

In the Kaptipada cluster of which Kuanrpur village is a part, the bulk of the NWFPs are collected from the farmers' doorsteps by village agents contracted by traders based at the block level. Commercial NWFP collection is next to agriculture in its contribution to the poor and very poor households' income (about 25-30% of their cash income). Another important feature of commercial collection of NWFPs is its importance during the lean season when other livelihood opportunities are minimal. The NWFPs keep them going in adverse situations and act as the safety net for the poorest households.

Figure IV.2. Value chain analysis



Source: Unpublished reports and discussions with villagers and traders.

Challenges faced by villagers

With low or no value-addition at the primary collectors' level and limited access to end-consumers, the villagers sell a major portion of NWFPs to intermediaries who operate in the area as commission agents. The NWFP value chains are very large and fragmented, and the role of primary producers ends at the very start of the chain, where the returns are lowest. Situated in remote areas, primary collectors do not have access to the higher levels of the NWFP value chain. The intermediaries withhold market information from the villagers and take advantage of this to secure high returns on NWFPs. The collectors lack the capacity for sustainable harvesting, processing, quality control, value addition and trade. Bhimal Khilar, a landless villager shared the concern,

> We are caught in a cycle. Since we are poor, we cannot own processing facilities and therefore we have to be satisfied with whatever the traders offer us for the raw products. With low returns, we do not have much to save and invest in processing machines.

Nityan and Mallick, a grocery shop owner, added that the biscuit manufacturer can decide the price and print it on the packet, but the poor NWFP collector cannot. Traders control the market and decide the prices, both during on and off seasons, and the intermediaries and local traders exploit the primary producer in weighing, grading, and sorting. Furthermore, forest dependent households lack access to credit that limits opportunities for value addition and compels them to "distress selling," especially during the peak harvesting season. As one collector wished,

> We have no cash for day-to-day needs. So we have to sell at whatever price is offered by the trader. If only we have somebody to give us loans for meeting our cash needs and pay back when we sell the NWFP, we can wait for better prices and need not resort to distress selling.

Jagabondhu Gan, caught up in a debt trap incurred from the marriage of his two daughters commented,

> Alleviating poverty is not possible without people getting the true value of their produce. For moving beyond subsistence and leading a good life, people's efforts for better income generation must be supported. Enterprises managed by the primary collectors of the forest produce can perhaps enable them earn the real share of the efforts.

The real challenge in Kuanrpur village is how to overcome the institutional failure in providing a venue for people to organize themselves for collective community action. Due to multi-pronged disadvantages, communities are not able to come together and fight for their rights, entitlements, and access to resources in a meaningful and effective way. The government, especially the forest department, should facilitate in institutionalizing community-based forest management in the village. In the short term, it could be through re-organizing the currently defunct JFM structure. There is also a compelling need to start building the capacity and awareness of, as well as trust among, the communities. Dibakar Mohapatra, field manager of the newly-formed Marshal Cooperative concludes:

> Community-owned organizations like cooperatives have high potential for ensuring that NWFPs do not remain just a safety net but become a climbing rope for the poor to come out of poverty. The Orissa Panchayat NWFP Act of 2001 allowed 67 NWFP items free for collection by people. The time is ripe now to make this right become the prime mover for strengthening community level trade channels, processing, value addition, and marketing.

Conclusion

NWFPs are critical safety nets for the families of Kuanrpur village, though the extent of dependency varies for the poor and relatively well-off families. Poor households depend more on NWFPs for cash income to meet their needs including housing, children's education, nutrition, health, and spiritual. Forests in general and NWFP in particular help reduce poverty and provide livelihoods. NWFPs are a natural safety net, especially when there is a bad crop due to rainfall fluctuation. But despite this significant contribution to poor people's daily lives, NWFP has yet to become a predictable and sustainable income source for the poor. Institutional weaknesses lead to uneven market mechanisms that benefit intermediaries and traders and siphon off the larger share of the value chain while the poor continue to remain poor. Community-based organizations that can collectively trade the forest produce can increase the returns from NWFP for the benefit of the poor. Government and non-government organizations must endeavor to promote such community-based organizations and enable establishment of proper infrastructure such as processing machines and storage facilities. Commercial NWFP in Kuanrpur has great potential for alleviating poverty, but it has to be given more support and focus with enabling interventions.

Case Study 3: Impacts of Ecotourism on Tribals in a Forest Village in Kerala State

The Athirapally waterfall along Chalakudy River is the most well-known waterfall in Kerala state. Popularly called the "Indian Niagara," the scenic surroundings, lush green forests, and the sight of the mighty river falling from a height of 80 feet make it a 'hotspot' for tourists. The surrounding forests of Vazhachal area constitute one of the richest biodiversity areas in India[22]. The river and the forests form a unique ecosystem of very high biodiversity value. The Vazhachal Tribal Settlement near the ecotourism spot is inhabited entirely by the Kadar tribe. The Vazhachal settlement is made up of 52 households (total population of 164 people), all below the poverty line. Literacy rate is only 35% and other HDI parameters are low compared to those of the non-tribal population. The Kadar tribe is one of the forest dwelling non-agrarian tribes of Kerala and the Western Gahts who used to be nomadic but who now live in settlements inside the forests. They do not practice agriculture or livestock-rearing and are dependent on forests and the river for practically all their needs. Geetha, a young Kadar tribal girl, relates,

> The water and surrounding forests is our lifeline. The waterfall, the river, and the forests provide livelihoods for all the people living here, without destroying the forests.

[22] There are 24 endemic species of flowering plants of the Western Ghats (one of the biodiversity hotspots of India) of which 10 are rare and endangered. The Chalakudy River supports 85 species of fresh water fish, and 35 species are endemic and nine are endangered.

Dr. Amithab Bachan

A popular tourist attraction in Kerala state, the Athirapally waterfall sustains income generating activities for the Kadar tribe members who help in protecting the surrounding forests and maintaining the tourism site.

Development projects, dislocation and depleting livelihoods

The construction of a series of reservoirs upstream of the Chalakudy River and large-scale forest plantations from 1940 to 1980 had deleterious impacts on the forests and biodiversity, more so to the forest-dependent Kadar tribe. The infrastructure submerged rich valley forests and displaced Kadars from their original homes deep inside forests. Adding to the misery of the tribals, about 40% of the natural forests of the Vazhachal forest were converted into plantations of teak, eucalyptus, and other commercial species. Employment opportunities generated from plantation activities mainly went to the non-tribals of the area and workers outside the settlement. These events resulted in the fragmentation of the remaining natural forests, depletion of the forest resources, and increased biotic pressure on the remaining forests. It is estimated that over the last 30-40 years, 60% of the forests underwent some form of degradation and detrimentally affected the forest-dependent Kadar community of the area and many starved. To meet their immediate needs, the people turned increasingly to the forests and river, while others got involved in illegal trade of forest products, poaching of animals, tree felling, and illicit brewing of alcohol.

Winds of change: Ecotourism for conservation and livelihood

Vazhachal's main natural attractions are the waterfall and the beautiful forest landscape. Even before the forest department took control of the area, the tourist spot was already drawing a large number of visitors. When the commercial potential of the tourism became evident, shops and hotels sprang up along the jungle routes. Some forests were destroyed as trees were felled for construction materials. Forest fires became frequent, destroying the regenerative capacity of forests. Many tribals were engaged in illegal felling of trees, construction of make-shift hotels and shops, and collecting fuelwood for sale. Unregulated tourism also brought with it pollution, garbage, alcohol and drugs, increased collection of fire wood and timber from forests, and other social problems. Faced with limited livelihood opportunities, tribals of Vazhachal were also sucked into this vicious circle and there were serious concerns about the socio-cultural, environmental, and ecological well-being of the forests and people.

The Joint Forest Management (JFM) program, also known as Participatory Forest Management (PFM),

Members of the Forest Protection Committee in their uniform, are in charge of managing the tourism site, including the management of wastes within the picnic area.

Photos on this page: Amithab Bachan

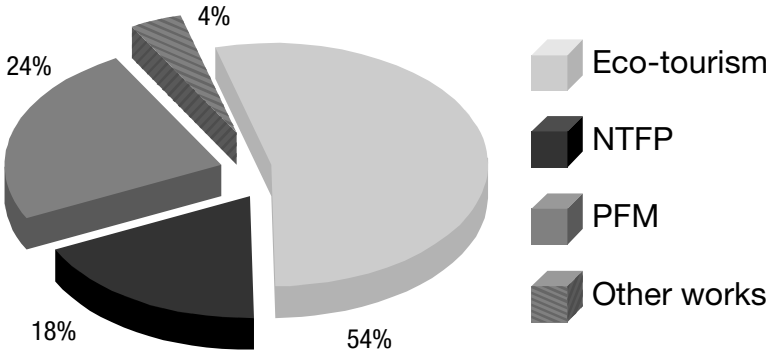
ushered in some changes in Kerala. JFM was actively introduced in the state in the late 1990s and took some time to reach the Vazhachal forest areas. The forest department took the first step and constituted the village level JFM Committee in 2002, chaired by an elected member from the tribals. Initially, it was difficult for the department to bring the tribal people to agree on collective action under an institutional set-up. Eventually, the forest department succeeded in winning the confidence and trust of the tribals through a series of awareness and capacity-building programs. Changes started to happen after the JFM was operational. A participatory microplan and visitor management plan brought order to the area and many of the illegal activities were eliminated, not by force, but by providing ecotourism-related livelihood opportunities.

Ecotourism initiatives under JFM have contributed to poverty reduction of the Kadar tribes in many ways. At least one member from each household works with the ecotourism project in various activities, which includes visitor management, garbage management, forest patrolling, forest fire prevention, forest products trade, etc. A group of tribal people (25 to 30) serves as guides or facilitators in tourist spots, trekking trails, and camping spots inside the forest. They are provided with green uniform that gave them a sense of pride, authority, and self-respect that they seemed to have lacked before, and afforded a real incentive for the tribals to actively participate.

Innovative mechanism for resource generation

Apart from eco-tourism, the community was allowed to use the other local forest and river resources. The relative contribution to livelihoods of tribals from different activities is given in Figure IV.3.The JFM Committee helped provide many opportunities. A Self-help Group was started for processing NWFPs, such as honey, dammar, resins and plant extracts. The processed NWFPs were packed and marketed under abrand name and the sales outlet was strategically located near the waterfall. The total value of NWFPs gathered from the forest in one year by all households was estimated at Rs400 000.

Figure IV.3. Income from different activities



Before the ecotourism project was introduced in Vazhachal under JFM, the forest department used to collect a small fee from visitors for the use of the picnic spots and the money (which was not a large sum) was credited to the state exchequer. The people never cared about how much the government collected or why it was collecting money, as they were not involved in the fund management. Later with JFM, the community assumed the role of a "caretaker" and modified the tourist spots into a more regulated and managed site. Consequently, the number of tourists more than doubled during the last 10 years with 1.05 million tourists visiting the area in 2010. However, this also required more financial resources for providing facilities and protecting the forests. The influx of tourists was leveraged to generate additional resources through an innovative mechanism which helped provide enhanced livelihoods and improved forest conservation.

A service charge of Rs 15 is now collected from visitors for the use of facilities and services provided in the ecotourism area. Of this, Rs 4 goes to the government and Rs11 goes to the VSS to be deposited in a corpus fund to be used for expenses related to tourism management, river protection, forest protection, tribal welfare, improving livelihood, and infrastructural development. To date, the VSS has collected about Rs 10 million. For visitors coming from far-away places, Rs15 is a very small amount compared to their total expenditure. The general feeling shared by the community, forest department, and tourists is that the service charge helps provide improved services for the enjoyment and safety of the tourists. By providing alternative livelihoods to the poor tribal people, the pressure on the forests (and biodiversity) has been reduced and the tribal community is gradually getting back a sense of belonging to the forests and the ecosystem.

Voices of the people

The voices of the people from the field share an appreciation of the ecotourism initiative started by the VSS under the JFM framework (Box IV.2).

An elder from the Kadar community added that it is not their tradition to destroy the forests, and that they used to live in the wet evergreen forests since birth, owning very little land. He explained that in other forest areas in the region, for example, Edamalayar area, the people are clearing the forests to cultivate the land. The Kadars need opportunities to manage the forests entirely and not just the activities related to ecotourism. He concluded, "We need a better hold in management."

According to some nature lovers of the area, tourism activities should not be concentrated in the present

Box IV.2. Voices of the people

According to a local forest official,

> Over the years, there has been tremendous increase in the number of tourists, going beyond the carrying capacity of the area. Many people used to go beyond the Vazhachal picnic spot and deeper into the forests. This not only interfered with the wildlife protection in the area but also put stress on the forest department struggling to cope with the pressure of the tourist influx. It is only through VSS, especially the Kadar tribe's support, that we can protect the forests.

Ammini, an elderly Kadar woman who owns a shop in the area, said,

> Everything has changed now after the VSS was setup to manage tourism in the area. Now, nobody goes hungry; everybody has an assured job in the VSS. We have good amenities and good food, almost all children are going to school, and every woman has some savings.

Janaki from a nearby area aired some concerns:

> The waterfall and river provide us with livelihoods and are our lifeline. There are many threats, including proposals for Athirapally hydro-electric dam and privatizing tourism, but we are fighting against these. For almost one year, we held continuous sathygraha (protest) here against the dam, and we found support from environmentalists and nature lovers all over the country.

Shelly, a local politician says,

> Sustaining the area for tourism is not only a concern for Athirapally and Vazhachal alone: the entire area from Chalakudy up to Puliyilapara (40km east) depends on tourists. The main reason there is ecological sustainability is the joint effort of the forest department and VSS who manage the area with concern for people and ecology. Otherwise, tourism could have gone in the wrong way.

On the other hand, Mohandas, an environmental activist working in the area felt differently:

> Though tourism contributes hugely to poverty reduction, the adverse impact of tourism on the forest, river, and tribes is inevitable. The negative impacts are minimal now only because of the involvement of the tribal people. We should develop tourism into a real "eco" tourism and not promote general tourism." There are also some people like Thankappan who want to use traditional skills in conservation and emphasize the need for diversification of jobs in the forest areas.

Geetha offers this view:

> "We all agree that eco-tourism is supporting us to get out of our poverty. More than that, we now have acquired a voice to discuss our concerns, although there are still improvements needed. All the members, especially the officials, are not empowered fully to bring all problems into light," said Geetha.

picnic spots, but distributed downstream to spread the benefits of ecotourism to more people and also help to decrease the pressure of tourism in the forest areas.

Some tribal elders are very concerned about the negative impact of outside influences and culture to the Kadars. They think that their socio-cultural relationship with forests has changed in the last eight years and that this trend will continue into the future. For them, increased interaction with the outside world has brought them a different set of concerns. In their view, the traditional family and community interactions, beliefs, and culture, have been generally threatened and eroded. As an example, these elders confided that some of the tribal youth have become alcoholics.

In general, poverty among the tribals has been reduced and the forests are better protected. With better income from tourism-related ventures, they are now able to support their families and obtain education, health services, and other comforts. But they still have concerns, mainly the adverse impact on their culture and on the relationships within community and families. The increasing trend in tourist arrivals is another concern which many feel will have adverse consequences in the long term for the ecology and people.

Outlook for Forestry and Poverty Alleviation

The forestry sector in the 21st century in India is saddled with contradictions and conflicts. Old and unresolved issues still remain with a set of new issues brought about by globalization and the rapidly evolving environmental, economic, social, and technological developments. In the process, forest management has become increasingly complex and is presenting new challenges as well as new opportunities. Added to these are long-standing challenges, such as poverty and deprivation among forest communities which have still to be resolved.

Drivers of Change

The real drivers of changes may not be home-grown in the forestry sector but will be a result of events and developments outside the sector, mainly larger societal changes. It is imperative to recognize these to have a better understanding of what is likely to happen, what can be influenced, and what will remain as givens that have to be lived with and acknowledged.

Globalization. Competition and conflicts with local communities are foreseen with regard to forestlands for development purposes, such as mining, industries, bio-energy, and infrastructure. The Indian forest industry will be facing escalating raw material deficits and higher costs. With a robust regulatory regime coupled with vibrant media and civil society, the forest industry will be less dependent on government forests for raw materials.

Demography. The current population of 1.2 billion is likely to increase to about 1.33 billion by 2020. Increase in population, though slowed down, means that the absolute number of poor people will remain more or less same, but the projected demand for forest products and services may increase as the urban population is projected to increase to about 430 million by 2020. This will drive higher construction needs and demand for wood and wood products, and other goods and services.

Economy. According to Citigroup Global Markets R Research (Business Standard 2011), India's real per capita GDP is expected to grow at over six percent annually between 2010 and 2050. Whether or not this will put pressure on natural resources and threaten the livelihoods of the forest-dependent poor depends on the dynamics of growth and distributional process. Evidence suggests that economic inequalities in India increased in the post-liberalization period. The major challenge therefore will be how to achieve higher and more inclusive growth. Another challenge will be to what extent the opportunities arising out of growth are taken advantage of by forest-dependent communities for getting out of poverty.

Policies. The rights-based approaches to development will continue to play out, and new legislation on right to food and right to health might be enacted in the immediate short term. With a vibrant civil society, active judiciary and media, there will be 'push factors' for transparency, participation, democratization of institutions, and accountability. Local Self Government will be given more rights and responsibilities in resource management and governance. These developments will have implications on forest-dependent people and poverty alleviation. Forestry issues could assume more political importance. Demand for development space and jurisdictional claims on forests are likely to be 'up front' issues in the sector in the near future.

Climate change. In the international arena and negotiations, India will increasingly take a nuanced position to expand its negotiation options. Efforts would be adopted to protect the country's economic growth, inclusive development, and poverty eradication agenda. It will also be guided more by domestic policies and actions and green growth strategies. Forestry will assume greater importance, and initiatives—such as the Green India Mission[viii] under the National Action Plan on Climate Change—will follow an integrated landscape approach for increasing the quality and quantity of forest cover and improving livelihoods of poor people. India is also likely to explore the REDD plus regime in forestry that is pro-poor and augurs well for poverty reduction. However it remains to be seen how, when, and in what manner the REDD plus mechanism will be actualized on the ground.

Water. Demand for water for a variety of uses is assuming critical importance and there will be an increasing awareness on the significance of protecting the forest in critical watersheds. It is likely that the poor communities will be provided incentives to protect forests under the PES mechanism. There will be a deliberate focus on watershed programs. Linking MGNREGS with watershed programs is a possibility, given the necessity of addressing spatial poverty in dry lands of the country.

Primary production sectors. Unlike in other developing countries, agricultural expansion at the cost of forests may not pose a big threat. With about 500 million livestock population (18% of the world livestock population) that contribute substantially to the livelihoods of poor people especially in the dry lands of the country, there is a growing recognition that the grasslands need ecological restoration and integrated management to support the people's livelihoods (as in Green India Mission). An integrated view of the forestry, agriculture, livestock, and fisheries sectors in an ecosystem-based approach will be one of important focal areas for future management.

Science and technology. New developments in the field of science and technology will help the forestry sector in many ways. The use of Remote Sensing (RS) and Geographical Information System (GIS) in forestry will be mainstreamed to help management decisions in future.

Future Scenario for Forestry and Poverty Alleviation

Forest area. In view of the current trend, forest cover may increase though to a small extent, and provide more goods and services to all, including poor people. The national goal of bringing one-third of the land area under forest or tree cover will continue to be a distant dream. The trend in the decline of shifting cultivation areas in North East India will have a positive impact for increasing forest cover.

Ecological services of forests. The recognition and importance of ecological services will improve and there will be new mechanisms to transfer the compensatory benefits and incentives to people who conserve the resources. PES, REDD plus, NPV of forests for diverted forest areas, and rights under Biological Diversity Act (BDA) are some of the areas where opportunities for forest-dependent poor could improve, but not much in the immediate future. REDD plus benefits to the poor are not likely to be realized in the next five years at least. Water from forested watersheds will assume economic significance.

Forest degradation. More than the quantity of forests, the quality of forests will be the major concern in the coming years. Landscape and integrated approaches addressing drivers of degradation, rather than mere afforestation and plantations, will guide future efforts. Forest fires though will remain as the most degrading influence on forests.

Sustainable forest management. Green tree felling from natural forests are prohibited and will continue to be so in the future. Increase in productivity of plantations, biodiversity conservation, forest certification, restoration of degraded ecosystems, and wildlife conservation will be thrust areas for future management. Forest communities stand to gain from these developments provided the enabling policy and institutional platforms are in place.

Policies and institutions. Forest laws are likely to be re-aligned with the forest policy of the country recognizing the tenure, rights, and responsibilities of forest-dwelling people. It is also likely that the state will provide more space for a plurality of local institutions including traditional institutions under the Local Self Government for forest governance and resource management. However, the transition will not be without its share of conflicts and contestations. The regulatory and compliance mechanisms on forest and environment will continue to be robust and will be more institutionalized.

Community-based approaches. In spite of its deficiencies, the centrality of the community-based approach in forest management will be further consolidated. JFM will undergo changes with legal backing through the LSG route. In remote areas and with practically little presence of other arms of the government, JFM institutions could become the nodal points for delivery of a host of entitlements under different poverty reduction strategies.

Wood demand. Trees from non-forest private lands will remain the major source of timber. With the increasing demand for wood and wood products in the future, the gap in supply will be met through imports to a certain extent. Agro-forestry and trees outside forests will be the main sources of wood for forest industries, including the pulp and paper industry.

Non-wood forest products. NWFPs, including medicinal plant products, will assume more importance economically than timber from forests. More high-value products will be generated through processing, value addition, and vertical integration with markets through small and medium forest enterprises. Subsistence production of NWFPs may decline as these will be increasingly commercialized. Commercially high-value species will be domesticated and cultivated on private farm lands. The institutional framework may undergo changes at all levels reflecting the importance, huge potential for value addition, and the need for market-based approaches.

Recommendations

1. In the poverty reduction strategies of the country, forests and forestry are generally touched upon as passing references. More often they are introduced in the descriptive sections of the programs and schemes of agriculture, livestock, watershed, rural employment, and rural development sectors, and in promoting tree-planting activities. It is important that the State and Central governments recognize forestry as a sector capable of meaningfully addressing poverty issues in some of the most deprived regions of the country and sections of people. The role of forestry in poverty-reduction strategies needs a sharp and pro-active focus.
2. The overarching concern of all national and state forest policies and programmes is sustainable forest management. Livelihood issues of people, though finding a place in the management objectives, appear not to be dealt with adequately based on a robust understanding of the forestry—poverty dynamics and links, both at macro and micro levels. While it is recognized that forestry by itself cannot solve the multi-dimensional nature of poverty in the forest regions of the country, establishing effective institutional linkages between the poverty reduction processes (PRP) and national forest programs (NFP) will help in ensuring meaningful forestry-related responses in the PRP and vice versa.
3. Notwithstanding methodological problems in valuing many non-marketed benefits of forests, the knowledge base is weak in understanding the dynamics of the contribution of forestry. It lacks clarity in valuating forest resources in economic terms in the context of poverty reduction/livelihood strategies. Specific research and specialized surveys are needed at the national level to understand the value of the forestry sector.
4. Promoting forest based enterprises, e.g., NWFP-based enterprises, is one of the most effective ways to trigger broad-based job-creating rural development in India. The NWFP sector suffers from a host of problems such as poor returns to collectors, market distortions, low technology, and institutional inadequacy. Despite the growing recognition of the importance of NWFP resources for poverty reduction, there is no institutional mechanism that has the approach, reach, or the capacity to take a long-term view of the sector. A national body for the management and development of the NWFPs sector would be necessary. This body could act as the lead organization and federate the primary collectors, producer organizations, and institutions at village, district and state levels, taking a cue from the very successful example of AMUL[23] in India.

[23] AMUL is the well-known brand name of the Gujarat Cooperative Milk Marketing Federation (GCMMF), India's largest food products marketing organization, which aims to provide remunerative returns to the farmers and also serve the interest of consumers by providing a wide range of quality products. It has 2.9 million milk producer members organised into 15,322 village milk cooperative societies handling more than 9 million liters of milk daily and with an annual turnover of Rs 80,053 million in 2009-10 (~US$ 1.7 billion). GCMMF is an institution created by the milk producers themselves to primarily safeguard their interest economically, socially as well as democratically and plough back the surplus to farmers through the village societies.

5. PES is in an exploratory stage in India, but could possibly provide opportunities for poverty reduction if positioned in a socially relevant, transparent, inclusive, and decentralized manner, mainly in the areas of ecotourism, carbon, water and biodiversity. Compensatory payments to communities protecting the catchments of rivers could help their livelihoods. To start with, PES can be tried in catchments supplying water to cities and towns by levying a fee from users and ploughing it back to communities.

6. Community-based Eco-tourism is an effective instrument for conservation of natural resources and local economic development. With a bulging middle class in India and a rich diversity of wilderness and unique endowments, the demand for ecotourism is on the increase. Being context-specific, models need to be developed across the country and strategic partnerships established among local communities, government tourism agencies, NGOs, and the commercial private sector. To start with, an inventory of the best practices could be documented and disseminated to local forest institutions, especially the JFM institutions.

7. Of all the avenues to realize carbon benefits, REDD plus offers high potential in India. Resolution of the concerns related to transaction costs, lack of clarity on rights, benefits and incentive structure for the local people, and centralization-decentralization is necessary. However, initiatives could be taken to prepare the country for REDD plus such as developing national REDD plus strategy, appropriate communications strategy, benchmarking carbon capture potential of ecosystems, and improving the capacity to implement REDD plus at decentralized levels. The country should eventually be able to set up a reliable, predictable, and adequate compensation mechanism for REDD plus benefitting poor forest communities.

8. The objective of BDA, enacted as a sequel to CBD, is fair and equitable sharing of benefits arising out of the use of biodiversity and the Act mandates the creation and empowerment of state and local-level institutions. The institutions under the Act such as the State Biodiversity Boards and Biodiversity Management Committees[24] need to be revamped to ensure empowerment of the local communities and their realisation of benefits.

9. Compensatory payments to state governments for conserving forests or payments for forest areas diverted for non-forestry uses should be targeted to the poor and the money should be utilized for providing education, public health, energy, agriculture development, infrastructure, and other development in forest areas.

10. The village-level institution for forest protection and management in India is the JFMC. There are also legally-mandated institutions under different legislations on environment, governance and forest-related subjects such as those under the FRA, BDA, PESA and PRI Act. Added to these are traditional community institutions managing local resources, including forests in many parts of the country. All these play out in the same spatial arena and with the same set of communities with many overlaps. The institutional and jurisdictional claims over forests under many of these are confusing to stakeholders resulting in conflicts and inefficiency to deliver. Resolution of these contradictions has implications in reducing poverty in forests and is of critical importance. Given the mandate of PRIs under the Constitution for local governance and development, and being the integral part of the three-tier governance structure in India, the resolution of institutional mismatch is best resolved under the aegis of PRIs with a polycentric approach. Instead of being prescriptive, it would be rewarding to work with a plurality of institutions at the local level, including the traditional institutions and leveraging their relative strengths through a context-specific approach.

11. Though the communities generally manage to enjoy *de facto* benefits of using forest resources for their income and subsistence needs, the state continues to consider forests as state assets and put restrictions on local peoples' rights of access legally. However, until rural people can claim clearly-defined user rights, there is very little incentive for them to engage in long-term forest development or to use the opportunities fully for enhancing

[24] The Biological Diversity Act (BDA) provides a three-tier institutional set up of National Biodiversity Authority, State Biodiversity Boards at provincial level and Biodiversity Management Committees at Panchayat level.

their livelihoods. Resolution of policy, legal and institutional conflicts discussed earlier would define the process for securing tenure in clear and unambiguous manner. Recent remarks[25] made by the Indian Minister for Environment and Forests capture the sense on this issue.

12. Studies show that, of the two geographical regions—dry lands and forested areas—where chronic poverty is widespread, the latter represents a more complex interface of the forces causing poverty brought about by multiple disadvantages. Though national poverty alleviation programs are generally universal in application, separate targeted approach in forested areas, such as the one adopted for North-Central India, makes sense. Poverty-alleviation strategies in these areas should be complemented by support to initiatives that are aimed at overcoming the political powerlessness of people who live in remote forested regions.
13. An enabling environment for sustainable forest management and production of goods and services will help in alleviating poverty in the forested areas. This could include the following:

    - adaptive silviculture for local use forestry that meets the diverse ecological and social needs, respecting traditional knowledge and resource management skills, choice of species, and coping techniques;
    - landscape approach addressing livelihood dependencies in an integrated manner that treats forests and non-forest lands simultaneously in a given bio-physical unit and in convergence with programs such as watershed programs;
    - easing regulations on harvesting and transit of forest produce to encourage tree-planting and forest/tree-based enterprise activities;
    - capacity-building, awareness and communication to enable the communities to capture potential livelihood opportunities from forests and acquire a clear sense of their legal rights and access over the resource; and,
    - community facilitation through building a cadre of community foresters from among the skilled local community youth to act as a bridge between the communities and the service providers.

References

Adhikari, B. (2009). *Market-based approaches to environmental management: A review of lessons from payment for environmental services in Asia.* ADBI Working Paper 134.Tokyo: Asian Development Bank Institute. Retrieved from http://www.adbi.org/workingpaper/2009/03/26/2906.market.based.approaches.environmental.mngt/

Angelsen, A. & Wunder, S. (2003). *Exploring the forest-poverty link: Key concepts, issues and research implications*. Occasional Paper No.40. Indonesia: Center for International Forestry Research.

Baginski, S. et. al. (2009). *Redressing 'historical injustice' through the Indian Forest Rights: Act 2006. A historical institutional analysis of contemporary forest rights reform*. IPPG Discussion Paper Series, School of Environment & Development. University of Manchester, Manchester.

[25] Remarks quoted in the Indian newspaper, 'The Hindu' of January 04, 2011: "We need a complete paradigm shift in the way we look at forest management. Our model is based on the primacy of the state, but we must shift to a three-fold model of state, communities, and partnership between the two… Out of the total 70 million hectares, I'd say about 35-40 million hectares could be shifted to exclusive community management or partnership between the Forest Department and communities," the Minister for Environment and Forests said, adding that these were "preliminary estimates."

Bahuguna, V.K., Mitra, K., Capistrano, D., & Saigal, S. (Eds.). (2004). *Root to canopy: Regenerating forests through community state partnerships*. New Delhi: Winrock International India/ Commonwealth Forestry Association India Chapter.

Bhat, K.M. [n.d.]. *Industrial utilization of bamboo and rattan in India: An overview*. Peechi, India: Kerala Forest Research Institute.

Bhattacharya, P., & Hayat, F. (2004). 'Sustainable NTFP management for rural development: A case from Madhya Pradesh, India'. *International Forestry Review* 6 (2).

Bird, N., & Dickson, C. (2005). *Poverty reduction strategy papers: Making the case for forestry*. ODI Forestry Briefing, Overseas Development Institute, London, U.K.

Business Standard. (2011, February 5). Retrieved from http://www.rediff.com/business/slide-show/ slide-show-1-india-to-become-the-worlds-largest-economy-by-2050/20110502.htmCentral

Central Statistical Organization. (2004). *National accounts statistics*. Government of India, New Delhi: CSO.

Community Forestry International. (n.d). *Payment for environmental services: A case study from Meghalaya, NE India*. Retrieved from http://www.communityforestryinternational.org/ publications/mini-reports/PES_flyerMawphlang_Sacred_Forest.pdf

Chopra and Dasgupta (n.d). *The nature of household dependence on common pool resources: An empirical study in India*. New Delhi: Institute of Economic Growth.

Chopra, K. and S. C. Gulati. (2001). *Migration, common property resources and environmental degradation: Interlinkages in India's arid and semi-arid regions*. NewDelhi: Sage Publications India Pvt. Limited.

Chronic Poverty Research Centre (CPRC). (2011). *India chronic poverty report: Towards solutions and new compacts in a dynamic context*. New Delhi: Indian Institute of Public Administration.

Chronic Poverty Research Centre (CPRC). (2008). *Chronic poverty report 2008-09: Escaping poverty traps*. University of Manchester, Manchester: Chronic Poverty Research Centre.

Das, N., & Sarker, D. (2008). *Distributional aspect of forest income: A study on JFM and non-JFM forest dependent households. Calcutta*: Working Paper N.6, Centre for Studies in Social Sciences. Retrieved from http://mpra.ub.uni-muenchen.de/15330/

Dasgupta, P. (2010). *Impacting livelihoods through institutional innovations: Income and food security from the Indian Forest Rights Act*. IPPG Discussion Papers. University of Manchester, Manchester: School of Environment & Development.

Dhyani, S.K., Samra J.S., Ajit, A.K., Handa & Uma. (2007). Forestry to support increased agricultural production: Focus on employment generation and rural development. *Agricultural Economics Research Review*, Vol. 20 July-December 2007.

ESPASSA. (2008). *A situation analysis for India and the Hindu Kush Himalayan region. Ecosystem services and poverty alleviation study in South Asia (ESPASSA)*. New Delhi: The Energy & Resources Institute.

FAO. (2010). *Woodfuel development and climate change mitigation: Case studies from Brazil, India and Mexico*. Forest and Climate change Working Paper 6. Rome: Food and Agriculture Organizations of the United Nations.

Forest Survey of India. (2009). *State of forests report 2009. Forest survey of India. Government of India, Dehradun*: Ministry of Environment and Forests.

Forest Survey of India. (1995). *State of forest report 1995*. Government of India, Dehradun: FSI.

Forest Survey of India. (1995).*Extent, composition, density, growing stock and annual increment of India's forests*. Dehradun: FSI.

Forest Survey of India. (1999). *State of forests report 1999. New Delhi*: Government of India.

Gera, P. (2002). *Women's role and contribution to forest-based livelihoods.* UNESO and UNDP.

Himanshu, R. (2010). Towards new poverty lines for India. *Economic & Political Weekly* 45(1), 2-8 January 2010.

IFAD. (2011). *Rural poverty report 2011—New realities, new challenges: New opportunities for tomorrow's generation*. Rome, Italy: International Fund for Agricultural Development.

International Food Policy Research Institute (IFPRI) (2010). *Global Hunger Index: The challenge of hunger – Focus on child undernutrition*. Washington, DC: International Food Policy Research Institute.

International Labour Organization (ILO) (2007). *India decent work country programme 2007-2012. Geneva*: International Labour Organization.

Jairam calls for paradigm shift in forest management (2011). *The Hindu News Paper.*

Joshi, S. (2003). *Super market.* New Delhi: Down to Earth, February 28, 2003.

Kannan, K.P. (2010). Estimating and identifying the poor. *Journal of Human Development* 4(1): 91-98.

Kaushik, R.B. (2007). *Poverty alleviation and pro-poor growth in India*. New Delhi: Asian Institute of Transport Development.

Manoharan, T.R. (2000). *Natural resource accounting: Economic valuation of intangible benefits of forests.* RIS Discussion Paper # 04/2000. New Delhi: Research and Information System for the Non-aligned and Other Developing Countries.

Mehta, A.K. & Shah, A. (2003) Chronic poverty in India: Incidence, causes and policies. *World Development* 31(3).

Ministry of Environment and Forests. (1988). *National Forestry Policy (1988)*. New Delhi: Government of India.

Ministry of Environment and Forests (1999). *National Forestry Action Plan India*. New Delhi: Government of India.

Ministry of Environment and Forests (2006), *Study of alternatives for meeting the demand of raw materials by wood-based industries.* New Delhi: Government of India.

Ministry of Environment and Forests (2006a). *Measuring milestones: Proceedings of the national workshop on joint forest mangement (JFM)*. New Delhi: Government of India.

Ministry of Environment and Forests. (2006b). *Compendium of environmental statistics*. New Delhi: Government of India.

Ministry of Environment and Forests. (2006c). *Report of the National Forest Commission*. New Delhi: Government of India.

Ministry of Environment and Forests. (2009). *India forestry sector outlook study.* New Delhi: Government of India.

Ministry of Environment and Forests (2010). *Report of the National Committee on Forest Rights Act*. New Delhi: Government of India.

Ministry of Rural Development (MoRD) (2009). *Report of the expert group on the methodology for the BPL census.* New Delhi: Ministry of Rural Development.

Ministry of Statistics and Programme Implementation. (2009). *Millennium development goals India country report 2009 - Mid-term statistical appraisal.* Government of India, New Delhi: Central Statistical Organization.

Ministry of Tribal Affairs. (2010). *Annual report 2009-10*. Government of India, New Delhi.

Mukherjee, A.K. (1994). *India's forests: A status report: Concepts definitions, trends, controversies*. Paper presented at the International Workshop on India's Forest Management and Ecological Revival, New Delhi.

National Commission for Enterprises in the Unorganized Sectors (NCEUS). (2008). *A special programme for marginal and small farmers*. New Delhi: NCEUS.

National Commission for Enterprises in the Unorganized Sectors (NCEUS). (2010). *Report on conditions of work and promotion of livelihoods in the unorganized sector*. Academic Foundation New Delhi.

Nayak, P.K. (2002). *Community-based forest management in India: The issue of tenurial significance*. Working Paper, Foundation for Ecological Security, Anand, India.

NSSO. (1999). *Common property resources in India,* NSS 54th round (Jan 1998 – June 1998), Report No. 452(54/31/4) Government of India, New Delhi: National Sample Survey Organization.

NSSO (1999). *Common property resources in India*, NSS 54th round. New Delhi: National Sample Survey Organization

Padhi, P.S., Panigrahi, N. & Mishra, A.K. (2006). Tribal population and chronic poverty in Orissa: A note on the North South divide. *Margin* 38(4) & 39(1): 81-90.

Pandey, C.N. & Rangaraju, T.S. (2008). *India's industrial wood balance. International Forestry Review*, Vol.10(2).

Patnaik, S. (2007). *PESA, the Forest Rights Act, and tribal rights in India*. International Conference on Poverty Reduction and Forests, Bangkok.

Planning Commission. (2006). *Report of the steering committee on rapid poverty reduction and local area development for the eleventh five-year plan (2007-2012)*. New Delhi: Planning Commission.

Planning Commission. (2008). *Eleventh five-year plan: Inclusive growth*. New Delhi: Planning Commission.

Planning Commission. (2009). *Report of the expert group to review the methodology for estimation of poverty*. New Delhi: Planning Commission.

Planning Commission. (2010). *Mid-term economic review*. New Delhi: Planning Commission.

Planning Commission. (2011). *Press notes on poverty.* New Delhi: Planning Commission.

Prasad & Bhatnagar. (1990). *Socioeconomic potential of minor forest produce in Madhya Pradesh. SFRI Bulletin* No.26, State Forest Research Institute, Jabalpur, India.

Prasad, R. (2006). *Strategy for sustainable forest management in India National Status Report for ITTO Mission to India*. New Delhi: Ministry of Environment and Forests.

Prasad, R. (2006a). Economic value of forests/green accounting and non-market valuation of forests. In *Compilation of papers for preparation of National Forest Status report on forests and forestry in India*. New Delhi: Ministry of Environment and Forests.

Press Information Bureau. (2007). *Poverty estimates for 2004-2005*. Press Release, March. Press Release, February. New Delhi.

Ravallion, M. (2007). A global perspective on poverty in India. *Economic & Political Weekly* 42(34), 25-31 October 2007.

Saigal, S., & Bose, S. (2003). *Small and medium forest enterprises in India*. Winrock International India, New Delhi and International Institute for Environment andDevelopment, London, UK.

Saxena. (1999). *NTFP policy and the poor in India*. New Delhi: Planning Commission.

Shah, A. (2010). *Patterns of poverty in remote rural areas. A case study of a forest-based region in Southern Orissa in India*. Overseas Development Institute and the Chronic Poverty Research Centre, Overseas Development Institute, U.K.

Shah, A. & Guru, B. (2004). *Poverty in remote rural areas in India: A review of evidence and issues. CPRC-IIPA Working Paper 21*. Chronic Poverty Research Centre, Indian Institute of Public Administration, New Delhi.

Singh, K. D., Sinha, B., & Sutar, P. C. (2009). *Community based forest management with micro enterprise for poverty alleviation*. Boshensingh Mahendra Pal Singh, Dehradun, India.

Singhal, R.M., Kumar, S., & Jeeva, V. (2003). Forests and forestry research in India. *Tropical Ecology* 44(1): 55-61, 2003.

Sumner, A. (2010). *Global poverty and the new bottom billion: What if three-quarters of the world's poor live in middle-income countries?* Working Paper for Comments and Debate, Institute of Development Studies, Sussex. Retrieved from http://www.cgdev.org/content/publications/detail/1424922/

Sunderlin, W. D., Dewi, S., Puntodewo, A., Müller, D. Angelsen, A., & Epprecht, M. (2008). Why forests are important for global poverty alleviation: a spatial explanation. *Ecology and Society* 13(2): 24. Retrieved from http://www.ecologyandsociety.org/vol13/iss2/art24/

Verma, M. (2000). *Economic valuation of forests of Himachal Pradesh* (mimeo). Indian Institute of Forest Management, Bhopal.

World Bank. (2006). *India: Unlocking opportunities for forest-dependent people*. India: The World Bank.

World Wide Fund for Nature – India (WWF). (2003). *Relevance of certification to the wood carving industry in India*. New Delhi: WWF India.

WWF - India. *Economic instruments for managing forest ecosystem services in India*. World Wildlife Fund-India, New Delhi. Retrieved from http://assets.wwfindia.org/downloads/economic_instruments_project_ brief.pdf

Endnotes

[i] Joint Forest Management (JFM) is the official and popular term in India for partnership in forest management involving the state forest departments and the local communities. The JFM frameworks vary from state to state as per the state-specific resolutions and are also known by different names. Generally a village-level institution, the general body of which comprises all willing households in the village, known as the Forest Protection Committee (FPC) or JFM Committee (JFMC) and the Forest Department enter into an agreement. Villagers agree to protect the neighborhood forests from fire, grazing, and illegal harvesting and in exchange, they receive the rights to collect NWFP and a share of other forest products including timber harvested from the area. A participatory micro plan is prepared for the area for development of the forests to be implemented by the JFMC, usually with financial assistance from government.

[ii] Exchange Rate as on January of the year (One US $ to Indian Rupee): 1999 – 42.47, 2000 – 43.48, 2001 – 46.66, 2002 – 48.24, 2003 – 47.99, 2004 – 45.61, 2005 – 43.61, 2006 – 44.36, 2007 – 44.20 2008 – 39.42, 2009 – 48.73, 2010 – 46.65, 2011 – 44.67, Aug 2011 – 45.37 (Source: Reserve Bank of India).

[iii] The official poverty line based on the per capita consumption level does not capture consumption patterns that are changing, nor reflect the growth of income in the economy and the inadequacy of relative weights. The Tendulkar Committee recommended that the rural poverty line should be recomputed to inter alia reflect the money value in rural areas of the same basket of consumption that is associated with the existing urban poverty line. The Committee hence estimated that the percentage of people below poverty line in rural areas during 1993-94 was 50.1 as against official estimate of 37.3 and during 2004-05 it was 41.8 against 28.3. Whether we use the new or old methodology, the percentage of

decline during 1993-94 to 2004-05 is more or less the same i.e. about 8-9%. (Press release Planning Commission 2011). There are also other assessments such as by the N.C. Saxena Committee which reports 50 % of rural population below the poverty line and Arjun Sengupta Report of National Commission for Enterprises in the Un-organized Sector (NCEUS) which considers more than 77 % below the poverty line.

[iv] **Table IV.6. Summary statistics on common property resources**

Highlights	Percentages
Common Property Land Resources(CPLR)	
Percentage of CPLR (land)	15 %
CPLR per household (ha)	0.31
Collections from CPLRs	
Household reporting collection of any materials from CPRs	48 %
Average Value of annual collections per household	Rs 693
Ratio of Average value of collection to average value of consumption expenditure	3.02 %
Nature of Use of CPRs	
Households reporting grazing of livestock on CPRs	20 %
Livestock rearing	30 %
Household Enterprise	2.8 %
Share of fuel wood in value of collection from CPRs	58 %
Average quantity of fuel wood collected from CPRs during 365 days	500 kg
Households possessing livestock	56 %
Households Collecting fodder from CPRs	13 %
Households Cultivating fodder from CPRs	2 %
Average Quantity of Fodder collected from CPRs during 365 days	275 kg

Source: NSSO 1999

[v] There are 7887 JFMCs in Jharkhand state with 2.76 million members of which more than 70% is from SC and ST communities. During the last 10 years JFMCs received about Rs.1070 million as share from bamboo and thinning (15% of the value of produce). Although this amount is generated from only about 350 JFMCs in dense forest areas, it is used in all JFMCs for income-generating activities and development. The benefits include establishing 331 NWFP enterprises; bringing 25000 ha under irrigation; introducing more than 113700 improved biomass cooking stoves, solar lighting devices in 2152 villages and 34 bio-briquette machines; forming 120 artisan SHGs; establishing handicraft emporiums in cities; pasture and diary development; producing about 10000 tonnes of lac; raising clonal pulp wood plantations with major pulp and paper companies etc. (Dr. V K Bahuguna and Dr. Anup Bhalla, personal communication, May 2011).

[vi] In the 1970s, agricultural land degradation led villagers in Sukhomajri village to practice indiscriminate free-grazing, land-clearing and tree-felling – perpetuating a cycle of land degradation and poverty. These actions affected the water supply for communities downstream. Sukhna Lake in Chandigarh city was being silted due to degradation of forests in the mountain land near Sukhomajri village. The city administration decided to compensate the villagers for giving up grazing and tree felling in the hills. Two earthen dams for water harvesting were built which provided enormous irrigation benefits as immediate incentive to initiate watershed protection work by the villagers. The villagers also introduced a market-based mechanism for equitable sharing of benefits. All the households in the village, including the landless, were assigned an equal share of the water collected in the dam in return for their participation in watershed protection activities. Hence, the landless and those with very small landholdings were able to sell their water rights to larger landowners who needed more water. The de-linking of water rights from land rights compensated the landless and the small landowners for the loss of access to traditional grazing lands and allowed them to gain an equal share of the watershed benefits. This PES scheme has, in the past 40 years, generated high economic returns for the once-poor community.

[vii] The case of Mawphlang Lyngdohship in Meghalaya state is an example of how resource management partnerships help local communities and environment. Large tracts of upland forests were getting degraded due to swidden or Jhum, deforestation, quarrying etc. The local villagers stand to lose income if they end commercial fuel wood collection and small scale quarrying, restrict grazing, and allow marginal farmlands to return to natural forests. The indigenous leadership of the communities signed

a resolution to control seasonal fires, grazing by cattle, unsustainable firewood harvesting, and quarrying. Community Forestry International (CFI), an international agency, has agreed to provide financial support of $12,131 per year and technical support for a three-year project period to the community as Payments for Environmental Services.

[viii] Green India Mission (GIM) is one of the eight missions under India's National Action Plan on Climate Change. The overarching objective is to increase the forest cover on 5 m ha of forest/non forest lands and improving the quality of forest cover on another 5 m ha, and together improving ecosystem goods and services on 10 m ha. The salient features of GIM include: improving the livelihoods of 3 million forest dependent households; enhancing a broad array of ecosystem goods and services such as biodiversity, carbon sequestration and hydrological services, and realising carbon benefits as co-benefits; providing a definitive focus on improving the quality of forests/ecosystems and not merely on increasing the quantity of forests; finding pathways to resolve institutional issues relating to tenure and user rights; providing a major focus on democratic decentralization, autonomy, accountability and inclusiveness with local communities at the heart of implementation and proposing an integrated approach of treating forest and non forest lands simultaneously in a given bio-physical unit, and addressing the drivers of degradation through cross-cutting interventions and convergence with other programs.

V

Assessment of the Contribution of Forestry to Poverty Alleviation in Indonesia

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Introduction

Forest Situation

Indonesia's forest cover based on 2005/2006 satellite imagery was 98 million ha or 52.43% of the country's total land area (187.8 million ha) (FRA 2010). Of the total forest cover, over 90 million ha are within forest areas[1] (132 million ha), while approximately 8 million ha are within non-forest areas. About 65% of the country's forest cover is located in Papua and Kalimantan (MoF 2009).

Indonesia has, however, undergone rapid forest loss over the past decades. It was estimated that forest cover declined from 84% of country's land area in 1950 to 61% in 1985, representing a 27% loss over 35 years. The deforestation rate during 1970-1990s ranged from 0.6 and 1.2 million ha per year, as vast forests were allocated for large-scale commercial logging concessions. The rate of deforestation climbed to 1.7 million ha per year from 1985 to 1997: Sulawesi, Sumatra and Kalimantan each lost more than 20% of their forest cover during this period (FWI-GFW 2002). Forest development activities began with capital-intensive production of logs or timber in the early 1970s, and continued with the development of timber processing, pulp and paper industries in the mid 1980s, and large-scale forest clearance for industrial timber plantations in the 1990s (Simorangkir and Sardjono 2006). The deforestation rate climbed rapidly to 2.8 million ha per year from 1998 to 2000, before falling to about 1.08 million ha per year from 2000 to 2005. Globally, Indonesia is one of the top 10 countries having the biggest net loss of forests per year in 2000–2005[2]. In 2007, Indonesia posted the third largest green house gas (GHG) emissions globally, and deforestation, forest degradation and forest fires accounted for about 85% of the country's total GHG emissions (Olsen and Bishop 2009).

The causes of deforestation in Indonesia are numerous and complex, with large-scale commercial logging and forest clearance for industrial timber, oil palm plantations and agriculture as the leading drivers of forest loss. The government's transmigration program of relocating thousands of people from densely populated Java to the outer islands was responsible for nearly two million ha of forest clearance from the 1960s until the 1990s (FWI-GFW 2002). The Forest Planning Bureau attributes continuing forest loss to weak law enforcement, intensive illegal logging, uncontrolled forest fires, communities' claims on forest areas, log smuggling, mining activities and conversion of forests to other land uses

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[1] Based on Law 41/1999 on Forestry, 'forest area' refer to land that the MoF designated as permanent forest. Forest areas may or may not have actual forest cover.

[2] http://www.fao.org/forestry/30515/en/

(MoF 2009). A study by the TREES Project (Stibig et.al. 2007) investigated in detail the major forest change processes obtaining in different parts of Indonesia.

Government's policy and forest management framework has generally been "one of large industrial concessions awarded to a select set of private sector firms, all geared towards spurring industrial development, energizing national economic development and securing public claims on territory" (Contreras-Hermosilla and Fay 2005). This approach has resulted in the unsustainable exploitation of forests and the inequitable distribution of benefits from forests.

With 126.8 million ha or about 68% of the country's land area designated as forest areas as of 2005 (MoF 2006), forest management is mostly under the control of the Ministry of Forestry (MoF). The three main objectives of forest land management are (i) supporting economic development, (ii) improving rural livelihoods and reducing poverty, and (iii) producing environmental services and benefits (MoF 2009).

Based on recalculation of Indonesia's forest cover for 2005 (FRA 2010), the total production forests comprise 71 million ha (74% forested); protection forests, 24.9 million ha (96% forested); and conservation forests, 18 million ha (84% forested).[3] The uneven distribution of forest management rights between the government, state-owned or private companies and local communities is reflected in only about 230,000 ha of community forests developed between 2003 and 2005 (Manurung et. al. 2007) compared to 27.8 million ha designated for logging concessions and 5.4 million ha for forest estate companies (Fey 2007). Official data of forests under customary management by indigenous peoples are not available.[4] The establishment of forests as protected and conservation areas to protect Indonesia's high level of biodiversity has often marginalized the poor in these areas and resulted in conflicts on forest ownership and access.

Economic Situation

Since its recovery from the Asian economic crisis, Indonesia's economy has been growing at an annual average of 4.5% in 2000–2004 and 6% in 2005–2008. It went down to 4.3% in 2009 (BAPPENAS 2010a) despite the 2008 global economic downturn and rose again to 6.1% in 2010. Indonesia's economy is now shifting from an agricultural base to being service and industry-based (ADB 2009). Another indicator of economic growth over the last decade is the increase in income per capita from US$ 1,186 in 2004 to US$ 2,271 in 2008, making Indonesia a lower middle-income country (BAPPENAS 2006).

Forestry has been contributing to Indonesia's economy, particularly to the gross domestic product (GDP), foreign exchange earnings, government revenue and employment (Manurung et. al. 2007; World Bank 2006). Its contribution to GDP in 1993 to 2005 ranged from 1.7% to 3.1% (Manurung et. al. 2007); however, its contribution to the GDP has been steadily declining in recent years since its highest in 1997, along with the decrease in the number of natural forest concessions (MoF 2006). Non-tax concession license fees, reforestation fund and forest product royalties have also been contributing to state revenue. Estimates of the workers employed in the private forestry sector vary. Simangunsong (2004 in MoF 2006) place the number of these workers at 338,000 during the peak of the forestry sector in 1997, which has since been declining, while Manurung et. al. (2007) estimated them to number about 500–600 thousand people, not including thousands of workers in the woodworking, small-scale sawnwood, particle board and wooden handicrafts industries. MoF (2007), on the other hand, claimed

[3] Production forests are classified into (i) limited production forests for restricted logging activities; (ii) permanent production forests; and (iii) conversion forests, which can be converted into non-forestry uses for other development objectives, such as agriculture. Protected forests are forests designated for protecting important life-supporting environmental services, such as preventing flooding, minimizing erosion and maintaining soil fertility. Conservation forests are particularly allocated for biodiversity protection. Conservation forest include strict nature reserves, national parks, wildlife sanctuaries, nature recreational park, game hunting park and grand forest park.

[4] Some *adat* forests recognized by government include 73,309 ha allocated as forests with special purposes in Krui Lampung, 1,178 ha of *adat* forests awarded to the Katu people in Lore Lindu National Park, and 690 ha of *adat* forests of the Guguk community in Jambi (Fey 2007).

that 3.4 million people were employed by forestry industries and businesses in 2000. The contributions of forestry to the GDP, which are largely focused on timber production and processing, do not account for the subsistence use and informal earnings from rural forest-based livelihoods, profit from illegal logging operations and the value of environmental services.

The above-mentioned economic measures, however, "misrepresent" the role of forestry and forest industries in rural and forest-dependent communities (MoF 2009). Although "pro-poor growth" is said to have allowed Indonesia to bring down the poverty rate from 40.1% in 1976 to 17.7% in 1996 (WB 2006; BAPPENAS 2006), the lion's share of the benefits has been bypassing the communities living in and around forests, as the trickle-down effect of the profits from the forestry sector did not significantly redound to these communities (Safriti 2010). Serious policy efforts are necessary to allocate huge revenues being derived from timber and mineral resources in the forest areas to local poverty alleviation or to ensure that long-term investments in human, financial, physical or natural assets for communities in and around forests translate to greater share of benefits to local communities (Wollenberg et. al. 2004). However, rather than improving the welfare of communities in previously resource-rich areas, the unsustainable exploitation of resources has led to the loss of resources and worsened the poverty situation (UN CCA 2004).

In the late 1990s, Indonesia started to experience a "forestry crisis" (Barr et al. 2006) with declining stocks of timber following decades of rapid deforestation driven by the overcapacity of the wood processing sector. The *hak pengusahaan hutan* (HPH) timber concessions (and subsequently the timber industry) began to decline toward the end of the New Order Regime owing to several factors, including (MoF 2006):

- mismanagement of forest resources leading to shortage of supply of raw materials;
- slow progress in industrial timber plantations;
- conflict over tenure with local communities; and
- high business transaction costs.

Besides insufficient supply of raw materials and over-capacity (which is driving illegal logging[5]), stakeholders in the timber industry also identified other major problems besetting the industry: namely, (i) industry inefficiency, (iii) low product competitiveness, (iii) diminishing market share and (iv) low added-value of wood products (Manurung et. al. 2007). Intensifying forest plantation development is seen as the primary strategy to ensure sustainable and legal timber supply (Manurung et. al. 2007; MoF 2007).

Poverty Situation

Indonesia is an early achiever of Millennium Development Goal (MDG) 1 of halving the incidence of extreme poverty, by reducing the proportion of its population living on less than US$ 1/person/day from 20.60% in 1990 to 5.9% in 2008. Raising the target for poverty reduction, however, the government aims to reduce poverty using the national poverty line of US$ 1.50/person/day from 13.33% in 2010 to 8–10% in 2014 (BAPPENAS 2010b). Likewise, the increasing trend in the country's Human Development Index (HDI) values (0.458 in 1990; 0.500 in 2000; 0.561 in 2005; and 0.600 in 2010[6]) represents some improvements made in terms of human development (i.e., in improving people's access to education and health, and purchasing power). There are, however, variations in the HDI across the country's provinces.

Among the major causes of poverty and hunger in Indonesia are (i) unemployment and a lack of adequate livelihood opportunities, (ii) gender and cultural inequalities, (iii) over-exploitation of natural resources and hunger, and (iv) insufficient budgetary allocations to key human development sectors, (UN CCA 2004). Further, poverty among indigenous peoples in the country (estimated to number 50–70 million),

[5] A substantial proportion of the timber supply is harvested illegally.
[6] Indonesia is in the medium human development category and ranks 108th out of 169 countries in 2010.

is caused by (i) lack of recognition and protection of their rights to their land and natural resources, (ii) transfer of lands to outsiders and poor quality of land, (iii) development activities, mainly logging, mining and plantations, (iv) degradation of the natural resources, (v) lack of education and poor health, (vi) limited access to information, and (vii) problems in transportation (AMAN 2010).

Reducing poverty in Indonesia, a large archipelagic country with diverse conditions, poses several major challenges. One, there are significant disparities in poverty levels among the provinces that are in part reflected in the gap between the urban and rural areas (BAPPENAS 2010a; WB 2006). Of the country's 33 provinces, 17 provinces have a poverty rate below the national average (13%). Provinces with poverty levels twice the national average include Papua (37%), Papua Barat (35%) and Maluku (28%) (BAPPENAS 2010a). A related challenge is that, while the poverty rate is higher in the eastern provinces and in more remote areas (where population is smaller), most of the country's poor are living in the densely populated western provinces (WB 2006). In 2010, the poverty rate in rural areas was 16.56%, which is significantly higher than the 9.87% rate in urban areas. While the country is fast urbanizing, there are still more households in rural than in urban areas. Two, almost one-half of the population are "near poor", living just above the national income poverty line of US$ 1.50/day, and are at risk of slipping into poverty in case of price increases, unemployment or natural disasters (WB 2006; BAPPENAS 2010b). Three, the income poverty measure does not represent the real poverty situation in Indonesia: households that are not income-poor may be poor because of their lack of access to basic services and their poor human development levels (WB 2006).

There are no official data on the population living in forest areas and the poverty situation in these areas (Fey 2007). Citing Brown (2004) and Muliastra and Boccucci (2005), MoF (2009) estimates that about 50–60 million people dwell in mostly rural, state-claimed forest zones, of which 20% are poor. People living in and around forests comprise one of the largest groups of poor people in Indonesia (Wollenberg et al. 2004). Commercial utilization of forest resources, wherein forest areas are opened to concessions and the people's resource bases are subsequently degraded, has reduced the capacity of the people dependent on these forests to access natural resources (Sumarjani 2006 in MoF 2006). Compared to villages away from forests, villages in and near forests have higher proportions of poor households and are worse off in income- and non-income measures, including availability of infrastructure (CESS-ODI 2005). In rural villages, compared to households that are better-off, poor households depend more on incomes from forests, which serve as their important resource base and 'economic safety net' (Wollenberg et. al. 2004).

Poverty in and around forest areas is closely related to access to and quality of resources as well as lack of access to education, health services, housing and other public facilities, and the government's weak capacity to provide social services fails to improve the situation (MoF 2009). Getting out of chronic poverty is difficult, because the lack of infrastructure and the distance from markets and social services hinder the poor from shifting to better livelihoods (Wollenberg et. al. 2004).

Poverty and Forest Policy in Poverty Reduction Policy

National Poverty Reduction Strategy

Indonesia's National Poverty Reduction Strategy (*Strategi Nasional Penanggulangan Kemiskinan* or SNPK), which was finalized in 2005, defines poverty[7] as a situation in which a person or a group of people are not able to adequately exercise their basic rights to live with dignity. SNPK adopted a rights-based approach to development, calling on the state to undertake measures to recognize and protect the basic rights of the poor, which include the rights to food, education, participation and

[7] The Central Bureau Statistics (BPS) defines poverty as inability to sufficiently meet minimum requirements, comprising food (2,100 kg calories/person/day) and nonfood needs that include health, education, housing, clothing and other services and goods (BAPPENAS 2008). BPS set the national poverty threshold in 2007 at IDR 166.7 thousand/capita/month (or approximately US$ 0.65/day).

land tenure security. The rights pertaining to forestry and natural resource management include the following (WB 2006):

- right to land by guaranteeing and protecting individual and communal property rights, protecting customary communities and vulnerable groups and increasing the involvement of poor communities in spatial and land-use planning and implementation;
- right to resource access by increasing the means for the poor and communities to manage and use natural resources and the environment in a sustainable way
- the right to employment, including improving the capacity of poor communities to pursue businesses and enter labor markets and promoting small and medium enterprises and cooperatives

Among the forest-related problems of the poor are inequality of land ownership and landholding, limited access to forest and natural resources and low participation in development planning and implementation (Ibid.).

Prior to the SNPK, the environmental aspects of poverty reduction approaches had not been adequately considered in national development planning (UNEP n.d.). With regard to the rights to environment and natural resources, the SNPK recommended policies to (i) ensure fair and sustainable access of the poor to natural resources; (ii) improve the capacity of the poor to use and manage natural and environmental resources; and (iii) strengthen the role of civil society and traditional and local organizations (Ibid.). The pillars for reducing poverty are (i) creation of opportunities for the poor; (ii) community empowerment; (iii) capacity building; (iv) social protection; and, (v) strengthening of global partnerships on poverty alleviation. Integrated in the rights-based approach are good governance, decentralization and elimination of gender discrimination and environmental sustainability.

The SNPK and MDGs have been incorporated in the Medium Term Development Plans for 2004–2009 and 2010–2014. The Medium-Term Development Plan[8] (*Rencana Pembangunan Jangka Menengah Nasional* or RPJMN 2010-2014) is the second phase of implementation of the Long-Term Development Plan (*Rencana Pembangunan Jangka Panjang Nasional* or RPJPN 2005–2025), which envisions an Indonesian nation that is self-reliant, advanced, just and prosperous by 2025. The second RPJMN includes reducing poverty and unemployment and providing the people equal access to public services, economic facilities and infrastructure in its national development missions (BAPPENAS 2010).

Increasing people's welfare is one of the government's top priorities for 2010–2014. Attaining and maintaining high economic growth (7% by the end of 2014) is critical for generating job opportunities and supporting government projects to achieve the target of RJPM 2010–2014 of reducing absolute poverty from 14.1% in 2009 to 8–10% in 2014. The development of rural areas will be pursued through strengthening the agriculture sector and encouraging the growth of small and medium enterprises (SMEs) and cooperatives. Related to the above pillars for reducing poverty, the strategies include: (i) improving credit facilities for SMEs; (ii) empowering the poor through better access to and use of resources to improve their welfare; (iii) improving the poor people's access to social services; and, (iv) improving the provision of social protection to the poorest of the poor (BAPPENAS 2010a). RJPM 2010–2014 also aims for a just and inclusive development, particularly for the economically, socially and politically marginalized groups (i.e., those in "left-behind", frontier, outermost and post-conflict areas).

Forestry sector development is a fundamental part of national development; hence, forestry planning is inseparable from national development planning (MoF 2006). Under RJPM 2010-2014, reference to increasing productivity and value-added products from processed forest yields is included in the development of Kalimantan. This is in line with the National and Regional Spatial Plan, which states

[8] The RPJMN 2010-2014 serves as a basis for ministries and government agencies in preparing their Strategic Plans as well as for regional governments in their formulation or updating of regional development plans to attain development targets. (BAPPENAS 2010).

that the development of the Kalimantan region is directed at maintaining areas that have a conservation function, rehabilitating environmentally degraded areas in the context of supporting the sustainability of the utilization of forest, mining, agricultural, marine, coastal and small islands resources, reducing the risks of natural disasters, and developing sustainable marine, agriculture, estate, mining, and forestry-based processing industries (BAPPENAS 2010a).

Forestry Policy

Indonesia's forest policy and management framework during the New Order Regime (1967–1998) was mainly oriented toward large-scale commercial timber production and processing to support national economic growth. Although there have been some shifts in forestry policy over the last decade with the issuance of new laws and regulations that allow for more space for local communities to play a role in state forest management, forestry policies and management in Indonesia continue to prioritize large-scale exploitation activities as contributing to economic development, with less consideration for sustainability and ecological and social values (Leimona et. al. 2009). Forest policies encompass numerous laws and regulations that are complicated, not well-integrated and—as some analysts noted—"not in the best interest of the people" (MoF 2006).

In the 1960s, the government of Indonesia consolidated state authority over the country's forests through the Basic Agrarian Law (1960) and the Basic Forestry Law (1967). Under these laws, the government assumed control and management of the country's forests. Subsequent laws—Law 1/1967 on Foreign Investment, Law 6/1968 on Domestic Investment and Government Regulation (GR) No.21/1970 on Forest Logging Concessions and Rights of Collecting Forest Produces—served as the legal foundation of the New Order regime (1967–1998) for large-scale timber exploitation and forestry investment (Safriti 2010). The laws catered to the timber industry as a source of revenue for economic growth. Concession rights were granted to state-owned and private companies (domestic or foreign) for timber and plantations, without concern for the sustainability of forests or fair sharing of benefits with communities living in and near the forests and with very limited participation from these communities (Simorangkir and Sardjono 2006).

Act No 5/1960 recognized the claims of indigenous communities living in forest areas, but their rights were generally ignored, overruled or granted minimal recognition. The Law on Forest Planning (PP 33/1970) failed to include community participation in the setting of forest boundaries and to ensure compensation for communities for lands lost to concessionaires, thus weakening policies that gave some recognition to traditional management of customary forest lands (Poffenberger et. al. 2005). During the New Order regime, a lot of conflicts over land tenure emerged but the people could not openly complain or protest. Further, during the 1970s and 80s, forest communities were stigmatized as illegal practitioners of "slash and burn" agriculture and primary causes of deforestation. This was in part adopted to draw attention away from the culpability of the commercial timber industry (Ibid.). The disregard for the people's customary ownership and rights to forest lands and resources led to rural poverty and conflicts.

Laws favorable to commercial logging and processing operations spurred large-scale forest exploitation from the 1960s to the present, which contributed to the country's economic growth but had limited impacts on local communities' welfare and livelihoods. Although MoF policies upheld centralized control and timber production throughout the Soeharto regime, some efforts explored community forestry as an option for managing the forests with the support of development agencies. During the mid-1990s, the MoF passed policies related to community forestry, including the Community Development Program (CDP or *Pembinaan Masyarakat Desa Hutan* or PMDH) that obliged timber concessions to address some of the negative impact of their operations to local villages and a Ministerial Decree issued in 1995 on Community Forestry granting limited user rights to rural villages in state production and protection forests as part of the objective of regenerating degraded forest lands.

During the *reformasi*, the Decentralization Policy (Regional Autonomy Law No. 22/1999) and the Revised Forestry Law (Act No. 41/1999) were passed. Act Number 22/1999 on Regional Autonomy

decentralized many functions of the central government, including various aspects of forest regulation and management, to the provincial and district governments. Inspired by the *reformasi*, advocates of community-based forest management (CBFM) pushed for the greater recognition of communities' ownership of and rights to forest resources. Act No 41/1999 on Forestry provided a legal basis for CBFM (Safriti 2010) while "promoting social objectives by recognizing forest land tenure and user rights and allowing individuals and cooperatives involvement in forest-based business" (Wardojo and Masripatin 2002 in Yasmin et. al. 2010), although it was criticized for its limitations in acknowledging indigenous peoples' rights to their *adat* forests and introducing more secure land tenure reforms for local people in forestlands.

Through Regulation 6/1999 on Forestry Enterprise and the Extraction of Forest Products in Production Forest, the central government authorized district governments to issue small-scale Forest Product Harvesting Permits (*Hak Pemungutan Hasil Hutan* or HPHH) in areas within forest estates. Many districts then passed local regulations authorizing the district heads to issue different types of small-scale logging permits. The proliferation of small-scale timber extraction and forest conversion permits issued by district governments threatened the large-scale concession holders, as the increasing administrative authority of the district governments over lucrative timber resources did the MoF (Barr et. al. 2006). In response, the MoF actively took steps to stop the issuance of these permits until Regulation 34/2002 on Forest Administration and the Formulation of Plans for Forest Management, Forest Utilization, and the Use of the Forest Estate was signed into law in June 2002. Revoking Regulation 6/1999, Regulation 34/2002 reaffirmed MoF's authority over large-scale timber extraction and the transport and marketing of both timber and NWFPs in the domestic market, and also extended MoF's administrative control over wood-processing industries (Mc Carthy et. al. 2006). Regulation 34/2002 "effectively recentralized control over the allocation of timber concessions and small-scale logging permits—and many other aspects of forest administration" (Barr et. al. 2006).

Decentralization efforts led to both opportunities and challenges for the legalization of community property rights, allowing communities to have more participation in forest-related policy-making in some areas but also critically threatening community rights to forests in other areas (Contreras-Hermosilla and Fay 2005). In some places, decentralization encouraged some district governments to formulate local policies on community forest management (Fey 2007; Adi et. al. 2004) and led to greater accountability at the local level, increased equity and more sustainable forest management (Contreras-Hermosilla and Fay 2005). However, in many areas, the abuse of authority over forest resources, lack of capacity and corruption among local officials as well as confusion over forestry administration and management accelerated forest loss (Poffenberger et. al. 2006; Simorangkir and Sardjono 2006).

During the last two decades, various CBFM schemes, recognized or developed, with varying levels of support from civil society organizations, local communities and development agencies, have—besides *private forests*—allowed community access to state forest lands and resources (Safriti 2010). *Forests with special purposes* are designated for research and development, education and training, religion and culture or other purposes of public interest. Government Regulation (PP) No. 6/2007 aims to empower communities living in or around production and protected forests through *community forests*, village forests and partnership between communities and forest concession holders, with the opportunity to obtain licenses for using forest resources (HPH). Ministerial Regulation P.49/2008 concerning village forests provides village-based institutions with licenses to manage protection and production forests within a village's administrative area. *Community forests* are state forests intended for empowering forest communities. Local individuals or cooperatives (indigenous or not) can be granted rights to state forests through community forest licenses for commercial utilization of forest areas, timber and non-wood forest products (NWFPs) and licenses to collect timber and NWFPs. This licensing system allows communities to have the same opportunities as private companies in accessing the forests (Fey 2007). Other than general provisions contained in Act No 41/1999, no specific national policy on recognizing customary rights of indigenous peoples to their *adat* forests and lands has been issued yet. Based on the draft regulation, a community has to be proven to exist first before the district government will recognize an adat forest. In 2007, the MoF introduced the scheme, *community timber plantation* (*hutan tanaman rakyat* or HTR), which provides communities rights and incentives for developing timber

plantations on community lands. However, with rural livelihoods being secondary to the primary goal of increasing timber production for the wood-processing industry, a number of concerns were raised on ensuring benefits for HTR holders (DTE 2007). Other types of forest management schemes involving local people are *company-community partnership in forest management and collaboration in managing conservation forests.*

However, lack of clear laws and regulations and stability of policies as well as contradictions, inconsistencies and uncertainties in forestry policies have been hindering the effective implementation and widespread application of the CBFM schemes and have been leading to many conflicts—and difficulties in the resolution of these conflicts—as people have been increasingly asserting their rights and demanding access to their lands and forests.

The Forestry Long-Term Development Plan for 2006–2025 (MoF 2006) sets the vision for the forestry sector development as "forestry as a pillar for sustainable development by 2025". Noting that "poverty is not the main responsibility of the forestry sector", the 20-year plan lists as one of its goals improving social welfare and raising society's active role in supporting responsible and equitable forest management (Ibid.).

In more recent years, climate change and reduced emissions from deforestation and forest degradation (REDD plus) are becoming an important policy priority in view of the government's commitment to reduce its GHG emissions from forest destruction. Some REDD policies are already in place, but which have been criticized for ignoring the rights of indigenous peoples.[9] The country has been participating in two international initiatives to support REDD-plus readiness activities: the Forest Carbon Partnership Facility (FCPF) funded by the World Bank and the UN-REDD Program, which is committed to a rights-based approach and recognition of free, prior and informed consent (FPIC) of communities. In early 2011, Indonesia announced a two-year moratorium on new concessions to clear natural forests and peatlands as part of a US$ 1 billion deal signed with Norway.

Forestry-related Programs for Addressing Poverty in and Around Forests

For the first time, the development of communities in and around forest areas was included in the MoF's strategic priorities in its plan for 2004–2009. Empowerment of local communities around forests is also one of eight strategic priorities for 2010–2014. This reflects in recent years a recognition by the MoF of the relationship between poverty and forestry and of some responsibilities of the ministry in addressing the poverty of forest peoples (Kayoi et. al. 2006). In the Forestry Long Term Plan, the MoF (2006) acknowledged that reducing poverty in and around forests (with target beneficiaries numbering 10 million poor people) is not the sole responsibility of the forestry sector.

Approaches to community empowerment by the MoF, which include providing support programs for local forestry enterprises, livelihood programs and CBFM implementation, have not been clearly identified as poverty reduction programs (Fey, 2007), although these were intended to improve the welfare of rural households. However, sectoral programs through the MoF have not been making significant impacts, as the ministry lacks the capacity or mandate to engage in poverty alleviation and as its interests in timber production and conservation usually run counter to local people's livelihoods needs (CESS-ODI 2005; Wollenberg 2004). CBFM strategies tend to be weak in specific targeting of the poor and vulnerable groups, because these interventions are often designed to address all local stakeholders and thus lack differentiated approaches in addressing levels of rural poverty (CESS-ODI 2005). The process of allocating forest land has been conducted in a purely top-down manner from Jakarta, ignoring existing local systems and failing to involve local people (Simorangkir and Sardjono 2006). In general, rather than providing security of tenure over portions of the forestland (including *adat* forests), the CBFM schemes "continue to be primarily directed towards sharing management responsibility over state forests" (Fey 2007). The reforms in forest policies "have nothing to do with changing forestland tenure regime", thus, communities' rights to forestlands remain obscure (Safriti 2010).

[9] 'REDD in Indonesia: An independent monitoring report by Forest Watch Indonesia' Retrieved from http://vh-gfc.dpi.nl/img/userpics/File/REDD/REDD-in-Indonesia.pdf

Sunderlin et. al. (2006) suggested four policy approaches for reducing poverty:

- transferring tenure of forest lands from the government to the people living in and near forests;
- facilitating access to the markets of forest products;
- promoting commercial-scale community forestry and company-community partnerships; and
- establishing payments for forest environmental services that are pro-poor.

Past and Current Contribution of Forestry to Poverty Alleviation

Forests are a significant natural resource owing to their economic, socio-cultural and environmental values. About six million people are depending directly on forests, including about 3.4 million people employed in the private forestry sector (MoF 2006). Their livelihood strategies are diverse, including subsistence farming, or commercial farming (combining upland rice and annual crops), logging, selling wood and collection of NWFPs for consumption and sale. Nonetheless, the country's forest resources "are not contributing as they should to poverty reduction, economic and social development, and environmental sustainability" (Sheyvens and Setyarso in press).

Forests for Subsistence Use and Allocation of Forest Resources

According to WRI et. al. (2005), more than 50 million people live in Indonesia's rainforests, and thousands are engaged in traditional livelihoods, such as small-plot farming, bamboo harvesting and collection of fruit and honey. It is difficult to obtain estimates of the extent of direct and indirect household use of forest resources, and most of the local consumption and exchanges of NWFPs are not reflected in the national account (Gautam et. al. 2000). NWFPs, compared to timber, have been given little support by national policies, but are vital to the subsistence and livelihoods of the rural, forest-dependent poor: these provide some of their basic needs and serve as safety net and potential sources of cash during times of hardship.

Traditional and subsistence forest management. Most of the indigenous peoples live in rural areas, in or near forests, engaging in gathering, rotational swidden farming, agroforestry, small-scale plantations, fishing and mining (AMAN 2010). The value of forests for indigenous peoples stems from their direct and cultural, social, political and spiritual relations with the forests, which have been changing, as well

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Agroforestry can help ensure food security and income through the production of a diverse mix of annual crops and fast-growing trees that can be harvested at different times, while also helping in sustaining the soil.

as the subsistence, livelihood and economic relations (MoF 2006). Forests are part of their animist beliefs and the natural capital needed for making traditional products used in the culture. Compared to early twentieth-century literature, shifting cultivation is presently not considered anymore as a major driver of forest loss, though it still plays a role in the mountain zones of northwest and southwest of Sumatra and in Kalimantan (Stibig et.al. 2007).

An assessment conducted by the Papuan Provincial Forestry Office in five places in Papua in 2004-2005 as part of the Multi-stakeholder Forestry Programme found that forests meet an average of 40% of cash and 30% of subsistence needs of the people (Kayoi et. al. 2006). Communities nearer to the forests and farther from towns tend to be more dependent on the forests. Within the communities, young single men who are not yet entitled to own agricultural lands have high dependence on forest resources for cash (i.e., timber, being one of few reliable sources of cash), compared to the women who generally use forest resources for subsistence (i.e., gathering of firewood, fruit and wild vegetables). However, because they do not have formal tenurial recognition, indigenous peoples in Papua lack clear rights to FPIC over the allocation of their customary lands to concessions or legal basis by which they can demand unpaid timber royalties from companies or seek compensation for economic losses resulting from logging and road construction (Ibid.). Previous deliberate attempts to abolish and replace customary institutions have weakened indigenous peoples' capacity to negotiate effectively with the government and investors.

The threats to local rights and livelihoods identified by local communities include the following (Fey 2007):

- lack of recognition of *adat*/local communities' rights to land and natural resources;
- illegal logging;
- continuing acquisition of *adat*/people's lands for plantations and mining concessions;
- transfer of lands to outsiders;
- lack of access to basic needs;
- low prices for local commodities and weak bargaining position with middlemen;
- degradation of natural resources;
- political changes; and,
- more frequent environmental disasters.

Agroforestry. Agroforests in Indonesia represent a diverse set of complex resource systems. In Java, the terms *pekarangan*, *kebon* and *talun* refer to lands that villagers planted with wood or fruit trees. The development of the *hutan rakyat* with community utilization of forest lands with initial food crops and the growing commercial timber species sustains many in community. *Simpuk* in Kalimantan is a fruit garden developed in formerly cultivated areas, while *repong* in Sumatra refers to rubber farms grown in formerly cultivated fields. However, statistics on community forests largely exclude extensive forests in the Outer Islands that have historically been managed by indigenous communities for long-rotation swidden cultivation, resin oil collection, hunting and gathering areas and protection for religious and hydrological purposes (Poffenberger et. al. 2005).

Studies of monetary benefits of community-managed agroforestry systems show that these have a substantial advantage over alternative land uses (IBP 2002 in Contreras-Hermosilla and Fay 2005). Comparing the financial structures of three possible land use options in Krui, West Lampung, IBP's research reflect a significant financial gain of the agroforestry systems practiced by indigenous communities over rubber or oil palm plantations (Ibid.). Customary agroforestry systems have associated environmental advantages as seen, for example, in higher returns to labor from community-managed systems of land use than from the plantations. One of the case studies in this report provides a qualitative account of an agroforesty system being practiced by an upland community in Bogoran, Wonosobo.

Agroforestry practices exemplify sustainable forest management, but there are obstacles in their development to contribute to timber production, local livelihoods and environmental services. Van

Noordwijk, et al., (2003 in WB 2006) identified the main constraints as (i) definition of forests, functions and land uses; (ii) lack of good-quality planting stocks; (iii) lack of smallholder management, processing and marketing skills; (iv) over-regulation that limits market access or increases costs; and (v) lack of reward mechanisms for generated environmental services. Large-scale plantations are often prioritized, with government policy support and subsidies, over agroforestry systems.

Community forestry schemes. Some community forestry programs included poverty reduction as part of their objectives, but with limited success. Effendi (2000 in Subarudi 2003) noted that the implementation of the Prosperity Approach Program in Java led to benefits for the forestry institution but not for the farmers, as farmers' participation was limited. The Joint Forest Management with Communities (*Pengelolaan Hutan Bersama Masyarakat* or PHBM), which was implemented by Perum Perhutani in Java, was "highly conflictual" (CESS-ODI 2005) and failed to improve community involvement in forest management (Subarudi 2003). Likewise, CESS-ODI (2005) noted that the Support to Forest Villages Development Programme (*Pembinaan Masyarakat Desa Hutan* or PMDH), which was implemented by logging concessions as a condition of licensing, also had very limited impact. The key objective of the CBFM policies (such as the *taungya* or *tumpang sari* implemented in Java and Nusa Tenggara, PMDH and government community forestry or *hutan kemasyarakatan*) has been to set up joint forest management and charity programs, which were not related to providing security of tenure over forestland that can contribute significantly to long-term improvement in the people's livelihoods (Fey 2007).

Nonetheless, there have been community development programs for poverty reduction that were successfully implemented in other parts of Indonesia (Subarudi 2003). According to Kusumanto, et. al., (2005 in WB 2006), there are approaches that registered successes in improving both the forests and people's livelihoods, but the state and companies—not the communities—continue to wield effective control over forest resources. The MoF notes that the "role of private or state-owned enterprises as partners and the role of the government as a facilitator are not optimal". (MoF 2009)

Forestry policies over the past decade have evolved state-sponsored CBFM schemes that allow communities' access to production and protection forests. However, these policies have not been addressing poverty (Adrianto et. al. 2006). As noted above, these schemes mainly focus on benefit-sharing agreements with the government, with the latter generally setting the terms and determined to get the highest possible share in the benefits (Contreras-Hermosilla and Fay 2005). Previous experiences with parastatal corporations (Inhutani) and government offices were not beneficial for the participating communities (Ibid.). The CFM schemes are different from one that grants legal ownership to communities, which seeks to empower communities to be able to make the relevant decisions. The changes in the regulatory frameworks over time have led to local people's access to forest lands but also to uncertainties and conflicts between the communities and state-owned or private companies, which have been hindering the building of trust in and expansion of the application of these approaches.

Support from civil society organizations have been critical in providing various forms of assistance for local communities, including livelihood programs (Fey 2007) through establishing credit facilities that allow local people to have access to soft loans; developing rattan programs for rattan farmers and handicraft-makers; developing food processing enterprises (some integrated with conservation and food security); and producing NWFPs.

In 2003–2007, the MoF implemented the National Campaign for Forest and Land Rehabilitation (*Gerakan Nasional Rehabilitasi Hutan dan Lahan* or GERHAN) project with the target of rehabilitating three million ha of degraded forestlands inside (60%) and outside (40%) state forest areas within five years. Its approach was to involve the communities in forest and land rehabilitation, such as in planting and maintenance, and cash or seedlings were given to farmers as direct incentives to plant trees on their farms (Nawir et. al. 2007). However, GERHAN failed to meet its goal of forest and land rehabilitation, and the success of the project is difficult to ascertain. Sustainability of activities may last while there is funding as there is no incentive to encourage a sense of ownership of the trees being planted. Implementation in some areas lacked adequate community participation in the process and results were not satisfactory (Ibid.).

As of 2010, MoF was able to issue 22 community plantation forest licenses covering a total of 9,045.89 ha, 107 community forest licenses covering a total of 415,153 ha and village forest business licenses covering 113,354 ha.

Commercial and Industrial Forestry

Production forestry, processing industries and plantations (large scale operations)

Forestry in general is said to have contributed to national and regional development through logging roads that made access to remote areas possible, job opportunities and increase in regional government and community income (MoF 2006). However, there have been critical problems associated with the dynamic growth of the forestry sector with regard to the poverty situation of communities in and around forests. While large-scale capital-intensive operations have been relatively able to generate short-run financial returns, "there is little evidence for poverty alleviation" (WB 2006).

The appropriation of forest communities' lands and resources for large-scale timber interests and the lack of recognition of the customary communities' rights adversely affected the people's livelihoods, economic opportunities and tenure security (Jarvie et al. 2003 in Contreras-Hermosilla and Fay 2005). Rural communities which depended on forest resources for their livelihoods associated the entry and operations of timber concessions and plantations with abuses and deterioration of community condition (Contreras-Hermosilla and Fay 2005). The people would still manage to utilize forest resources to meet their livelihood needs, but usually amid ensuing conflicts (Kayoi et. al. 2006). Or else, they would be forced to seek other forms of livelihood when activities of large-scale agri-businesses and logging companies encroached into substantial land areas. In Kaimana and Mapia in Papua, the shift away from a nomadic way of living (*pinda-pinda*) with hunting and gathering as the livelihood strategy occurred very fast after the logging company arrived in the area (Soriaga and Walpole 2009). Often, local people could be denied access to grasslands they can cultivate for food crops on the basis of the classification of those lands as forest zones to be used for timber plantations (Contreras-Hermosilla and Fay 2005).

In many cases, overlapping land claims and management regimes over the same area in the context of legal uncertainties and inconsistencies have led to conflict between communities and companies or local governments. Among the common reasons for local communities' complaints about forestry and forest utilization are (i) loss of forests that serve as sources of NWFPs; (ii) pollution of rivers and reduced fish stocks due to logging waste; (iii) community development approaches not based on local people's needs; (iv) the limiting of communication to those between company representatives and community elites, while not involving the broader set of community stakeholders; and (v) decreased community land (Eriantono 2010). Interrelated factors leading to intractable conflicts include: (i) communities' loss of forest area and living space on lands licensed as concession areas; (ii) restriction of community activities in concession areas, particularly shifting cultivation and the collection of NWFPs; (iii) lack of communication between communities and companies leading to misunderstanding and distrust between the two groups; (iv) minimum benefits from the companies for local communities (wages and employment provision as companies prefer to recruit migrant/external workers); (v) encroachment into local communities' traditionally protected and sacred sites; and (vi) deforestation and its impacts on the rural agro-ecosystem, such as erosion and increased river pollution (Sardjono 2004c in Simorangkir and Sadjono 2006).

Owing to the unequal distribution of benefits, affected local communities received little share—if any—of the benefits from their forests. Moreover, little policy effort has been made to "invest revenues in human, financial, physical, or natural assets for the long term" (Kayoi et. al. 2006). The long-term impacts of the degraded state of the forests and natural resources to the poverty situation are being acknowledged in terms of reduced resource base and unsustainable livelihood; lack of access to clean water; environmental disasters (floods, droughts and landslides); forestry-related crimes (e.g., illegal logging and timber smuggling); as well as competition over resources, conflicts and weakening social cohesion.

Employment in forest industries. According to the World Bank (2006), large-scale commercial forestry can create employment, but the forestry sector is not a "major source of employment" for the country's workforce of 100 million. Compared to about only 400,000 employees in mills and concessions, about four million people work in the agroforestry sector and three million in the fisheries sector. Though thousands of people depend directly or indirectly on the forestry sector, the sector is not likely to generate enough jobs to employ a large number of the poor and lift them out of poverty (Ibid.).

An analysis of the forestry sector employment in Riau province in Sumatra (Obidzinski and Barr 2005) raises questions on the contributions of commercial forestry subsectors to local employment. Riau province now hosts 70 % of the country's pulp production capacity, and growth of the HTI pulpwood plantations to meet the fiber needs of Riau's pulp mills is expected to create jobs. However, employment in pulpwood plantations is cyclical. Labor input is highest in year 1 for land clearing, site preparation and planting, and in year 7 for harvesting and replanting. Between these periods, relatively few workers are hired to manage the plantations, but lands are not made available for people's livelihoods. As for land-clearing activities in the government's community forestry program (*hutan kamasyarakatan* or HKM) operations, the jobs that are created are short-term and unsustainable. Mechanized operations can significantly cut down the labor input: e.g., converting 1,000 ha of land requires 39 workers with mechanized operations compared to 96 workers with semi-mechanized operations and 440 workers through manual work. As regards the claim of companies that they provide a major source of employment as justifying the conversion of natural forests into plantations, with mechanized operations needing lesser labor, there are relatively few foregone jobs if future pulpwood plantations are designated on lands with no forest cover or with lesser tree cover.

Further, jobs created by forestry operations do not necessarily benefit the communities where these are located (Ibid.). Majority of the workers in HPH concessions, plantation companies and licensed and unlicensed sawmills surveyed by the study come from other provinces. Workers from Riau are generally at a disadvantage in terms of the wage structure and the distribution of positions compared to non-Riau workers. Also, most of the jobs are not full-time and permanent: about 75% of the workers hired by pulp companies on a daily or target basis and without long-term job security.

In view of the plans of the government to promote the pulp and paper industry for its perceived major contribution to Indonesia's national economic growth, the study recommends an assessment of whether or not further investment of public funds in pulp and paper production is a cost-effective means of creating jobs in the forestry sector and whether or not the jobs generated are sustainable over the long term (Ibid.). The Riau study approximates that every job generated in the pulp and paper industry and associated land clearing and plantations subsectors involves an investment of around US$ 218,000. According to the study, the huge government subsidies to two large pulp and paper companies in Riau could have created jobs for hundreds of workers over a number of years if the money were invested in a public job-creation program. As two large pulp and paper companies aim to expand their plantation areas in the province, the tradeoffs between plantations and other land-use options need to take into consideration the livelihood security of rural communities.

Considering the ongoing forestry crisis, the sustainability of some jobs in the forestry sector is in question (WB 2006). Rising costs and limited supply of raw materials are affecting the Indonesian pulp and paper industry, forcing one company to lay off nearly half of its total workforce (ITTO 2008). Further layoffs in the wood products sector are expected as many manufacturers and sawmillers are considering scaling down businesses due to declining export prices (ITTO 2009). It has been initially expected that jobs lost due to the closure of plants in less efficient subsectors would be offset by jobs created through accelerating plantation development and SME activities (WB 2006).

Economic costs vis-à-vis economic benefits: Assessing the economic impacts of five large pulp plantation projects through industrial timber plantation (HTI) in Sumatra in terms of the total economic costs and benefits, Maturana (2005) revealed that four of the five plantation companies were incurring economic costs higher than their economic benefits. These costs comprise the direct financial costs of the investment (money, natural resources, etc.) and of operating the pulp mills and pulp plantation as well as the costs borne by the local people, the country and the world of the vast forest land allocated

for HTI projects. The finding underscores the need for the Indonesian government to rethink its plans to allocate logged-over forestlands for use as HTI pulp plantations and reset the directions for future plantation projects that will benefit the national economy in the long term.

Outgrower schemes. The allocation of wide areas for industrial plantation development poses both risks and new opportunities for rural livelihoods (Barr and Stafford 2007). Pulpwood plantation concessions have often overlapped with land or forests being used by local communities and thus have commonly resulted in their displacement or loss of livelihood options (Obidzski and Barr 2005). On the other hand, the industry's increasing demand for wood offers the opportunity for farmers to supply this demand. Colchester et. al. (in Barr and Stafford, 2007) stressed the need to ensure that the program truly strengthen the smallholders' livelihoods and welfare drawing on the lessons from previous government-sponsored outgrower schemes.

In 2007, the MoF launched the HTR community timber plantation program to establish plantations on 5.4 ha of community lands until 2016 as part of the revitalization of the forestry sector. Progress has been slow, however, and smallholders in some regions prefer oil palm and rubber plantations as better land-use options than acacia plantations (Barr and Stafford 2007). After two years, community interest and participation was low and had not expanded beyond a small number of state-directed pilot projects (Schneck 2009). Based on his investigation of the financial viability of developing HTR pulpwood plantations in Kalimantan, Schneck concluded that these were not profitable under existing market conditions.

HTR allows communities to have greater involvement in plantation development and helps clarify land tenure arrangements to an extent. However, its implementation faces challenges in identifying suitable lands, dealing with the limited capacity of communities and companies to manage HTR development, defining effective institutional arrangements and ensuring economic viability, considering existing market conditions and level of state-funded support as well as poor market access in many areas. Promoting HTR for pulpwood plantations necessitates "supportive macroeconomic and forest-sector policies which reduce market distortions, increase market transparency and liquidity, and raise domestic wood prices" (Schneck 2009).

In Pasir district (East Kalimantan province), five years after decentralization and the development of oil-palm plantations, the number of local people taking part in smallholder oil palm estate scheme together with the area of plantations have increased significantly (Simorangkir and Sardjono 2006). In 2004, about 17,000 families were managing 65% of the crop plantations. Oil-palm plantations allow the communities to gain income faster than timber and higher than NWFPs, although NWFPS continue to contribute to their livelihoods. Communities have divided views on the scheme, however. Some local people see the scheme as an opportunity to claim land, while others oppose it but still participate as a means of increasing their income and only on the condition that the land stays under community control in order to retain customary ownership. The plantations have also been contributing to Pasir's regional economy, which is expected to be sustained in the future. The local government plans to adopt agro-industry as the core of the district's economy and allocate about 250,000 ha for the expansion of oil-palm plantations that can allow more people to participate. This plan, however, threatens the district's remaining forests as most agriculture areas are already being used and has high potential for increasing conflicts over land because of unclear land ownership and use rights (such as traditional rights to land and natural resources), unclear boundaries, incompatible traditional claims and different interests over the same land (Ibid.). The increasing participation of communities in Pasir district in the establishment of oil-palm plantations has been used as a justification for obtaining timber use permits to expand to the remaining residual forests (Ibid.). Nonetheless, there is generally little proof that forest conversion is for the benefit of local communities for them to participate in community forestry schemes (Fey 2007).[10]

Company-community (CC) partnership under a profit-sharing agreement is one of the approaches of plantation companies to ease conflicts they commonly encounter with communities over the rights to

[10] An exception to this is the conversion of 145,000 ha of forest zones into non-forest zones by the MoF and subsequent issuance of individual ownership rights to the communities in Lampung province in 2001 after strong pressure from the communities and local governments (Fey 2007).

the land and forest resources within their concession areas (Maturana et. al. 2005). However, these have low acceptance among the communities and are difficult to maintain beyond one rotation period. Companies must consider the resources that the people use and the corresponding values associated with these resources in developing cost-effective CC partnerships to ensure better acceptance and long-term commitment.

Nawir et. al. (2003) in their study on different schemes claim that mutual benefits for communities and companies require commercial feasibility based on a long-term partnership contract with shared economic and social objectives; equitable contractual agreements based on a fair valuation of shared inputs; and full understanding by both parties of the benefits and potential risks of joining the partnership. Companies seek to reduce social risks through the resolution of conflicts over lands in concession areas and establishing relations on which to negotiate contract agreements toward ensuring a reliable source of wood. Tree growers benefit through secure long-term investment (trees to be harvested in the future), clarification in the status of their land rights and ownership, job opportunities, use of underutilized lands and access to company's social funds and credit assistance. The challenges include lack of trust, with companies dominating negotiation processes; lack of commercial viability owing to inadequate capacity-building and extension programs; lack of clearly defined investment mechanisms, and; inadequate assessment of community needs leading to waste of community funds when developing income-generating programs.

Community development (CD) programs. Community development programs, which timber and plantation companies were required to develop and implement starting in the 1990s to respond to the poverty situation and local conflicts in the areas where these were operating, have been expected to contribute to local livelihoods but with limited impacts. Companies tend to implement CD programs merely out of legal compliance and not out of concern about the people's livelihoods. Government assesses the programs based on the money spent by the companies and not on the actual activities conducted (Simorangkir and Sardjono 2006). Most CD activities put up infrastructure and short-term income opportunities, and were not invested in long-term, sustainable local development (Ibid.).

In her study on the impacts of the CD expenditure of five large pulp plantation companies in Sumatra as an approach to address land conflicts they have with villages within their concessions, Maturana (2005) found that although companies are investing money on CD programs (such as infrastructure or agricultural projects) to help address conflicts, it remains unclear if lands under conflicts were being reduced. Money invested in CD increased with the area of land under conflict. Districts that had higher CD share were those with larger areas of land affected by claims, which seemed to suggest that CD investments tended to promote land claims rather than decreasing these. The large investments in small villages created an "adverse incentive" for some people to gain profit by creating conflicts over the land, while developments in infrastructure as part of the CD programs encouraged people who went to work or live in other places to return to their villages or forested areas and re-claim their rights to their lands within concessions. These results underscore the need for companies to review their CD program implementation and further understand why the claims in their concession areas are being made as well as to redesign their CD investments so as to make them more beneficial to both the companies and communities (Ibid.).

Engel and Palmer's study (2006) of the impacts of decentralization in East Kalimantan found that companies wishing to receive harvesting permits from the district government have to negotiate directly with affected communities. After decentralization, an average of 94% of the households surveyed received payments from companies (compared to only one percent prior to decentralization), and villagers have become more able to negotiate for better non-cash benefits. After decentralization, 80% of the households viewed that forests belonged entirely to communities, compared to only 20% before decentralization. Further, after decentralization, many communities reported that logging was bad for hunting and the quality of river water, but felt that logging caused fewer problems for farming and forest product collection. Nearly two-thirds of community agreements with companies included environmental provisions, such as replanting logged forests, respecting minimum diameter of trees to be cut and logging of certain species only. Communities now feel empowered to take direct action with the companies that

do not follow these agreements or are late with payments, often with success (Ibid.).

Royalties and Reforestation Fund. Forest royalties and levies in Indonesia are set very low, so that forest companies can capture "superprofits", which do not provide incentives to reforest logged areas. Forestry companies should bear the responsibility of leaving forests in the same condition in which they were originally leased. However, paying royalties lead companies to perceive that they can shift responsibility for reforestation onto the government (Maryudi 2008).

The revised system of revenue sharing now allocates higher proportion of the benefits for the local governments. For forest-product royalty, central government gets 20%, and 80% is divided between the province (16%), producing district (32%) and other districts in the province (32%). The forest concession fee is divided between the central government (20%), province (16%) and producing district (64%). The reforestation fund, the single largest source of forest revenue (Resosudarmo et. al. 2006), is shared between the MoF (60%) and the originating regions (40%, not necessarily the districts where the logs were harvested from within a province). There are no comprehensive records on the extent of areas rehabilitated using the reforestation funds, and activities could have met many problems or were not successful (Nawir et. al. 2007). When Regulation 35/2002 was in effect, district governments' use of their share in the reforestation fund was restricted to activities directly related to land and forest rehabilitation (e.g., reforestation, regreening, forest management, enrichment planting) and did not support such activities as information dissemination about the projects, and provision of technical guidance, that were critical to the success of forest rehabilitation activities (Resosudarmo et. al. 2006). With the strong emphasis on community involvement and on tangible benefits for participating communities, activities were mostly conducted in accessible areas with clear ownership status (Ibid.). Based on the regulation on Reforestation Fund management issued in 2007, state-owned companies, private companies, cooperatives and forest farmer groups can access loan schemes for forest and land rehabilitation from the Fund. However, the money has yet to be spent on needy parties (Eriantono 2010).

Illegal logging. Local communities are usually 'willing victims' in illegal logging operations financed by rich people, risking their lives for only a small share in the profit (Fey 2007). The bulk of the benefits from illegal logging operations are captured by the timber brokers and exporters. For instance, members of illegal logging gangs, often poor forest-dwellers, receive a mere US$ 2.20 per cubic meter of wood, compared to what timber brokers get (US$ 160) and what Singapore-based exporters of sawn Indonesian hardwood can charge (as much as US$ 800 per cubic meter to ship to Western markets (EIA/ Telapak 2002). Some 60-80% of Indonesia's timber is illegal (Colchester 2006), costing the country US$ 3.7 billion a year in lost revenue (Saparjadi 2003).

Small-scale logging permits

Decentralization has had both positive and negative impacts to local people's livelihoods (Moeliono and Dermawan 2006). Through small-scale logging permits issued by the district governments until 2002, decentralization allowed some local communities to gain short-term economic benefit from increased forest exploitation that used to be the privilege of large companies only (Ibid.). Also, local communities could negotiate with logging, plantation and mining companies for a share of the benefits from their resources, in the form of entrance fees to the lands and forests they claimed, volume-based payments for harvested timber, compensation for lands used for infrastructure and plantation development (Tokede et. al. 2005 in Ibid.), as well as provision of educational and health services and communal housing (Yasmi et. al. 2005 in Ibid.).

Nonetheless, the ultimate beneficiaries of decentralized timber harvesting were not the local cooperatives comprising local villagers, but individual entrepreneurs or companies (in some cases, HPH concessionaires) who owned the equipment and capital (Moeliono and Dermawan 2006). Often, though local communities' share of the benefits from forest utilization increased, these were not shared equitably with the poorest community members and instead profited the entrepreneurs, elite and government officers. Some community members, who got small percentages of the profits from the small-scale timber permits, were not transparent or fair in the distribution of the benefits,

especially with marginalized groups (Yasmi et. al. in Barr et. al. 2006). Further, in many cases, the money obtained by local communities under timber-harvesting agreements with outside companies or investors was not always used for lasting community development (Moeliono and Dermawan 2006). Some groups took advantage of these permits for profit in the short-run, but their activities resulted in increased internal conflicts owing to unequal distribution of fees and compensation payments, reduced quality of their forest resources serving as their safety net, and the increased gap between the better-off and the poor. Continued cutting and conversion in forests where the poorest families depend most for food and other needs increased their vulnerability (Adrianto et. al. 2006). Also, broadened authority of local governments through decentralization was used by some local officials and politicians for their rent-seeking agenda, and not to promote resource sustainability, improve people's livelihoods or clarify local people's rights to land and forests (Safriti 2010). A study on two forested districts in 2004 found that local officials continued to consider forests mainly as cash-income sources (Adrianto et. al. 2006).

In Papua, smallholder logging was facilitated by a system locally called *kopermas* (*Koperasi Peran Serta Masyarakat*), which are community cooperatives granted small-scale concession permits. The kopermas system enabled indigenous communities to get directly involved in forest management and obtain short-term benefits. However, it failed to ensure equitable sharing of benefits from timber revenues within these communities and between the kopermas and other actors along the production chain. Several cases of co-optation were found (Tokede et al 2005). Some indigenous peoples allowed their names to be used by outsiders to obtain permits, and migrants worked with local people to log illegally (DTE 2002). The most significant factors contributing to the failure of *kopermas* to deliver equitable and sustainable forest management are the lack of information about community rights in new policies of government as a result of decentralization; unclear and inconsistent implementing guidelines from national and local governments; the limited capacity and skills of community cooperatives for commercial forest management; and limited knowledge and access of community cooperatives to operating capital (Soriaga and Walpole 2009).

Forest-based small and medium enterprises (SMEs)

The forestry sector in Indonesia has been "quite highly concentrated with 8% of the large firms using 60% of the wood in export-oriented production, while 80% of the firms are small or medium-sized firms oriented to the domestic market" (NRM 2000 in WB 2006). Forest-based SMEs, which dominate the furniture and handicrafts-making enterprises, generate employment for skilled and unskilled laborers (Manurung 2007).

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A small scale processing enterprise in Java serves as an accessible market for smallholder tree farmers who sell their logs in large or relatively small quantities depending on their need for cash and available harvestable trees.

Satyawati's (1991) field research reflects some limitations of employment in wood-handicraft shops in Central Java and rattan-handicraft industries in Cirebon county. The workers were getting a small percentage of the profit derived from the products, and as operations generally depended on orders for the products, they were at risk of losing their jobs if there were no orders. Although wood and rattan-handicraft enterprises were thriving at the time, market saturation and the high cost of raw materials reduced the profit of the entrepreneurs, driving some to reduce costs by lowering their workers' wages that in turn brought the workers to the verge of poverty. Wood and rattan handicraft industries are viable and thriving industries but need support in terms of making wood prices affordable, ensuring sustainable supply to the raw materials, better training and credit facilities.

Noting that SMEs can be a leading force of economic growth and employment creation, the World Bank and the IFC (Policy Brief 2004 in WB 2006) recommended reforms to improve SMEs, such as reducing regulatory burdens, streamlining tax administration, increasing access to credit and supporting business education. Promoting SMEs, which have generally proven to be more effective in absorbing labor than large capital-intensive companies, is identified as a strategy in the revitalization of the forestry industry.

NWFP commercialization

Over 90 NWFPs are traded in the local, national or international markets (FAO 2002 in MoF 2009), but records of their production and extent to which the poor are benefiting from the trade are lacking.

NWFPs provide jobs to farmers. For many households in Kalimantan, rattan is the main or secondary source of cash as well as emergency income (Seibert n.d.). NWFPs are accessible to the poor because of their low market value. However, as NWFP products become valuable, "powerful interests generally appropriate the benefits" (Dove 1993 in MoF 2009). Much of the value-added and profits from NWFP activities are in transport and marketing, from which poorer households tend to be excluded.

The entry of logging concessionaires in forest areas improved accessibility to remote areas, allowing those engaged in the collection of NWFPs (e.g., rattan) to bring their products to the market. However, logging often destroyed the local communities' resource bases for NWFPs and the conversion of forests into monocrop plantations (such as oil palm or rubber) meant permanent loss of NWFP sources and consequently, the destruction of customary NWFP production and management practices. Investments in the rattan industry in 1970s–1990s encouraged rattan production (Silitonga n.d.). The prices of rattan were however depressed by restrictive trading policies on raw rattan, thus, reducing farmers' incomes (FAO 1997 in Tiwari 2007).

Payments for Environmental Services (PES) and Carbon Payments

There are a number of efforts in Indonesia to protect environmental services (ES) and develop the markets for these, though these are is still at an early stage. PES provides some potential to contribute to the livelihoods and welfare of the poor living in and around the forests.

A review of 81 case studies related to environmental services (40% related to biodiversity conservation and the rest equally distributed for watershed protection, carbon sequestration and landscape beauty) notes that only a few cases have a truly functioning ES market or have proposed an ES market (Suyanto et.al. 2005). In some projects, the sellers are the farmers' groups and, in others, government and National Park community (mostly landscape beauty). The range of rewards includes land leases to potential monetary benefits from carbon credit, water user's fees, eco-tourism concessions and entrance fees (Ibid.).

Payments for watershed regulation

Since 2001, the World Agroforestry Center (ICRAF) has been implementing the Rewarding the Upland Poor for Environmental Services (RUPES) program which aims to improve the livelihoods and reduce poverty of the upland poor while supporting ES. At the local level, RUPES has been supporting the

development of institutional mechanisms for implementing PES schemes in villages around Singkarak Lake in West Sumatra, linking watershed protection by upland communities to the existing monetary flows from the hydroelectric plant and to the provincial and district governments, as well as for participating in the global carbon market. With regard to the reward for watershed function, the local government in West Sumatra issued a regulation on the sharing of tax money paid by a state-owned hydroelectric power company that is tapping water from Singkarak Lake between the provincial government, the district generating the tax and other districts in West Sumatra. However, the regulation does not provide for a policy on how the tax should be distributed to the upland communities. As for the market for carbon sequestration through A/R CDM, the concept of 'bundling' services, is posing challenges for the CDM requirement for additionality and investors' preference for fresh sites that allow them a more controlling role than being part of a "bundle" (Leimona et. al. 2006).

Carbon payments: A/R CDM and REDD mechanisms

Under Afforestation/Reforestation Clean Development Mechanism (A/R CDM), some small-scale "tree-based agriculture" systems and other forest activities by local communities on forest areas turned into grasslands seek to capture economic benefits for local communities from carbon payments. An example is the Loksado Grassland Reforestation project (Boer et. al. 2006) which aims to establish about 2,500 ha of viable mixed rubber-cinnamon-timber plantations in three Dayak villages in Loksado subdistrict, South Kalimantan. The project hopes to contribute to the incomes of poor communities through the sale of rubber and other tree products by the fifth year of project implementation and through carbon payments by the 10th year and to decrease pressure on the Loksado protection forest by developing the commitment of local farmers to practice sustainable, permanent agriculture. Another reforestation project (Roshetko et. al. 2006) plans to establish smallholder fruit and timber systems in 650-hectare grasslands in Sidenreng Rappang (Sidrap) district, South Sulawesi to improve soil conservation and watershed functions. The project targets to increase the incomes of 581 participating families through the sale of fruits and timber products after the fifth year as well as from carbon payments for a 30-year period, and help in developing Sidrap as a major producer of specific tree products. The agreed-upon carbon payment-sharing scheme gives the farmers the highest share plus the proceeds from the sale of tree products. Other direct benefits for the participating farmers include (i) secure land tenure to be facilitated by the district government through the end of the project; (ii) viable market-oriented tree-based systems to be established by the farmers; and (iii) start-up investment to be secured with other stakeholders to initiate the project.

No CDM forestry project has been approved yet. MoF sees A/R CDM as an option for financing the rehabilitation of logged-over forest areas through community or industrial forest management systems (MoF 2006), but recognizes that meeting CDM conditions, such as clarifying land rights, poses critical challenges.

Many REDD pilot projects and proposals across the country are in varying stages of development and initial implementation. Among the major concerns over REDD projects in Indonesia relate to the nature and extent of participation/consultation with local communities during project preparation, such as top-down planning by government, international agencies, NGOs, private companies and carbon financing companies and lack of consultations with communities or local governments that are signing on to REDD.[11] Local and indigenous communities often lack the administrative and legal knowledge to be in a position to effectively negotiate over REDD deals. FPIC is not integrated in the draft REDD policy. Also, promises of equitable distribution of REDD funds to indigenous and local communities in the forest project areas are made but without clear mechanisms. Questions being raised on the equitable sharing of benefits need to consider whether villagers with no formal land titles or those not doing destructive activities will receive benefits, as new inequities may be created with unfair benefit-sharing (Colchester et. al. 2006 in MoF 2006).

[11] No Rights No REDD. http://www.foe.org.au/climate-justice/activities-and-projects/redd/REDD-Indo.pdf

Morgan's investigation (2011) of 23 privately sponsored REDD projects found that project developers deal with communities through services, jobs, cash and, in very few cases, land rights. All projects claim to provide new employment (mostly as forest wardens for protecting forest conditions) or livelihoods to lessen the communities' forest dependence, but these have often been developed without much community inputs and have benefited only a small percentage of the people whose livelihoods were displaced. Nine projects have plans of providing health clinics and primary schools; nine projects gave cash to communities in exchange for their promises to stop using forests for food or fuel; and four projects proposed micro-credit to support local projects for alternative livelihoods. Only two projects were noted to prioritize the rights of communities within the project areas, including the right to FPIC. Both projects facilitated the designing of the project on traditional land-use pattern within village customary forest areas and development of access plans based on the communities' traditional land rights and management practices. Project developers discovered that while engaging with communities costs money, sharing benefits with them may actually save the developers money in the long run (Morgan 2011).

According to Morgan, providing jobs, services and cash are relatively cheap compared to recognizing land rights of communities in REDD project areas, and may be the most cost-effective way to increase projects' ability to save forests. However, carbon credit buyers "either do not care about communities whose livelihoods and forest uses are displaced by REDD projects, or do not have the experience to judge what is better or worse in terms of community co-benefits. What is more insidious and systemic is that project developers are able to market REDD carbon credits while providing only minimal compensation to forest communities because no laws or regulations require them to do more". As there are no minimum standards for engaging with communities in the voluntary carbon credit market, project developers, for instance, may opt to deal directly with the local government and work with communities "as much or as little as they want" (Morgan 2011).

Case Studies

The first case study focuses on the experience of Bogoran, a village in Wonosobo District (Java) in agro-forestry on private land as well as negotiations with the Perhutani over the use of state forest land and benefit-sharing. On the other hand, the second case study looks into a REDD plus initiative in the Merang peat swamp forest in MUBA District, Sumatra.

Bogoran: A Village's Wxperience in Agroforestry on Private Forests and Negotiating Clearer Agreements with the Perhutani on State Forestlands[12]

Wonosobo is one of the poorer districts in Central Java Province.[13] It has a total land area of 98,468 ha, and more than 60 % of this is farmland planted to rice, vegetables, fruit trees, coconut, coffee, clove, and various tree species for roundwood. State forestlands comprise the second largest land use (20%). These are under state forest management, through the Perhutani, primarily for the production of pine and dammar. Of Wonosobo's 733,000 population in 2001, over 70% live in the uplands and depend on agriculture and forestry. Remittances coming from members who have left to work in other provinces or other countries also form an important livelihood source.

Forest tenure and management in Wonosobo

The district's total forest cover in both private lands, called people's forests or *hutan rakyat*, and the Perhutani-managed state forestlands is about 37% of its land area. Agroforestry systems (called *wono dusun*) are usually practiced in *hutan rakyat* involving a high level of plant diversity and generating a

[12] Data for this case study are drawn from previous AFN field visits to the area (with corresponding reports) in 2004 (Communities Transforming Forestlands: Java, Indonesia and Forest Stewardship in Southeast Asia), in 2006 (Small Scale Tree Farming: Philippines Learning Visit to Indonesia), and in 2010.

[13] Wonosobo services five watersheds and the Wadaslintang Dam.

wide range of products in densely packed plots of land. On the other hand, Perhutani forest management is based on specific technical and organizational regulations, grounded in strict representations of what a 'planted forest' should be and who will benefit from output. Perhutani allows villagers to plant in state forestlands only when *tumpang sari*[14] is being implemented; otherwise, entering state forest lands is forbidden.

Some of the state forests in Wonosobo are now bare because there has been no replanting in recent years. After massive forest plunder and the weakening of Perhutani's presence in state forest lands following the *reformasi*, many areas became open access. *Hutan rakyat* areas, nonetheless, retained their tree cover.

Wono dusun (agroforestry) in *hutan rakyat* (people's forest) in Bogoran village

Bogoran is an upland farming village in Wonosobo with a total population of 1,810 people in 2006 and a total land area of 664 ha. State forestlands comprise 34% of the village land area (226 ha), while agricultural lands that include people's hutan rakyat make up 50% (332 ha). Most of the village members engage in rice cultivation (two harvests in a year), agroforestry and backyard raising of cattle and goat. Because of limited economic opportunities in the village, some of the young women have left to work in neighboring towns or other countries. Majority of the youth are staying to work on the land and are active in organizing environmental initiatives and working with NGOs.

Comparing the conditions in the village today and 40 years ago, a mother shared that there are no longer times of hunger, as families who do not own ricefields or have limited harvests have access to government-subsidized rice. Another villager cited improvements in water access and sanitation. The village got electricity in 1997, and many families replaced the 15–20 meter-deep household wells with electric pumps for their water supply. There are also several good land-use practices and new ones are emerging to help them improve their farming and productivity.

Farmers in Bogoran practice multi-layered *wono dusun* where, typically, fast-growing or fruit-bearing trees (*sengon* or *Paraserianthes falcataria*, jackfruit, mahogany or *Swietenia macrophilia*, etc.) provide the upper layer canopy; coffee, *salak* (*Salacca edulis*), *kaliandra* (*Calliandra calothyrsus*), cocoa, pepper, banana and papaya compose the middle layer; and cash crops such as ginger, turmeric, and other shade tolerant crops are grown at the lower layer. Other crops such as corn, cassava and pepper are also planted where light permits. At first, *sengon* was intended to shade the coffee but this tree later gained higher commercial value for the community. The logic to their multi-layered farming has taken into consideration the shade, nutrients for their crops, space optimization and other factors.

Incomes from the *hutan rakyat*

Sengon is usually grown for only 8–10 years, reaching not larger than 20 cm in diameter. Farmers have three options for marketing their wood. One, wood in relatively small quantity is hauled to the depot about five km away. Prices at the depot tend to be lower, but the farmers can decide how many trees to cut based on their needs. Two, there are traders who buy in bulk. Wholesale selling of all the trees on a farm gives the farmers higher returns in the short run, but leaves them with no trees to harvest the following year or when the need arises. Third, farmers with a relatively large volume of wood can sell directly to a processing plant where prices are relatively higher than the depot rates. Prices for the three buyers (ranging from US$ 33–78 per cubic meter) also depend on the diameter of the logs or trees.

Farmers usually sell their trees with smaller diameters, which do not fetch a high price but allow them to get early returns for their needs. Still, many farmers retain some big trees for future plans, e.g., construction of a new house. The younger trees are likened to a regular 'savings account' that they draw from for regular needs, and the 'legacy' trees to a 'time deposit' that they allow to mature and earn higher 'interest' for special occasions. According to the Bogoran village head, a family which practices

[14] A system (also called taung ya)where farmer planters could grow rice, corn, tobacco and other field crops for one or two years in between rows of state owned seedlings.

intercropping in at least 0.25–0.5 hectare parcel can send their children to junior high school without having to harvest from the forests. Income from *hutan rakyat* is also spent for contributions for social affairs, such as marriage, birth and religious events. Also of importance, at least 10% of the families in Bogoran have sent a member on a hajj pilgrimage, with 11 more villagers expected to go this year.

Pedro Walpole

Pak Mustadzir proudly refers to the pilgrimage of some of the young community members in Bogoran, largely financed by proceeds from the sale of falcata, as "Albasia Hajj".

Some women earn cash by preparing snacks from crops harvested from the hutan rakyat and selling these by the roadside.

Farmers also harvest their other crops within their hutan rakyat for their household consumption or for selling to earn cash. *Kapulogo* (*Amomum compactum*), *salak* and chili are harvested regularly as sources of additional household income. Even cow dung is collected and sold to the market by the truckload: two cows can generate at least one truckload of dung in a month.

Previous Perhutani operations in Bogoran

Perhutani's earlier schemes with the villagers over the state forestland in Bogoran had been limited to hiring some members to plant seedlings. The first time was after the old-growth forests were clear-cut in 1965 and, the second time, after the first round of plantations were harvested in the 1990s. For the second

round, the Perhutani again hired Bogoran villagers to plant pine seedlings and allowed them to plant food crops in newly planted areas under the tumpang sari system until the canopy would close on the third year while they looked after the seedlings. In some areas where the pine seedlings died, the farmers planted *sengon* with coffee and cassava but, because there was no clear agreement on this, Perhutani had these cut in 1998.

After the *reformasi*, Perhutani field staff asked the Bogoran villagers to replant on looted state forestlands. Prior to planting, the villagers asked permission to cut the remaining trees and use the proceeds for improving their village road. Perhutani permitted them to cut 100 trees. At the time, some local Perhutani staff and police officers reportedly informed the farmers that they could earn money by cutting pines trees on state forestlands and bringing the wood to local traders. The farmers who were involved got paid Indonesian rupiah (IDR) 20,000–30,000 for each tree felled and delivered to the traders who in turn paid off the Perhutani staff and police. This pattern led to the loss of over 300 ha of pine forests in Bogoran in 1998–2000. At the time, the state forests were heavily looted and Perhutani lost its control over state forest lands. Following the looting, several Bogoran villagers started planting on barren state forestlands in and around the village. As of 2002, around 90 ha of state forestlands have been planted.

Perhutani forestry program and Wonosobo district forest policy

In 2000, the Central Perhutani adopted collaborative forest management (PHBM) as the new Perhutani management approach. The main feature of PHBM is the introduction of the timber profit-sharing agreement, which gives 25 % of the timber sale to the communities for their labor on state forest lands.

With 70% of its population dependent on forestlands, forest plunder and land use conflicts were high on the Wonosobo District's agenda. In 2001, on the strength of the 1999 decentralization policy, the district government passed the District Regulation on Community-based Forest Management (PSDHBM), which was formulated through a multi-stakeholder consultation process with NGOs and initially the Perhutani (which later withdrew from the group). PSDHBM provided the basis for giving greater tenurial rights to communities working on state forest land through a 30-year tenurial agreement. The production-sharing scheme is 70% for the community and 30% for the district government. The guidelines gave priority to farmers with existing ownership of lands less than 0.3 ha. Both the Perhutani and MoF, however, contested the regulation since it threatened their control of the forests.

Bogoran is one of three villages selected as a pilot area for the implementation of PSDHBM, through the Wonosobo Multi-Stakeholder Team. In 2002, as the piloting of the implementing guidelines of the PSDHBM was in progress, Perhutani started lobbying with central government for the district regulation's cancellation. Perhutani also campaigned against the PSDHBM process in the communities, claiming it lacked legal backing from the central government, and unlike Perhutani, did not assure a 25% share for communities. The local communities were divided over the more substantial benefits offered under PSDHBM as compared to the assured benefits under PHBM. In 2005, the Ministry of Interior revoked the Wonosobo district government's PSDHBM regulation.

The risk of insecure tenure to the state forestland confronted the Bogoran farmers in 2004, when a timber trader, who claimed to be backed by Perhutani, forced them to clear-cut a 6-hectare block in state forestlands and to give him 30% of the revenue. Perhutani officers denied that they ordered the trader, but admitted that the state forest block in question was targeted for planting that year. Farmers planted this barren block in 1999 with *sengon*, then valued at 20 million rupiah (US$ 2,300). In the end, the farmers had to relent to the timber trader's demands. Without an approved CBFM District Regulation, district government representatives could not stop the land clearing. Most of the Bogoran farmers accepted the situation and devised a sharing arrangement: 90% of the proceeds for the farmers who tended the block and the rest to be distributed among the village government, the youth organization and the Block Sijambu forest farmer group. However, this sharing arrangement did not materialize as the trader insisted on his 30% share by threatening farmers with arms. Until this incident, difficulties of Wonosobo farmers who actively managed state forestlands had largely been legal and procedural in nature.

Challenges and ways forward

In the last two years, *sengon* is being attacked by a gall disease that damages the growing trees, reducing greatly its value when harvested. The alternative fast-growing tree, *mahoni*, takes 15 years compared to the 8–10 growth years for *sengon*. Shifting to *mahoni* will mean economic and farming adjustments for the farmers. The community knowledge of the land is constantly adapting and now gives importance to organic aspects of cultivation, as the practice of intensive cultivation involves different ways of composting.

One challenge to the farmers is getting better prices for trees they harvest from their *hutan rakyat*. A youth leader admitted that buyers were trying to dictate the market terms and demand for smaller-diameter logs to keep prices down. An interview with one of the furniture makers confirmed this: he generally prefers to buy 16-20 diameter wood since wood larger than this was less cheap.

After more than a decade of struggle with Perhutani (Ministry of Forestry) seeking a more socially responsive policy for community forest land use, the situation is still risky. The community seeks to establish acceptable and secure guidelines for planting and harvesting on forest lands, inasmuch as the present sharing and management practice still results in much confusion and loss of face.

Case Study 2: Merang REDD Pilot Project[15] (MRPP) in Sumatra

Indonesia leads globally in GHG emissions associated with the draining of peatlands (Olsen and Bishop 2009). In Sumatra, most of the island's forest and peat carbon are concentrated in the province of Riau. Riau also holds the highest deforestation rate in the island as plantations have increasingly replaced natural forests (WWF-Indonesia 2010). REDD is envisioned to protect and rehabilitate the remaining peat forests, while benefiting poor local communities in the process.

Peat swamp forest status and the MRPP

In South Sumatra, the Merang peat swamp forest area has been chosen as a site for a REDD pilot project.[16] The project area covers the contiguous peat forest areas in Southern Sumatra, located near the Sembilang National Park (South Sumatra province) and Berbak National Park (Jambi province). Its forest cover and large below-ground carbon storage capacity remain relatively intact. However, these are threatened by legal and illegal logging, forest fires, digging of canals for transporting logs and expansion of plantations as developers look for new lands with lesser land tenure problems.

The MRPP project area covers 24,000 ha of peat swamp forest in Musi Banyuasin (MUBA) district, classified as limited production forest. When HPH forest concession operations in the peat swamp forests stopped in 2000, illegal logging activities took over. The local authorities have neither the capacity nor the will to stop illegal logging. The forest is now about 37% degraded primary forest and 63% secondary forest. In 2009, the MUBA district government passed two decrees approving the MRPP and establishing the Lalan Forest Management Unit (FMU) or *Kesatuan Pengelolaan Hutan Produksi* (KPHP) covering an area of 265,953 ha of various forest concessions and conservation areas.

The MRPP aims to protect and restore the Merang Kepayang peat swamp forest in South Sumatra, including its biodiversity, through its preparation for REDD implementation and a system of FMUs. The MRPP implementation from 2008–2011 is being supported by a grant (up to euro 1,433,454) from the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU). MoF is the executing agency, and District Forestry Agency of Musi Banyuasin and the Provincial Forestry Agency of South Sumatera are the implementing agencies in cooperation with GIZ in Indonesia. There are no communities within the project area; the villages nearest the Merang Kepayang peat swamp

[15] Case Study 2 is based on literature review. Sources of information include http://www.merang-redd.org/REDD/komponen-mrpp/pengendalian-kebakaran-terpadu/community-development.html; http://www.merang-redd.org/REDD/home.html;

[16] The MRPP draws on the South Sumatra Forest Fire Management Project (SSFFMP) that the Indonesian government collaboratively implemented with the European Union in 2003-2008.

forest (Muara Merang and Kepayang in MUBA District) were chosen as the community partners for the project.

Merang and Kepayang villages: socio-economic situation

Muara Merang has a total land area of 16,912 ha and a total population in 2006 of 3,036, while Kepayang has a total land area of 13,288 ha and population of 1,207. Majority of the villagers are locals and the rest are migrants from other districts of South Sumatra and other provinces. Merang and Kepaya are poor, isolated villages. Educational levels of the people are very low, and access to health services is very limited. The people use rainwater and water from the river for their daily needs, exposing themselves to water-borne diseases. Income levels are also low. The people's main livelihood sources are small rubber or oil palm plantation holdings and temporary daily work at oil palm plantations. Daily labor rates range from IDR 32.000–40.000 (US$ 3.3–4.4) per day, with 20–22 working days per month. Many villagers are expecting to benefit from a recent government regulation that allows registered households to be given two ha of oil palm plantation each by the companies adjoining their village.

Despite their low incomes, not many of the local villagers have been drawn to work as illegal logging laborers under the illegal logging mafia. However, some villagers, mostly migrant, are involved in illegal logging and others may be forced to participate in times of grave need (e.g., paying for health expenses).

Merang and Kepayang villages are hemmed in by oil palm plantations, timber estate concessions and state forest lands, which leaves little room for productive activities and which can easily trigger conflicts over land tenure. In response to the people's need for land for their livelihoods, the MoF issued about 7,250 ha of hutan desa or village forest concession to the Pancoran sub-village of Muara Merang in 2010. Another 6,000 ha of hutan desa concession is being considered for Kepayang village.

Community development component and establishing Community Forest Rangers

MRPP's community development component centers on establishing the Community Forest Rangers or *Kelompok Masyarakat Peduli Hutan* (KMPH), which is the project's main strategy for conserving, protecting and rehabilitating the peat swamp forest. The activities include (i) improving awareness and promoting active community participation in the project; (2) establishing effective fire prevention and developing methods to mitigate illegal activities through the involvement of the local communities; and, (iii) developing alternative income-generating activities to reduce dependence on illegal logging and to prevent fires. The KMPH will be mobilized and capacitated to participate in protecting the peat swamp forest forests from illegal logging and forest fires and in rehabilitating the forest area.

Each KMPH comprises 15 members. The CFRs' tasks include conducting fire patrols within the project area, and preventing and providing initial control of fire when these occur during the dry season; monitoring and reporting illegal log rafts that pass by CFR posts; and participating in MRPP field activities, e.g., canal blocking, survey on vegetation and degree of degradation, and carbon measurements. As part of capacity development, the project has been providing trainings (forestry techniques, agricultural technologies, basic fire management, nursery development and others), public awareness raising and strengthening of group organizational capacity. Institutional strengthening is being carried out in collaboration with local NGOs.

Economic incentives for the members of the KMPH include additional income from income-generating activities (IGAs) and access to village micro-finance service/savings and loan mechanisms. After IGAs are agreed upon during KMPH meetings, agriculture specialists conduct assessment of existing technology to identify the needed interventions. An ongoing IGA in two KMPH is on poultry raising. IGAs are intended to be scaled up or replicated by other villagers as alternatives to illegal logging.

In 2010, the project disbursed a subsidy of IDR 30 million each to 14 KMPH as their revolving capital for their savings and loan services. Under the agreement signed with MRPP, the KMPH members will use the fund for IGAs or other productive activities only—not for illegal logging and other illegal activities.

Challenges

The target buyers of the carbon capture and storage are voluntary and/or compliance markets and other investors with corporate social responsibility policies. Based on project plans, the FMU/MRPP will receive conditional payments for the environmental services to be obtained by the project. However, there is still no precise guideline on how the carbon payments will be shared, other than mentioning that the benefits would accrue to local communities for alternative livelihood generation and other activities. Transparency and communities' participation in fund management and project planning and implementation are critical to ensure fair benefit-sharing with the communities and broader impacts to improving their welfare—for the compensation of their labor as well as for investment in social services in the area and sustainable livelihood activities. The security of the KMPH members must also be ensured in case illegal logging monitoring and reporting will put their lives at risk.

Current MRPP funding ends in 2011 and other funding sources are needed to bridge the project from readiness to a developed REDD project. An assessment of the first phase of project planning and implementation on the community development component, KMPH being the main strategy for the peat swamp forest protection and rehabilitation, would be opportune to know the strengths and weaknesses of the project's approach and identify areas for improvement. Worth looking at is the effectiveness of the selection and capacity-building process. Illegal logging will be a big challenge for the project, and needs a detailed investigation on the operations and other ways of mobilizing community support against these activities and targeting their participation in the project.

Locally, the successful outcome of the MRPP in conserving and protecting the Merang and Kepaya peat swamp forests for environmental objectives and contribution to local communities' welfare rests in large part on the level of commitment of the MOF and the district government to support the initiative and keep the area off from plantation development. In 2006, the district head endorsed a decree recommending the conversion of 89,500 ha—the MoF approved only 67,000 ha—in Merang peat swamp forest into timber plantation by PT Rimba Hutani Mas. At the national level, the Indonesian government imposed a two-year suspension on all concessions for the conversion of peat and natural forests starting from January 2011, but this does not cover those that were already issued.

Outlook for Poverty and the Forestry Sector

Indonesia has achieved its target for MDG 1 of halving extreme poverty before 2015 at the national level, but poverty reduction remains a challenge, as this target may not be achieved in poorer districts and since a significant proportion of the population is living just above the poverty line. The Second Medium Term Development Plan lists poverty reduction as one of the national government's top priorities for the period 2010–2014 and specifies attaining and sustaining high economic growth as the key to alleviating poverty (BAPPENAS 2010). Given this economic goal, the country's high forest cover and the international market opportunities for wood products, forests and forestlands are largely viewed as economic assets and sources of national income, which will determine priorities for forest resources development and will have critical implications on rural livelihoods and forests.

To what extent the forestry sector can contribute to further reducing the proportion of the population living below and just above the national poverty line of US$ 1.50/capita/day in the immediate future will be largely determined by how initiatives and activities in community forestry, commercial and industrial forestry and PES and carbon payments support or enable some critical aspects of people's livelihoods, including secure tenure and access rights to forests and forest lands, sustainable resource base, secure employment with fair wages, better market access, capacity to add value to forest products, greater participation in forest management, and fair benefit-sharing. Since the end of the New Order, community forestry schemes have been evolving in forestry policy which allows for some opportunities for the poor to derive benefits to some extent from the forestry sector. There are various schemes that allow local communities, including the poor, to have access to forest lands and enter into benefit-sharing with state and private companies, although broader implementation is slow. The improved system of

forest revenue-sharing (royalties, reforestation fund) allows for more funds for local development and forest rehabilitation in areas affected by logging and plantations development, although to what extent the benefits will accrue to the poor depends on local capacity to access and allocate the fund for long-term development and reforestation.

Addressing issues on tenure and management rights for communities living and around forests is among the key challenges to reducing rural poverty. With the value of forests still largely weighed in terms of commercial and market opportunities, community forestry will remain of lesser importance in forest management priorities. The forest policy and management framework's heavy orientation toward large-scale, capital-intensive commercial forest operations will continue to critically limit the potential for community forestry to be developed further and make significant contributions to poverty alleviation. Existing policies are not supportive of tenure reforms in the form of transferring ownership to the local communities or fully recognizing adat claims to customary forests. Policy reforms over the past decade are not genuinely addressing secure tenure of indigenous and local communities, but are more focused on benefit-sharing over the utilization of forest lands and resources. Private forests and outgrower schemes with fair benefit-sharing can benefit from the high market demand for wood and wood products.

International market trends and demand for wood and wood products is one of the key factors significantly affecting the forestry sector in Indonesia. The increasing global market demand for wood and related products, especially with the rapid economic growth in China and India, will continue to make considerable demands on Indonesia's natural forests, as state and private companies relying on forest clearing for their operations take advantage of the growing opportunities to supply the market demand. It is projected that the global demand for plywood, sawn timber, moulding and furniture will continue to rise (MoF 2006a). However, the wood processing industries in the country—plywood, veneer and block board, sawnwood—are likely to continue to face shortfalls in the wood supply until 2017 (MoF 2009). In turn, this high demand for tropical timber and wood products will define how forests will be allocated in the country, which means continuing priority placed on timber and plantations development.

The MoF's program of establishing nine million hectares of plantations for industrial wood in state forest zones by 2016 for Indonesia's pulp and paper industry is not likely to reach the target and contribute to local poverty reduction. Progress in establishing 60% of the total target through industrial community-based timber plantations in Sumatra and Kalimantan has not been proceeding rapidly as expected owing to the unattractive economic benefits for local communities. On the other hand, progress in establishing traditional large-scale industrial plantations (40%) is being hindered by issues and conflicts between companies and local communities in many areas, i.e., over land claims and adequate compensation. Employment to be generated through the expansion of plantations can have minimal impacts to reducing poverty, considering the low labor demand of plantation development relative to local unemployment and the livelihoods that may be displaced and the lack of long-term security in employment in plantations development. Private forests will meet some of the demand for woods, ensuring markets and income for private forest owners but, with the development of sustainable timber supplies still unable to keep apace with the industry's demand, the expansion of the pulp industry would mean huge costs in terms of the natural forests and peatlands.

Certification may be less effective in checking illegally sourced products for China and India, because these rising markets do not have strict environmental standards. Likewise, oil palm plantations are one of the main causes of forest loss in Indonesia, and it is likely that additional land requirements will result in an acceleration of deforestation in the country (WG-CCD 2007).

With the forestry crisis, a number of Indonesian timber companies have collapsed or are facing severe pressure because of economic difficulties and "adverse publicity due to social and environmental problems caused by the industry performance" (Eriantono 2010). Further, plywood, panelwood and pulp and paper industries are beset by shortage of raw materials and negative public image in relation to the exploitation of natural forests (Ibid.). The forestry crisis will continue to threaten some forest industries, which will lead to loss of a number of jobs, as affected companies, both large- and small-scale,

end or scale down their operations. As legal uncertainties and confusion are not being decisively dealt with, vertical and horizontal conflicts will persist, causing problems for the companies and significant delays in the development of vast areas of forest lands. Logging and plantation companies can no longer easily ignore the environmental costs of their operations. Broadened space for local people's voices, participation by civil society organizations, networking at the local, national and international levels, social and environmental safeguards of international financial institutions will continue to exert pressure on large-scale companies and the government to address social and environmental values and not just the aspects of economic gains from forest exploitation and technical management. Depending on the commitment of the companies to plan and implement appropriate community development activities with the local communities to reduce corporate risks and the capacity of local communities to effectively negotiate with companies and equitably share the benefits, improved partnerships can lead to better community development programs and profitable outgrower schemes that will contribute to improving local livelihoods and social services as well as reducing risks to plantations and processing operations for the companies.

PES schemes have the potential of accruing benefits for poor communities in and near forests, but the markets and the policy framework have yet to be established. The market for landscape beauty (mainly tourists) seems to have made the most progress, but biodiversity protection and eco-tourism are not always compatible. Markets for watershed protection are newly evolving, on the perception that the forests are good for water and the people are willing to pay for this service though the scientific connection between land-use and water has not been completely established (Suyanto et. al. 2005). Indonesia has high potential to benefit from the REDD market, given its high deforestation rate and vast forest areas, but actual impacts to rural poverty alleviation are yet uncertain.

As expressed by President Yudyohono, the emerging carbon market provides an opportunity to develop a new sector in the economy—"through ecosystem restoration concessions for carbon sequestration and emission reduction".[17] REDD plus will be significantly affecting the forestry policies in the immediate years ahead, which will have positive or negative implications for the rights of local communities depending on the extent of recognition of their FPIC and other rights by REDD-plus project developers and their participation in the project development and implementation. The two-year moratorium adopted in May 2011 on the issuance of new permits for the use of primary natural forests and peatlands to reduce emissions from deforestation and degradation as part of the country's REDD agreement with Norway may impact the local communities negatively because it does not include in the exemptions for the "multiple types of use or management rights that can be issued to communities, even though community based forest management and monitoring has been recognized as an effective strategy for achieving sustainable forest management and balancing economic, social, and environmental development goals" (Gingold and Stolle 2011). PES schemes and REDD plus activities that will primarily focus on protection to the economic displacement of the poor will further lead to rural poverty.

Recommendations

Reversing the trend of unsustainable forest management, inequitable allocation of forest land and resources and inequitable distribution of benefits from forests will be critical for achieving the poverty reduction target beyond MDG 1, particularly alleviating rural poverty in and near forest areas. For many, forest lands and resources are critical resource bases for the livelihoods of the poor, safety nets or "gap fillers" during hard times. Harnessing forestry to lift the poor out of poverty will require serious measures to strengthen the poverty alleviation agenda in forest management. The reforms needed can benefit from numerous assessments and analysis of the forestry industry in Indonesia and the recommendations for improving current conditions. Ultimately, there is a need for the national government to give more priority to the goal of poverty reduction in forest management, in consideration

[17] Speech delivered by President S.B. Yudhoyono during the conference, "Forests Indonesia: Alternative futures to meet demands for food, fibre, fuel and REDD+", held on 27 September 2011 organized by CIFOR.

of the goals of forest and biodiversity conservation, protection of environmental services and economic productivity, if the forestry sector is to contribute more to the welfare of the rural poor. Efforts of the forestry sector to alleviate rural poverty needs to be coordinated or integrated with social development programs to attain greater impact.

Improving Community Forestry Implementation

The goal of empowering communities recently included in the strategic priorities of the MoF needs to be translated into specific actions. MoF should take the lead in carrying out the specific activities laid out in the Forestry Long Term Plan with reference to increasing communities' role in sustainable forest management and improving the welfare of communities in and around forests. Pertinent and practical actions are needed in the areas of more secure tenure (which is fundamental to the livelihoods of the poor) and increased participation in forest management, equitable benefit-sharing and conflict resolution.

There is a need to increase community participation and capacity in the management of forests and/or forest lands through community forestry schemes that grant clear communities' rights to manage the forest resources area or forest lands with fair benefit-sharing. Various CBFM schemes have been evolved and it would be useful to review their effectiveness to craft a comprehensive and integrated community forestry program that will offer schemes appropriate to local conditions. Consistent with the rights-based approach of the SNPK, CBFM schemes must endeavor toward greater recognition of the rights of indigenous peoples and local communities to forest resources toward addressing their poverty situation. As has been raised, tenure reforms that will include the allocation of land to the communities beyond agreements with local communities on access to forest lands and benefit-sharing (Fey 2007) and reduction of the level of corporate control of the forestry sector form the far-reaching options to take (Wollenberg 2004). The identification and recognition of customary claims on land and forest management rights of indigenous peoples, which have long been raised, need a specific law beyond general provisions in the Revised Forestry Law of 1999. Beyond tenure reform, further support is also needed for the marketing of forest products as well as capacity building and access to funding support for the farmers to add value to their raw products.

Working with available CBFM schemes, CBFM schemes in forest lands must secure increased benefits for people working in the forestry sector through establishing an equitable and transparent profit-sharing system between the government, private companies and local communities involved, improving access to micro-credit, developing alternative income-generating sources, improving infrastructure and facilitating technical and information services. Promoting SMEs, one of the strategies for revitalizing the forest industry and one of the strategies of RJPMN 2010-2014, can allow local communities to participate more in forestry development, with specific measures to ensure that benefits accrue to the poor. As proposed in the Forestry Long Term Plan, the area of independent and sustainable private forests should be increased to support the forests' contribution to community livelihoods. This will involve recognizing forest management rights on lands with traditional management rights, improving local people's capacity to be involved in forest management from planning to the management stage, developing community forestry industries, such as small-scale industries, and markets for community forestry products, and developing policies that support the growth of community forestry businesses aimed at creating an enabling business climate for community forestry. Small- and medium-scale enterprises that rely on community forests have great potential to absorb labor and increase the income of local people living in and near forests and thus make a direct contribution to the poverty eradication.

Policy inconsistencies and uncertainties need to be addressed, and innovative and acceptable mechanisms for the resolution of conflict related to forest management need to be established for communities to be able to participate in sustained forest management and obtain lasting benefits.

Increasing the Benefits from Large-scale Commercial and Industrial Forestry and Ensuring their Operations do not Exacerbate Poverty

In view of the negative impacts of timber concessions and industrial plantations to local communities' livelihoods and, at best, their minimal contribution to rural poverty alleviation in terms of local employment creation and social services, there is a need to increase the benefits that local communities can derive from large-scale corporate operations and ensure that their operations do not worsen poverty of the affected communities.

There is a need to develop incentives to encourage state-owned and private companies to adopt voluntary commitments to undertake activities that are socially responsible and environmentally sound, including fair terms of employment, fair wages and benefits for the workers. Strategies that incorporate poverty alleviation include making more lands available for community-company partnerships for outgrower schemes and ensuring fair benefit-sharing, as well as planning community development programs with local communities that are economically profitable and are addressing social development needs so as to re-invest forestry revenue in long-term social and economic development in the affected areas. Establishing grievance and monitoring mechanisms involving local governments, local communities and civil society organizations with channels of communication with national government will help address local conflicts for the mutual benefit of both companies and local communities.

Making Payments for Environmental Services and Carbon Payments Accrue to the Local Communities

For PES and carbon payments to contribute to the welfare of the poor living in and near the forests, related initiatives and activities must start from a recognition of the rights of indigenous peoples to FPIC as well as the rights of local communities to the forests, and allow greater community participation in the planning, implementation and monitoring of the projects, including fund management. Strategies for the protection of environmental services must not displace economic activities of local communities, but provide support for the rebuilding of the resource base for local livelihood and environmental services values, as well as provide viable alternative livelihood activities. There is a need for transparency and greater accountability in the management of the funds from the PES or carbon payments with clear agreements to ensure that more benefits will accrue to local communities and not to mediating parties. Participation must look into better targeting of the participants to involve the community members who are most in need and to ensure equity in benefit-sharing.

References

Adi, J. et. al. (2004). *Communities transforming forestlands: Java, Indonesia*. Asia Forest Network.

Adrianto, A. et. al. (2006). *District governments and poverty alleviation in forest areas in Indonesia*. Governance Brief Number 2006. Center for International Forestry Research (CIFOR).

Aliansi Masyarakat Adat Nusantara (Indigenous Peoples Alliance of the Archipelago – AMAN). (2010). *Country technical notes on indigenous peoples' issues – Indonesia*. IFAD and AIPP (Draft).

Asia Forest Network. (2006). *Small scale tree farming: Philippines learning visit to Indonesia*. AFN.

Asian Development Bank. (2009). *Asian development outlook 2009*. Manila, Philippines: ADB.

Basnyat, B. (2008). *Impact of predicted demographic changes on forests and forestry in the Asia and Pacific to 2020*. Rome, Italy: FAO Forest Economics and Policy Division.

Badan Perencanaan Pembangunan Nasional (BAPPENAS). (2010a). *Regulation of the president of the republic of Indonesia number 5 of 2010 regarding the national medium-term development plan (RPJMN) 2010-2014*: Book 1- national priorities. BAPPENAS.

BAPPENAS. (2010b). *Report on the achievement of the Millennium Development Goals Indonesia 2010*. BAPPENAS. Retrieved from http://www.scribd.com/doc/38151948/2010-Indonesia-MDG-Report-Final

BAPPENAS. (2008). *Handbook: Pro-poor planning and budgeting.* BAPPENAS.

Barr, C. & Stafford, B. (2009). Emerging scenarios in the Asia Pacific pulp and paper sector to 2020: A preliminary assessment of implications for wood demand and landuse. In R. Lesli (Ed.), *Asia-Pacific Forestry Commission – The future of forests in Asia and the Pacific: Outlook for 2020*: 16-18 Oct 2007, Chiang Mai, Thailand.

Boer, R. et al., (2006). Case study 11. Loksado grassland reforestation, Indonesia. In D. Murdiyarso & M. Skutsch (Eds.), *Community forest management as a carbon mitigation option: Case Studies. Bogor, Indonesia*: CIFOR.

Colchester, M. (2006). *Justice in the forest: Rural livelihoods and forest law enforcement*. Bogor, Indonesia: CIFOR.

Contreras-Hermosilla, A. & Fay, C. (2005). *Strengthening forest management in Indonesia through land tenure reform: Issues and framework for action*. Forest Trends and World Agroforestry Center.

Eriantono, E. (2010). Private sector financing in Indonesian forestry – Removing constraints to investments. In M. Pescott, P.B. Durst & R.N. Leslie (Eds.), *Growing green assets: Removing constraints to private sector investments in forestry in Asia and the Pacific*. FAO.

Down To Earth (DTE). (2002). *Update on Indonesian government's forestry policy*. Retrieved from http://dte.gn.apc.org/cfprs.htm

DTE. (2007). *'Peoples plantations': Help or hindrance in tackling deforestation?* Down to Eath. Retrieved from http://dte.gn.apc.org/74bpe.htm

EIA/Telapak. (2002). *Timber trafficking: Illegal logging in Indonesia, South East Asia, and international consumption of illegally sourced timber.* London: Environmental Investigation Agency.

Engel, S. & Palmer, C. (2006). Who owns the right? The determinants of community benefits from logging in Indonesia. *Forest Policy and Economics* 8(4), pp.434-446.

Explanation Note on 2010 HDR Composite Indices. Retrieved from http://hdrstats.undp.org/images/explanations/CHN.pdf

FAO. (2010) *Global forest resource assessment – 2010: Indonesia country report*. Rome: Food Agriculture and Organization of the United Nations.

FAO. *Facts and figures on deforestation and net forest change*. Retrieved from http://www.fao.org/forestry/30515/en/

Fey, C. (Ed.) (2007). *Review of legal frameworks for community-based natural resource management in selected Asian Countries*. Indonesia: World Agroforestry Center. (Draft).

FWI/GFW. (2002). *The state of the forest: Indonesia*. Bogor, Indonesia: Forest Watch Indonesia and Washington DC: Global Forest Watch.

Gautam, M. et. al. (2000). *Indonesia: The challenges of World Bank involvement in forests*. The World Bank.

Gingold, B. & Stolle, F. (2011). *Indonesia's ambitious forest moratorium moves forward*. Retrieved from http://news.mongabay.com/2011/0617-indonesia_moratorium_wri.html

International Tropical Timber Organization. (2009). *Tropical timber market report*, 16-30 Nov 2008. Yokohama, Japan: ITTO.

International Tropical Timber Organization. (2009). *Tropical Timber Market Report*, 1-15 Jan 2009. Yokohama, Japan: ITTO.

Kayoi, M. et. al. (2006). *Poverty and natural resource conflict in Indonesian Papua: Reconciling growth and social justice*. Retrieved from http://www.profor.info/profor/Documents/pdf/livelihoods/IndonesianPapuaCaseStudy.pdf

Leimona, B. et. al., (2006). Singkarak: Combining environmental service markets for carbon and watershed functions? In D. Murdiyarso & M. Skutsch (Eds.), *Community forest management as a carbon mitigation option: Case studies*. Bogor, Indonesia: CIFOR.

Manurung, E.G. et al. (2007). *A road map for the revitalization of Indonesia's forest industry*. Ministry of Forestry: The Forest Industry Revitalization In-house Experts Working Group.

Maturana, J. (2005). *Economic costs and benefits of allocating forest land for industrial tree plantation development in Indonesia*. CIFOR.

Maturana, J. et. al. (2005). *Moving towards company-community partnerships: Elements to take into account for fast-wood plantation companies in Indonesia*. CIFOR Working Paper No. 29.

Ministry of Forestry. (2006). *Indonesia's forestry long term development plan 2006 – 2025*.

Ministry of National Development Planning/National Development Planning Agency (BAPPENAS) (2010). *Report on the achievement of the Millennium Development Goals Indonesia 2010*. Retrieved from http://www.scribd.com/doc/38151948/2010-Indonesia-MDG-Report-Final

MoF. (2006b). *Poverty reduction in Indonesia: A brief review of facts figures and ways forward*. Paper presented at the Forum on National Plans and PRPS in East Asia, Vientiane, Lao PDR. Ministry of Forestry.

MoF. (2009). *Indonesia forestry outlook study: Working Paper No. APFSOS II/2009/13*. FAO-Regional Office for Asia and the Pacific.

Moeliono, M. & Dermawan, A. (2006). The impacts of decentralization on tenure and livelihoods. In C. Barr et. al., (Eds.), *Decentralization of forest administration in Indonesia: Implications for forest sustainability, economic developments and community livelihoods*. CIFOR.

Morgan, B. (2011) *Community engagement: Don't ignore REDD impacts on communities*. Retrieved from http://www.insideindonesia.org/feature/community-engagement-18071463

Morton, A. & Applegate, G. (2009). Global market impacts on Asia-Pacific forests in 2020. In R. Leslie. (Ed.), *Asia-Pacific Forestry Commission – The future of forests in Asia and the Pacific: Outlook for 2020: 16-18 Oct 2007*, Chiang Mai, Thailand.

Nawir, A.A. et. al. (2003). *Towards mutually-beneficial company-community partnerships in timber plantation: Lessons learnt from Indonesia*. CIFOR.

Neilson, D.A. (2009). Corporate private sector dimensions in planted forest investment. In Leslie, R. (Ed.), *Asia-Pacific Forestry Commission – The Future of Forests in Asia and the Pacific: Outlook for 2020: 16-18 Oct 2007*, Chiang Mai, Thailand.

Maryudi, A. (2008). Forest stewardship: Sticks or carrots? *Jakarta Post*, 09-07-2008. Retrieved from http://www.fair-biz.org/artikel.php?id=38&lang=2

No Rights No REDD. Retrieved from http://www.foe.org.au/climate-justice/activities-and-projects/redd/REDD-Indo.pdf

Obidzinski, K. & Barr, C. (2005). *Forestry sector employment in Indonesia Riau Province. (Draft for Review)*. Retrieved from http://www.scribd.com/doc/41493832/DRAFT-for-Review-Riau-Forestry-Sector-Employment-Study-July-2005

Poffenberger, M., Soriaga, R. & Walpole, P. (2005). *Forest stewardship in Southeast Asia: Community forest management trends in Southeast Asia*. Asia Forest Network and Community Forestry International.

Roshetko, J.M., et. al., (2006). Case study 12. Sidrap community reforestation of unproductive grassland, Indonesia. In D. Murdiyarso & M. Skutsch (Eds.), *Community forest management as a carbon mitigation option: Case Studies*. Bogor, Indonesia: CIFOR.

Safriti, M.A. (2010). *Forest tenure in Indonesia: The socio-legal challenges of securing communities' rights*. Leiden University.

Saparjadi, K. 2003. Director general of forest protection and nature conservation, Indonesian Ministry of Forestry. Cited in Indonesia Losing $3.7 Billion Annually From Illegally Sourced Timber. *Asia Pulse*.

Satyawati, H. (1991). Case study 3: Forest-based handicrafts in Indonesia. In J. Campbell (Ed.), *Case studies in forest-based small scale enterprises in Asia*. FAO. Retrieved from http://www.fao.org/docrep/x5860e/x5860e06.htm

Schneck, J. (2009). *Assessing the viability of HTR – Indonesia's community-based forest plantation program*. Duke University. (Master's project).

Seibert, S. (2002). Harvesting wild rattan: Opportunities, constraints and monitoring methods. In *An Indonesian perspective in rattan: Current research issues and prospects for conservation and sustainable development*. FAO, SIDA and Inbar.

Silitonga, T. (2002). Degraded tropical forest and its potential role for rattan development: *An Indonesian perspective. Rattan: Current Research Issues and Prospects for Conservation and Sustainable Development*. FAO, SIDA and Inbar.

Simorangkir, D. & Sardjono, M.A. (2006). *Implications of forest utilization, conversion policy and tenure dynamics on resource management and poverty reduction: A case study from Pasir District, East Kalimantan, Indonesia*. FAO.

Sheyvens, H &Setyarso, A. (In press). *Development of a national REDD-plus system in Indonesia: Progress, challenges and ways forward*. Institute for Global Environmental Strategies (IGES).

Skutsch, M. & Murdiyarso, V. (2006). Lessons learned. In D. Murdiyarso & M. Skutsch (Eds.), *Community forest management as a carbon mitigation option: Case Studies*. CIFOR.

Soriaga, R. & Walpole, P. (2009). *Deforestation, indigenous peoples and the poor: Consequences and choices in the context of justice and climate change in Indonesia*.

Stibig, H-J., Stolle, F., Dennis R. & Feldkötter, C. (2007). Forest cover change in Southeast Asia - The regional pattern, *EUR-Scientific and Technical Research Series*, EUR 22896 EN, Office for Official.

Subarudi, et. al. (2004). Community forestry for poverty Reduction – Lessons learned in Indonesia. *Proceedings of the Workshop, Forests for Poverty Reduction: Can Community Forestry Make Money? 1-2 September 2003, Beijing China*. FAO-RAP.

Sunderlin, W., Dewi, S. & Puntodewo, A. (2006). Forests, poverty and poverty alleviation policies. In Chomitz, K. *At loggerheads: Policies for development, poverty alleviation, and environment in the world's tropical forests*. World Bank.

Suyanto, et. al. (2005). *Review of the development of environmental services market in Indonesia*. World Agroforestry Center.

Tokede, M.J., William, D., Widodo, Gandhi, J., Imburi,C., Patriahadi, Marwa,J., & Yufuai, M. (2005). *Dampak otonomi khusus di sektor kehutanan Papua: Pemberdayaan masyarakat hukum adat dalam pengusahaan hutan di kabupaten Manokwari*. Center for International Forestry Research (CIFOR). Bogor Indonesia. (The impact of special autonomy on Papua's forestry sector: Empowering customary communities (masyarakat adat) in decentralized forestry development in Manokwari District).

United Nations Common Country Assessment – Indonesia. (2004).

World Bank. (2006a). *Sustaining economic growth, rural livelihoods, and environmental benefits: Strategic options for forest assistance in Indonesia*. World Bank.

World Bank. (2006b). *Making the new Indonesia work for the poor.* World Bank.

World Resources Institute (WRI) in collaboration with United Nations Development Programme, United Nations Environment Programme, & World Bank. (2005). (2005): *The wealth of the poor —Managing ecosystems to fight poverty.* Washington, DC: WRI.

WWF - Indonesia. (2010). *Sumatra's forests, their wildlife and the climate – Windows in time: 1985, 1990, 2000, 2009*. World Wildlife Fund – Indonesia.

Working Group on Climate Change and Development (WG-CCD). 2007. *Up in smoke? Asia and the Pacific: The threat from climate change to human development and the environment, the fifth report from the Working Group on Climate Change and Development*. Retrieved from http://pubs.iied.org/pdfs/10020IIED.pdf

VI

Assessment of the Contribution of Forestry to Poverty Alleviation in Lao People's Democratic Republic

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Introduction

Lao's People's Democratic Republic (Lao PDR) is a landlocked country located in central Indochina. The country shares borders with China to the north, Myanmar in the northwest, Thailand to the west, Cambodia to the South, and Viet Nam to the east.

Lao PDR has a total land area of 23.7 million ha, 70% of which is mountainous. There are three agro-climatic zones in the country: the mountainous north; the hilly to mountainous regions in the central and south; and the alluvial river plains along the Mekong and its tributaries in the central and southern parts of the country.

In 2009, the country's total population was estimated at 6.38 million, with a population growth of approximately 2.3% per annum. The Lao population comprises 49 official ethnic groups of some 200 sub-ethnic groups, and around 73% of them live in rural areas in which livelihoods rely on forest resources.

Forest Situation and Forest Policy

Being a landlocked mountainous country, Lao PDR is well-endowed with natural resources that can make a major contribution to the country's long-term economic development. The most important of these resources are forests, agricultural lands, hydroelectric potential, and minerals. In particular, the Lao forests are rich in species with a high degree of endemism and biological distinction[1]. In 2010, forest cover was estimated at 40.3% of the total land area (approximately 9.5 million ha) (DOF 2010). This is considered to be among the highest forest cover in the Southeast Asian region.

However, Lao PDR experienced a notable deforestation rate in the last two decades. Forest area decreased dramatically with an estimated forest loss of about 134,000 ha per annum or about 0.6% of the total land area (DOF 2002). Deforestation took place mostly in the north, where arable lands are limited and where most people practice shifting cultivation. If this deforestation rate continues, the Lao forest area will decrease to 7.4 million ha (approximately 31.3% of the total land) by 2020.In addition to decrease in area, changes also occurred in stocking density, species composition, forest structure, and decrease in wildlife and plant population.

There are external and internal factors causing deforestation in Lao PDR. External factors include increasing market demand for Lao timber and NWFP in the region, partly resulting from logging bans

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[1] According to MAF, FS 2020, there are at least 8,100 plant species, 166 reptile and amphibian species, 700 bird species, and 100 mammal species identified in Lao PDR.

in neighboring countries that increase pressure on the Lao forests. Internal factors, on the other hand, include shifting cultivation practices, unsustainable logging, land conversion to commercial plantations, hydropower development, and mining. More recently, deforestation in Lao PDR has been intensified by careless land concessions for domestic and foreign direct investments in natural resource-based sectors, particularly commercial plantations, hydropower electricity generation, and mining.

In the Lao policy, deforestation has been recognized as a serious threat to the sustainable socio-economic development of the country. The Government of Lao PDR (GoL) has spent a lot of effort in placing Lao forests under sustainable management. This includes the development and testing of various sustainable forest management models and improvement of forest policy and related legal framework. The participation of local people in forest management, protection, and conservation has been strongly promoted. These policy directions have been finally translated into the Forest Strategy toward 2020 (FS 2020) adopted by the GoL in 2005. The strategy consolidates the government's visions and related policies for the sustainable development in the forestry sector and specifies the important role of forestry development in economic growth, poverty reduction, environmental and biodiversity conservation, and mitigation of global climate change.

In FS2020, the GoL envisages to increase forest cover to reach 70% of the total land area by 2020, of which the production forest (PDF) accounts for around 13%, the conservation forest (NBCA) around 20%, and the protection forest (PTF) around 35%. In addition, forest plantations are expected to contribute 2% or around 500,000 ha. The key strategies set for forest recovery include natural regeneration, sustainable forest management, and the promotion of forest plantations. In June 2011, the GoL adopted the 7th NSEDP (2011-2015) that targets an increase in forest cover to 65% by 2015.

To date, 51 PDF areas covering a total area of around 3.1 million ha (about 13% of total land area) have been demarcated throughout the country. All these PDFs are to be put under the Participatory Sustainable Forest Management System (PSFMS)[2] developed and implemented by DoF with support from the Sustainable Forestry for Rural Development (SUFORD) project. The PSFMS has so far been implemented in 16 out of 51 PDFs covering 42% of the total demarcated PDF areas (DOF 2010a). Out of these PDFs, six sub-PDFs covering almost 82,000 ha have been certified by Smart Wood using the Forest Stewardship Council (FSC) criteria. Further expansion of certified forest areas is planned in the future (Ibid.). By doing so, GoL expects to maximize the value of Lao timber when trading with international markets. But due to a number of limitations, not much in premium benefits have been obtained from the effort so far.

In addition, PTFs covering a total area of around eight million ha are to be established. This forest type is particularly important for the protection of watersheds, especially in the uplands. However, the establishment and management of PTFs in Lao PDR are currently in an initial stage. No specific strategy and plans yet have been prepared for the establishment and management of PTFs. Efforts so far have been concentrated on boundary delineation on maps and preparation of governing regulations. In 2010, 308 protection forest areas covering around six million ha were in the process of boundary demarcation, 180 of which were officially approved by relevant provincial authorities. No groundwork has started yet.

Finally, 23 NBCAs have been established with a total area of about 4.4 million ha (approximately 19% of total land area) (DoF 2010). These forests are managed under two management systems: the "Participatory Protected Area Management System" and the "Participatory Conservation and Development."[3] In spite of a lot of efforts to develop management models and build associated capacity, the management of NBCAs in Lao PDR is still in an early stage and faces a number of

[2] PSFMS is a forest management system developed for the management of PDFs with full participation of respective villagers in planning, operation, and benefit sharing in accordance to prescribed rules and regulations.

[3] The two management systems both involve local people in the planning and management of NBCAs, but the difference between them is that in ICAD, rural development activities are integrated in the management system.

limitations and obstacles. Some key issues include, for instance, unplanned village settlements, unclear NBCA boundaries, pressure from exploitation, encroachment and large-scale development projects[4], inadequate institutional arrangements, lack of knowledge and experience, lack of funds, and other concerns.

Economic Situation

In terms of economy, Lao PDR is currently in the transition period, moving towards a market economy. In general, the economy has performed relatively well in recent years in spite of the global financial crisis. Currently, Lao PDR belongs to the top 10 countries that improved their human development index (HDI) and ranks 122nd out of 169 countries listed (UNDP 2010). The gross domestic product (GDP) shows a steady growth of about 7.9% per annum in the last five years and it is projected to continue growing steadily in the future.

Within the total growth, the agriculture sector grew on average at 4.1%, with a 30.4% share in the GDP; the industry sector at 12.5% with 26% share; and the service sector grew at 8.4% with 37.2% share. The rest was accounted for by indirect taxes (Report on the High Level Round Table Meeting 2010).

The economic growth in Lao PDR has been extensively attributed to external demand and massive inflows of foreign direct investment (FDI) from neighboring countries, particularly China and Viet Nam. During the period from 2000 to 2009, the FDI in Lao PDR accounted for US$ 12.2 billion, out of which 34% went to electricity generation, 26% to mining, 12% to service, 9% to agriculture, 8% to industry and handicraft, and 11% to the other sectors (PEI 2010). The number of approved and implemented projects gradually rose. In 2009 alone, 208 projects were approved and implemented, valued at approximately US$ 4.3 billion of FDI.

Table VI.1. Characteristics of affected populations from hydro & mining investments in Lao PDR

	Hydro: planned (with MOU)*	Within 1 hour's walk of current/planned hydro**	Mining: exploitation stage	Mining: exploration /general survey***
Villages	293	255	36	1,225
Population	104,962	112,256	19,082	568,370
Poverty Rate	47%	42%	37%	40%
Literacy rate	60%	69%	46%	40%

* Based on 42/81 hydro projects,"planned" include under construction, planning or feasibility study
**Excluding population within the inundated area, based on 42/81 hydro projects
***Rough average of projects in exploration or general survey stage

Source: Fenton et.al, 2010 in Lao PDR Development Report 2010. Background Paper. Social Impact Mitigation from Hydropower and Mining in Lao PDR: Examining Potential for Benefit-Sharing Approaches.

The investments are mostly concentrated on resource sectors such as hydropower electricity generation, mining and agriculture, particularly commercial plantations (Ibid.). The majority of these projects are located in remote rural areas where poverty incidence is high. Table VI.1 above depicts examples of the characteristics of affected populations from hydro and mining investments in Lao PDR.

In general, Lao PDR has achieved a rapid economic growth that drives development. However, the GoL has recognized that the growth does not reflect sustainable development because it is mainly derived from the exploitation and export of natural resources (Report of the Lao President to the IX Party Congress 2011). Increasing demand for the country's abundant natural resources will further accelerate the pace of exploitation of these resources, frequently without adequate measures to prevent or mitigate their adverse impacts.

[4] Large-scale development projects that challenge NBCAs include hydro-power development, mining, and industrial agriculture production, and plantations.

Poverty Situation

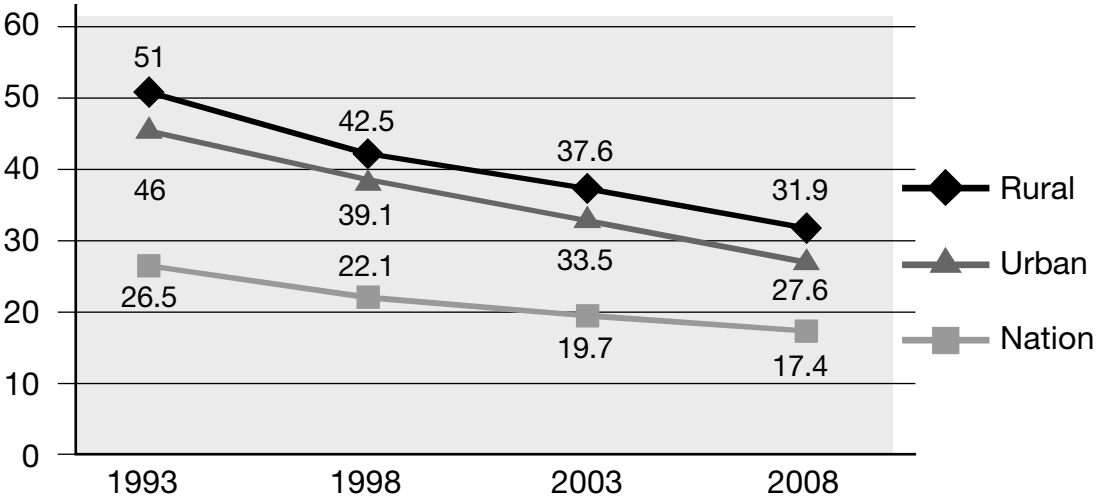
Despite the significant economic growth, Lao PDR remains a country with much poverty. Poverty in Lao PDR is defined as "the lack of ability to fulfill basic human needs such as not having enough food, lacking adequate clothing, not having permanent housing and lacking access to health, education and transportation services" (NGPES 2004).

Poverty in Lao PDR has a strong geographic dimension. Poverty incidence registers higher in the uplands as compared to lowlands. In particular, it appears highest in the southwestern region of the country, particularly along the Vietnamese border.

In general, there is a big poverty gap between rural and urban areas, as depicted in Figure VI.1.The closure of the average national poverty line to the average rural poverty line indicates that the highest poverty incidence remains in rural areas.

For concentrating poverty eradication schemes, the GoL identifies 72 districts as poor and a core group of the 47 poorest districts has been selected for priority investments. All identified districts are located in remote and mostly forest areas.

Figure VI.1. Poverty trend in Lao PDR



Source: Draft 7th NSEDP of Lao PDR.

To tackle the problem, the GoL is strongly committed to achieve the MDGs and targets set in its National Growth and Poverty Eradication Strategy (NGPES)[5]. The strategy set the targets for stable economic growth at 7.5% and the population living under the international poverty line to 24% by 2015. The strategy was elaborated and translated into the 6th National Socio-economic Development Plan (NSEDP), which was implemented during the period 2006-2010. The 6th NSEDP considered agriculture and forestry, transport, health, and education as priority sectors for poverty eradication.

The implementation of the 6th NSEDP resulted in a rapid economic growth and a satisfactory poverty reduction rate. For instance, in this period GDP per capita increased from US$ 491 (2005) to US$ 1,069 (2010) and poverty headcount ratio reduced from 33.5% to 26% in the same period (Report on the High Level Round Table Meeting 2010). The positive trend of poverty reduction in Lao PDR is also shown in Figure VI.1.

In spite of the rapid economic growth, there is a big poverty gap between rural and urban areas. In 2010, more than 73% of total population still lived in rural, marginalized areas (Ibid.). These people are heavily dependent on forests for their livelihoods, and the majority of them practices shifting cultivation. According to Lao policy, this practice is one of the main causes of deforestation and must be eradicated.

[5] NGPES was developed and adopted by GoL in 2004 to guide poverty eradication in the nation.

To continue reducing poverty, the GoL has adopted its 7th NSEDP in the 6th National Assembly Meeting held 9 to 24 June 2011. In the 7th NSEDP (2011-2015), GoL targets an increased annual per capita income of US$1,700 by 2015 and a stable annual GDP growth at 8%. Out of the total GDP, the agriculture and forestry sectors are expected to contribute 23%, the industry sector 39%, and the service sector 38%. The poverty headcount ratio is targeted to be brought down to 24% (Draft 7th NSEDP of Lao PDR 2010). Another forestry-related target in the 7th NSEDP is to increase forest coverage to 65% of the country's total area by 2015.

Poverty Eradication and Forestry in National Policy

The highest poverty incidence in Lao PDR is found in rural areas, where around 73% of the total population reside. These people are dependent on natural resources, especially forest resources for survival. Thus, forests and poverty are interrelated, and sustainable forest management and utilization are essential for poverty alleviation.

In the national policy, the GoL recognizes that forest resources are essential for poverty eradication. It is clearly spelt out in one of the NGPES strategic objectives *"maintaining a healthy and productive forest cover as an integral part of rural livelihood system, and generating sustainable stream of forest products"* (NGPES 2004). To materialize the objective, sustainable forest management is one of the four development goals of the Agriculture and Forestry Development Strategy towards 2020 *'Sustainable forest management for preserving biodiversity, improving national forest cover, providing valuable environmental services and fair benefits'*(Draft MAF Agriculture Development Strategy 2020).

In addition, forests are recognized as one of the most important environmental resources, which play an important role in the poverty-environment nexus, particularly in the interrelationship between economic growth, poverty eradication, and environmental degradation. It is also noted in the national policy that deforestation will most likely accelerate poverty in rural areas, where most of the poor inhabit, and cause unsustainable economic development in natural resource-based sectors such as mining and hydropower development, and environmental degradation, which in turn affects economic growth and exacerbates the poverty situation.

In reaction, the GoL through the Poverty-Environment Initiative (PEI)[6] has conducted a number of social and environmental impact studies of the development in key sectors with potential negative impact on the forest and its natural resources, including forest resources. These include, for instance, impacts related to FDI such as land concessions, commercial plantations, mining, hydropower development, bio-energy development, and others. Findings and recommendations for inclusive and sustainable development have been streamlined into the planning process, especially in the preparation of the 7th NSEDP.

Contribution of Forests to Poverty Alleviation

Forests have an important role to play in the national economy and are central to poverty alleviation, especially for rural people. For poverty alleviation in particular, Oksanen (2003) has grouped contributions from forests into five categories: (i) income generation, (ii) subsistence, (iii) energy, (iv) agriculture and rural development, and (v) governance.

In general, it is recognized that forests provide a significant contribution to poverty eradication, but to what extent, especially at the household level, is hard to quantify and is not recorded in national statistics. The following sections describe examples of forest contributions to poverty alleviation. Knowing that it is difficult to quantify indirect contribution of forest to poverty alleviation, discussion hereunder focuses on direct contributions in different aspects.

[6] A program that aims to mainstream poverty and environmental issues into national level planning and development processes to ensure that the country's rapid economic growth generates inclusive and sustainable development, supported by UNDP and UNEP.

Subsistence Use of Forests and Allocation of Tenure Over Forest Land and Resources

Almost all the Lao population living in rural areas is heavily dependent on forests for their subsistence, income generation, energy, and agriculture and rural development. Because it is difficult to distinguish whether forest products are collected for food, for income generation, or for other subsistence uses, the following sections will discuss the traditional contributions of forest resources as categorized into two dimensions, namely the contribution of NWFPs as food and income sources, and timber as fuel wood and subsistence materials.

Phouthone Sophathilath

Wild tea and mushrooms are some of the NWFPs collected and sold in open markets.

NWFPs as food and income sources

In Lao PDR, NWFPs are diverse and accessible to all Lao citizens, regardless of ethnicity, gender, wealth classes, and living conditions. NWFP collection is a traditional subsidiary livelihood activity for rural forest-dependent people, who mainly practice shifting cultivation. These people collect NWFPs mainly for food and additional income generation.

For poverty eradication, NWFPs are recognized as an important natural resource in the policy of the Lao Government, especially in the NGPES. In this context, NWFPs are the main sources of food, income, medicines, and other subsistence items. Living within and closer to forest areas, rural people have greater advantages in being able to benefit from NWFPs as compared with urban people. They are the main collectors, even if they sell these or urban consumption and commercial trading.

The true extent of NWFPS contribution is hard to quantify, but roughly estimated, on the average, NWFPs are worth a total of almost US$320 per year for each rural household, contributing to about 44% of subsistence value, 55% of cash income, or 46% of the total household economy.[7]

[7] Clearing-House Mechanism, http://chm.aseanbiodiversity.org

As a food source, over 700 NWFP species in the forests (238 plant species and 470 animal species) are identified as edible (Baird et. al. 1999 cited in Foppes and Ketphanh 2000). Wild plant species such as mushrooms, bamboo shoots, wild fruits, vegetables, and honey, for instance, provide a wide range of food products for consumption. According to Emerton, contribution from wild food has been estimated to be 61-79% of non-rice food consumption by weight and to provide an average of 4% of energy intake, 40% of calcium, 25% of iron, and 40% of vitamins A and C. They are also commonly used as buffers against seasonal and emergency food shortages (Emerton 2005).

Besides, NWFPs are also important income sources in rural areas. In many locations, NWFPs are also widely collected for sale in open markets. For cash income, national studies found out that the average sales of NWFPs on the national level are worth 11% of poor household cash incomes, but rise as high as 55% in forest-rich areas. For example, a survey carried out in Houapanh Province found that NWFPs contributed an average of 38% of village cash income, and up to 56% for household living within and adjacent to forests.[8] The case studies conducted in Khammouane (Foppes and Ketphanh 2000), Sayabouly (Foppes et. al. 2001), Luang Phrabang (Yokoyama 2003) and Sekong (Rosales et. al. 2003) discovered that NWFPs provide an average annual income in a range of US$ 69-127, averaging 45% of family cash income.

Many studies also revealed that local people use income from NWFPs to pay back debts associated with rice shortage. The case study in Luang Nam Tha, for instance, showed that income from NWFPs contributes an average 61% of cash income or around US$60 per family per year that households need in order to pay back debt associated with rice shortages (Kaufmann 1997).

In addition, NWFPs serve as materials for household construction and handicraft production including bamboo, rattan, pandanus, broom grass, and paper mulberry. They are also the ingredients of traditional medicines and are also used for livestock fodder and pasture. It is also important to note that NWFPs can be an important incentive for forest conservation, given that the forest is the main source of NWFPs, which are important food and income sources for local people, especially shifting cultivators.

However, these resources are rapidly declining in recent years, especially the species found in dense forests. Important factors associated with this negative trend are over-harvesting, shifting cultivation, forest fire, animal damage, lack of management regulation, and damage from infrastructure development. The decline will continue and may lead to complete loss of NWFPs (and extinction of some species) given that NWFP domestication cannot meet the demand and market demand is high (Sophathilath 2006). The continuous decline of NWFPs can increase the challenge for poverty reduction in forest-dependent areas.

Many efforts have been made to sustainably and effectively manage natural NWFPs. The case study carried out by this author shows the successful case from the intervention of NWFPs Sustainable Management Project carried jointly by IUCN-NAFRI in Ban Nam Pheng, Oudomxay Province.

Fuelwood and other materials for subsistence

Another important aspect of forest contribution to poverty alleviation is providing energy sources, especially for fuelwood and charcoal. Fuelwood is an essential energy source for the rural poor where there are no other alternatives. It was estimated that fuelwood accounts for 80% of total energy consumption in Lao PDR, and 92% of total households in the country use fuelwood for cooking and heating.[9] In addition, fuelwood and charcoal are often traded for urban consumption, from which the poor can benefit in terms of additional income and employment.

In Lao PDR, fuelwood collection is part of the Lao culture, especially for people living in rural areas. Thus collecting fuelwood for household consumption, so long as it is not for business purposes, is allowed in all categories of natural forests. Fuelwood collection is allowed by law in village forest areas

[8] Clearing-House Mechanism, http://chm.aseanbiodiversity.org
[9] MEM Renewable Energy Strategy.

allocated for communities to manage and utilize. Rural people, who practice swidden cultivation, often collect fuelwood from their newly-cleared upland rice areas. Many also get their fuelwood from fallow lands. Some also collect from dense forests near their villages.

Because there is no national record on fuelwood consumption, the author used the estimates obtained from the website of Clean House Biodiversity to describe the fuelwood situation. According to the source, data on the quantity of fuelwood used in rural areas of Lao PDR show extreme degrees of variation ranging from 0.75-2.92 cu m or 0.58-2.26 tonnes per capita per year. Thus, a conservative average per capita consumption of 1.2 tonnes[10] per capita per year was used for further estimation. According to the same source, consumption of fuelwood and charcoal by urban dwellers has been estimated at 42,146 tonnes or 280,973 cu m per year, and firewood demand for fuelwood consuming processing industries at 111,118 tonnes or 143,468 cu m per year. Applying current prices, household and commercial fuelwood consumption has a total annual value of approximately Lao kip (LAK) 45.75 billion, which is equivalent to US$ 45.7 million for the use of more than 5.6 million tonnes or almost 7.5 million cu m of raw wood a year.

Given the figure, it can be said that forests are essential and provide substantial values to rural people whose livelihoods heavily depend on forests. The GoL has promoted and invested in a number of bio-energy schemes such as biogas and rural electricity networks that could be good alternatives to and replacements for fuelwood at certain levels. However, since fuel wood consumption is already rooted in Lao culture and development of other alternatives is at a slow pace, fuelwood will remain an important energy source for the rural poor.

Commercial and Industrial Forestry

Commercial forestry is understood as the use of forest products and forest lands for commercial purposes. There are many types of activities that can be put under commercial forestry. As examples, four different types of activities are used by the author to discuss their contributions to poverty alleviation in this section. These include contributions from commercial plantations, contributions from the management of production forests, contributions from wood products and wood processing, and contributions from forest-induced environmental services.

Commercial forest plantations

Undertaking commercial forest plantations is one of the key strategies for GoL to meet its targeted forest cover set in its Forest Strategy 2020. In the strategy, the GoL anticipates an increase in the coverage of industrial tree plantations up to 500,000 ha (MAF 2020). To fulfill the objective, the GoL has strongly promoted domestic and foreign investment in forest plantations.

As a result of the promotion, the investment in commercial plantations increased sharply during 2004

Phouthone Sophathilath

[10] This is a conservative estimate for rural households in the Lower Mekong Region.

Phouthone Sophathilath

The expansion of rubber, eucalyptus and other monocrop plantations in vast land concessions, mostly under large-scale foreign investments, is drawing attention to the social and economic costs for the local communities and harmful environmental impacts.

to 2006, mostly through large-scale FDI in the form of land concessions. In 2007, over 109 foreign companies received business licenses in the plantation sector (MPI 2007) and 123 plantation projects worth almost US$ 0.7 billion were approved.[11] In terms of area, plantations increased from around 5,000 ha in 1990 to 165,800 ha in 2007 (NERI). The most recent national record is unfortunately not accessible. The most favorable tree species for commercial plantations in Lao PDR were rubber, eucalyptus, acacia, teak, agar wood, and jatropha.

In recent years there was a rubber boom in Lao PDR. Areas planted with rubber skyrocketed from approximately 27,000 ha in 2007 to 140,550 ha in 2008, and 195,000 ha in 2010, as a result of FDIs from China and Viet Nam. These mostly occurred in the northern and southern parts of the country (NAFRI 2008). MAF projected that rubber areas would increase to 300,000 ha by the year 2020 (MAF 2009).

Companies from China have large investments in rubber plantations mostly in the northern region near the Chinese border, while Vietnamese companies are located in the southern region. The Chinese investments are mainly in the form of contract farming; the Vietnamese, on the other hand, mainly have used the concession model.

Besides rubber, foreign companies have also invested in eucalyptus plantations. The largest investor is the Japanese pulp and paper giant Oji Paper, which received a land concession of 50,000 ha in the central region and applied for another 30,000 ha in the southern part of the country. Another large-scale investor is Grassim-Birla Group of India. This company also received a 50,000-ha concession in the central region. More recently, the Finnish pulp and paper giant Stora Enso received 35,000 ha concession for planting eucalyptus in the southern region.

There has also been a substantial investment in jatropha feedstock cultivation with a total planned investment of approximately US$ 50million (Gaillard 2010). In this area, the largest companies, Kolao Farm and Bio-energy Company, have announced an investment of US$ 30 million for producing 400 million liters of biodiesel for domestic uses. However, the actual scale of the developed plantation and the status of the planted jatropha are still uncertain. By 2020, the land area to be covered by jatropha cultivation is expected to reach 167,000 ha with a total seed production of about 250,000 tonnes per year (Gaillard et. al. 2010).

In terms of investment models, three main models apply in the plantation sector in Lao PDR, namely the *Smallholder Farming Model, Contract Farming Model*, and the *Concession Model.*

Besides contributing to the fulfillment of the forest cover target of the FS 2020, the commercial plantation is also perceived to bring about many social and economic benefits in terms of economic

[11] These figures do not include plantation projects with investments lower than US$ 3 million approved by provincial and districts authorities and those established by smallholders.

growth, increased per capita income, improved standards of living, and poverty reduction. The following discusses whether or not plantations contribute to poverty alleviation. In particular, the discussion will compare benefits and possible negative impacts of the three different investment models.

Smallholder farming model

This investment model is commonly used for teak, rubber and agarwood. Individual farmers who have sufficient land and capital and can wait for long-term benefits avail of this model. These farmers mostly belong to middle-class or wealthy groups.

Experiences show that investment in these plantations take a minimum of eight to 15 years to receive returns (eight years for rubber and agar wood and 15 years for teak). For rubber, an eight-year rubber tree produces 1,360 kg of latex per hectare for a profit of around US$880 (NAFRI 2008) with a tapping period until the trees reach 35 years of age.

Famers who invest in teak plantations have to wait at least 15 years for financial returns, given that there is no market for small wood from the first and second thinning. Once the teak trees mature (in 15 years) for harvest, teak farmers receive an average of 15 cu m per hectare valued at US$ 1.5 per hectare in 15 years or about US$ 100 per hectare per year.[12] There have been cases, wherein famers have sold their young plantations to investors at prices ranging from US$ 700 to US$ 2,000, depending on the location and the ages of the trees. These farmers, after selling their plantations, often seek lands in other places, often in forests, to cultivate rice.

The investment in agar wood plantation, on the other hand, is very costly, compared to the investments in teak and rubber. The total cost is estimated at about US$ 4,200 per hectare in eight years with an establishment cost of about US$ 1,950 per hectare (Sengdala 2010). In terms of income generation, about US$ 17,000 per ha can be made from selling wood (about 58 tonnes per ha) with a net profit of around US$ 12,800 per ha in eight years or US$ 1,600 per ha per year. Profits can also be made from extracting oil estimated at US$ 8,500 per ha (Ibid.).

Contract farming model

Investors who obtain no large land concessions usually use this model. This model, particularly the '2+3 model' has been strongly promoted by the GoL and widely used in both perennial and short durable crop plantations in different parts of the country, such as rubber plantations in Northern Laos, maize in Louangnamtha, soybean in Oudomxay, sweet corn in Vientiane, horticulture in Bokeo, and tea in Phongsaly (Setboonsarng et. al. 2008).

This model is considered as the most appropriate in the transition period while moving from subsistence to market economy. Under this model, external investors bring with them technology, capital, and market access to rural areas. In exchange, farmers have better access to promising technology, sufficient inputs and credit, and an assured market for their produce that enables them to earn higher profits. This translates into improved incomes and an effective transformation from subsistence to commercial production with no financial burden upon the public sector. This suggests that contract farming can be an effective private-sector-led mechanism to facilitate the transition to commercial agriculture. In addition to bringing FDI into the rural sector, contract farming can be an effective tool to improve the profitability and raise the incomes of small farmers, thereby reducing poverty in rural areas with limited market development.

In addition, while involved in the contract, farmers have full rights in land ownership. Thus the model secures land tenure for farmers. The model also introduces a fair benefit-sharing system. Additional benefits that farmers can gain from this model are the ability to intercrop seasonal crops such as rice and corn in perennial plantations such as rubber. This can be done in the first three years before the plantation's canopy closure.

[12] Price at farm gate US$ 100 per cu m cited in Midglay et. al. 2006.

Concession model

This model is widely used for rubber, jatropha, eucalyptus, and acacia species in central and southern Laos. The investments under this model are mostly in large-scale monoculture and have expanded rapidly in recent years as a result of the strong government promotion coupled with careless authorizations of land concessions. A rapid increase of this type of plantation may be positive for the government's targets in forest coverage and increased investment flows, their potential contribution to rural development, and replacement of shifting cultivation. However, as mistakes have occurred in recent years, these perceived benefits are increasingly being weighed against negative social and environmental costs.

Among the negative environment impacts is that the large amount of land required for the monoculture industrial plantations have caused the clearance of natural forests in many places. The clearance of forests, such as the 3,000 ha for coconut plantations in Bolikhamxay province from 2004 to 2006 is a relevant example (PEI Lao PDR 2010). In addition, large-scale industrial plantations under this model tend to exacerbate poverty for poor farmers. Rubber plantations invested in by Vietnamese companies in Lao Gnam and Bachieng Districts, southern Laos show clear examples of negative socio-economic impacts. In particular, the investments have resulted in decreased landholdings, food production, and household incomes. In this respect, a recent study (Leonard 2008) reveals that from 2005 to 2007, villagers lost their productive lands at nearly 2.8 ha per household and about half of households interviewed households are now landless (n=210). As a consequence, crops grown by each household have generally declined. Furthermore, upland rice production in all villages has steadily fallen and the number of households with rice sufficiency has also fallen sharply.

In comparison, the small-scale forest plantation appears to contribute less to the national economy but provide more benefits to poor people. For farmers who can afford to engage in long-term investments, both the smallholder farming model and contract farming model are appropriate. However, in economic terms, the smallholder farming model can be most appropriate for the rich farmer who has land, capital, knowledge, and market access.

The contract farming model is most likely suitable to poor and middle-class farmers who can make land available and have labor, but who lack the capital and knowhow and who have no market access. Under this model, in addition to shared benefits in monetary form, involved farmers can benefit from enhancing their own associated skills either in the technical or managerial aspects. The model is considered as the best plantation model that contributes to poverty alleviation and promotes commercial production in rural areas.

In contrast, large-scale investments such as the concession model, if well-managed, can contribute to the growth of the national economy and per capita income, but not necessarily to poverty alleviation for poor farmers. Under this model, benefits at the local level, especially for poor people, are considered minimal. In contrast, it has a high tendency to exacerbate poverty and create negative social and environmental impacts such as land loss, forest loss, insecure food security and social tension.

Contribution of PSFM of production forests

By law, commercial logging in Lao PDR is permitted only in PDFs with approved sustainable forest management plans prepared in line with PSFMS developed and applied by SUFORD. As discussed in Section 1.2, there are 51 PDFs in the country. Currently SUFORD works in 16 PDFs, covering a total area of approximately 1.3 million ha located within boundaries of more than 700 villages. The SUFORD model is intended to expand in all 51 PDFS in the future.

There are two ways through which SUFORD interventions contribute to poverty alleviation: (i) through the distribution of village development grants, and (ii) through timber revenue-sharing with village communities.

As of September 2010, Village Development Committees were established in 304 villages with 119 out

of 311 villages (38%) preparing their village development plans (VDPs) with technical assistance from project staff. SUFORD provided a grant worth US$ 8,000 per village to support the implementation of the VDPs, following specific guidelines: US$ 3,000 for infrastructure development linked to livelihood improvement activities and US$ 5,000 for a loan revolving fund from which individuals or groups can borrow for investing in their livelihood alternatives.

In November 2010, SUFORD conducted an assessment on the impact of the village grant and found that impact was small mainly due to limited resources provided by SUFORD and insufficient technical support to the scheme. However, an improved situation is foreseen with increasing local awareness and capacity-building. Although SUFORD is about to phase out at the end of 2011, the Finnish Government has shown enough interest to take on the effort. A feasibility study was carried out mid-2011 and the new project is expected to launch at the beginning of 2013. For the transition period, DoF has already requested the World Bank to extend the use of the remaining IDA fund. In addition, another recent qualitative study conducted by SUFORD (Clarke and Puustjärvi 2010) revealed that many investments were profitable and brought benefits to the community or individuals.

While applying PFMS, a sustainable level of revenue from timber is expected to contribute to the growth of the national economy as well as to poverty reduction in rural areas, especially in villages located in and surrounding production forest areas. In this connection, SUFORD estimated that net revenue from timber can be generated, ranging from US$ 4.5 to 14.5 million per year once the entire PDF system is in productive use. Using the existing benefit-sharing system, wherein 25% from timber revenues is shared with the respective villages as Village Development Funds (VDF), every year around US$ 1.1-3.6 million can be made available for village development activities and thereby contribute to poverty alleviation.[13] However, the actual gains from forest revenue are very low and deemed insufficient to help village development. The income from timber is low because the designated forests have been overharvested before and very limited timber remains for logging. This also contributes to high logging costs.

According to SUFORD, the timber revenue made available to villagers in current situation is modest, with an average revenue of US$ 261 per village per year. The highest revenues were received by villages in Savannakhet and Khammouane, with an annual average of US$ 680 and US$ 191 per village, respectively. In contrast, in Salavan and Champassak, the annual average revenue was low, at only US$ 28 and US$ 33 per village.

In addition, considerable and sustainable revenue from NWFPs from production forests if managed with PSFMS can be expected. It was estimated that a potential annual cash income of US$ 17 million per year and non-cash income of about US$ 49 million per year can be gained in the SUFORD PFAs. After deducting costs, the net cash income from the NWFP collection can be estimated at about US$ 15 million per year and is much higher compared to the net timber revenue for the SUFORD PFAs estimated at US$ 1.8-5.4 million per year.

Another possible income option that can be made available for poverty reduction is carbon revenue, as long as deforestation is halted as a consequence of PSFM in SUFORD areas. With the assumption of a carbon credit price of US$ 5 per ton, SUFORD has estimated the potential revenue from carbon revenue from production forests at US$ 10 million per year. But at this level, carbon funding alone may not be sufficient to compensate the foregone benefits for farmers. Additional funding sources or higher carbon credit prices are needed.

Finally, villagers can also gain income from SUFORD in the form of wages when participating in the implementation of the SUFORD project. While implementing project activities at the grassroots level, SUFORD has also hired casual labor from villagers so they can gain additional income for improving their livelihoods. There are a number of activities: forest inventory, forest rehabilitation,

[13] From the net revenue, 50% goes to royalty at central level, 25% goes to Forest Development Fund (PAFO), and the other 25% goes to villagers through the Village Development Fund.

land use planning, logging operation, and capacity building that villagers can take part in during the implementation. Daily wages range from LAK 25,000 to 50,000 per day. For example, from January 2009 to June 2010, SUFORD paid labor service to villagers who were involved in the activities a total amount of more than LAK 750 million for 5,568 working days. Given that SUFORD is working in more than 700 villages throughout the country where thousands of people live, the payment is considered minimal and only a small number of villagers can access the benefits.

Wood processing and wood products

As a consequence of the log export bans in1990, the GoL has promoted downstream processing and export of finished or semi-finished wood products. This has led to the growth of the wood-processing industry. However, being in an early stage of development, wood processing in Lao PDR has been deemed inefficient, having low recovery rates and generating low-value products. To reverse the situation, the GoL has instituted a reform of the wood industry to promote efficiency and final products processing and export.

In August 2007, 326 of 587 sawmills and secondary processing factories were closed, 185 were recommended for improvement within one year, and only 76 were allowed to continue operations. Of 1,528 furniture factories, 1,188 were closed, 212 were recommended for improvement within one year, and only 128 were allowed to continue operations.

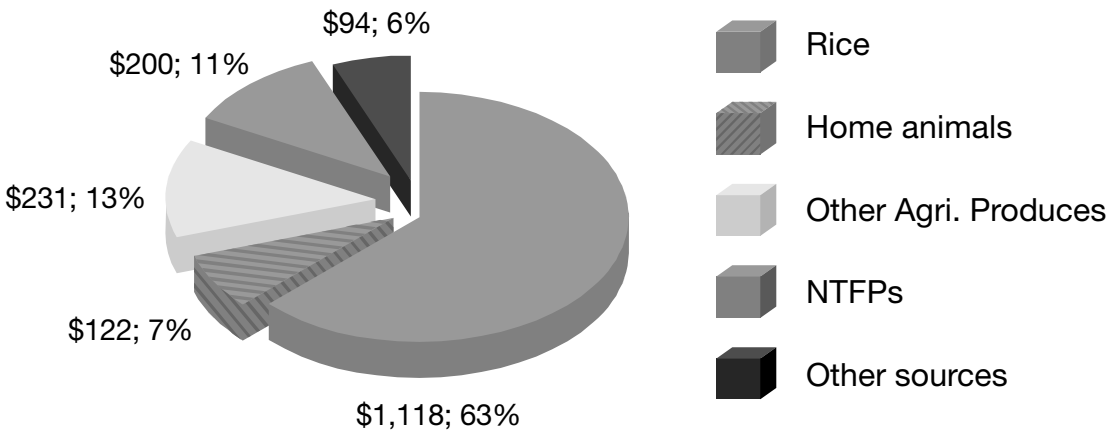
Meanwhile, the private sector has formed the Lao Wood Processing Industry Association, the main objective of which is to facilitate the allocation of government timber quotas to individual factories. The association is expected to play key roles in technology upgrading and skills improvement, marketing cooperation, and promotion of the use of timber from sustainably-managed forest areas. The association also collects chain of custody (CoC) certification information in relation to the processing and export of certified wood.

The wood-processing sector in Lao PDR is foreseen to make an important contribution to both the national economy and employment in the country. To the national economy, it contributes approximately 6% of GDP and 32% of the manufacturing production value (MAF 2005), but no official national record is available regarding employment.

In the 1990s, wood and wood products accounted for 40% of export earnings, almost half of which were from the export of logs. The total value of wood and wood products exports reached US$ 67-75 million in financial year 2001-2002 and increased to US$ 97 million in 2005-2006, as a result of the additional wood supply obtained from the clearing at the site of the Nam Theun 2 Dam (NT2) and the plantation program (Sayakoummane and Manivong 2007).

In addition, the wood industry also contributes to the household economy. A recent study conducted in 48 forest-based enterprises from Vientiane and Savannakhet Province reveals that the average direct earning (salary) for an employee working in forest-processing enterprises is US$ 105 per month or about US$ 1, 270 per year. Compared to the average individual income in the country, especially of those working in the governmental sector (US$ 30-100 per month), the average salary paid by factories is relatively higher. Apart from salaries, employees also received non-salary incomes such as overtime payment, annual bonus, and compensation for hospitalization costs. They are also granted factory waste. According to the survey, majority of respondents appeared to be satisfied with the paid income, with only 19% of them reported as not satisfied (NAFRI/FRC 2006).

Figure VI.1. Important household income sources



Source: Field survey.

Payment for Environmental Services

To date, four main environmental services identified have been addressed by PES—watershed services, carbon sequestration, landscape beauty, and biodiversity conservation. In Lao PDR, like in other developing countries where environmental governance is not yet effectively addressed, PES is a very new concept and is not yet well understood by the majority of the people. Although the government has recently recognized the importance of PES in sustainable socio-economic development and poverty alleviation and has taken it as a key policy objective, the use of PES schemes is not widely practiced. It is implemented as project-specific in nature and lacks consistency in its application.

Due to the above-mentioned limitations, the following sections discuss examples of contribution of PES through the forest environmental services to the national economy as well as to poverty alleviation. For the discussion, possible contributions from ecotourism and from the REDD initiative are presented as examples.

Ecotourism

Tourism in Lao PDR is closely linked to natural forests and culture. It is one of 11 priority sectors to support national socio-economic development. It is seen as one of the country's major engines of economic growth and poverty alleviation. The overall tourism sector objective is centered on poverty alleviation.

Since 1990s, the tourism sector has developed very fast. Tourist arrivals have increased significantly in the last 20 years. The number of arrivals skyrocketed from 14,400 in 1990 to 737,000 in 2000 (Manivong and Sophathilath 2006) and reached 2.5 million in 2010[14] and around 66% are interested in forest-based ecotourism (FBE) (Schipani and Marris 2002). FBE has high potential in Lao PDR, because the country has a large conservation forest system that makes a wide variety of ecotourism activities possible. In some conservation forests, ecotourism activities are already integrated into biodiversity conservation and management, with an orientation towards raising awareness about conservation. Tourism is a powerful globalizing force and if well-managed, can have a direct positive effect on the national economy and poverty alleviation (Schipani 2000b).

Foreign exchange earnings from tourism showed a steady increase, with total earnings of about US$ 97 million in 1999, US$ 113 million in 2002, and US$ 119 million in 2004 (LNTA 2004a). In 2010, tourism ranked third in terms of foreign exchange earnings, producing US$360 million (LNTA 2007c). Of the total income from tourism, around 45% was estimated to come from nature and culture-based tourism (LNTA 2004b). The Lao tourism industry is also a major employer, generating

[14] LNTA press released February 8, 2011 on http://vientianemai.net/teen/khao/1/1993

Phouthone Sophathilath

The Nam Ha conservation forest boasts of thick forests, rich biodiversity and cultural tradition and breathtaking landscapes. The National Ecotourism Strategy and Action Plan aims to promote poverty alleviation and strengthen biodiversity management in protected areas. Part of the entrance fees collected from tourists visiting Nam Tha conservation forest is invested in programs for improving local livelihoods, particularly those related to ecotourism in the area, and providing alternative sources of income.

some 17,000 jobs nationwide. Indirect employment provided by the sector was estimated at around 167,000 people (LNTA 2007).

REDD plus initiatives

Lao PDR is ranked 12th among the top 20 tropical countries that have the potential to store carbon while also protecting globally important biodiversity ((Peskett et. al. 2008b). It is in a good position to capture benefits from the REDD mechanism. Although REDD is new to the country, it is strongly believed to reconcile economic development, forestry, and climate change and ultimately contribute to poverty alleviation (Manivong 2008).

Recently, Lao PDR was selected as one of 25 participating countries in the World Bank Forest Carbon Partnership Facility. Its Readiness Plan Idea Notes (R-PIN) was approved in October 2008 and the country received a Readiness Fund. Preparatory activities for readiness to implement the REDD program are being implemented, such as the REDD strategy formulation, coordination and consultation; development of a national REDD mechanism; carbon assessment pilots; and REDD demonstration (Sawatvong 2010).

REDD is considered to give great opportunities for a participating country's economic development, sustainable forest management, environment protection, and poverty reduction. For the poor, REDD is expected to provide both income and non-income gains. Income gains from participating in the implementation of REDD can be derived from payments made through the Carbon Finance Mechanism, which is intended to provide incentives for stakeholders, including local peoples and private sector, so as to achieve long-term sustainability in REDD projects. The extent of possible incomes generated by the rural poor from REDD is too early to estimate. However, experiences from other countries show that poor people who participate in environmental service schemes similar to REDD are generally better-off, or at least not worse-off (Wunder2008). Non-income gains, on the other hand may include increases in human and social capital and higher visibility vis-à-vis external investors (Wunder 2008 in Biddulph 2009).

In addition, it is believed that REDD can be a good incentive for tackling deforestation because it gives actual financial values to standing trees rather than logging trees and clearing land. But the success of the REDD program implementation, particularly when payment is based on performance, will depend on three factors. One is the amount or level of compensation. If it is too low compared to opportunity costs or program implementation costs, governments or participants will lose interest in REDD. Second is the fairness or attribution issue. The REDD payment systems need to be designed in such a way that people or organizations who have actually contributed to reduction in deforestation, are paid commensurate to their contributions. Third is the initial costs of REDD programs, which seem to be very large. A mechanism to pay for part of these costs from future REDD payments may need to be developed (Lao R-PIN 2008).

Other concerns were raised in a recent study. It revealed that the contribution of REDD to sustainable development in Lao PDR is uncertain since the REDD scheme will have implications on national forests on which the livelihoods of the majority of Lao people in rural areas heavily depend. In this connection, it was argued that success would depend on the ability to address challenges related to the rights of local people over their resources, the creation of exclusionary conservation forests, fair benefit-sharing, corruption status, and top-down policy (Sivirath n.d.).

If these challenges are addressed at an early stage, then REDD policies might offer opportunities for local communities to derive benefits. It is also important that local communities become fully involved in the REDD policies (Griffiths 2007 in Sirivath n.d.). In addition, the rights of local people will need to be adequately respected, land titling provided, and foregone benefits adequately compensated. All these concerns and challenges have been well-recognized by the GoL since the preparation of the Lao R-PIN and measures to address these have been proposed in the respective R-Plan.

National Case Studies

To supplement literature review, three country case studies on contributions from forest and forestry to poverty reduction have been carried out for this country study. The first study seeks to understand the contribution from NWFPs with organized marketing groups in Ban Nampheng, Odomxay Province. The second deals with the contribution from production forests through the Participatory Sustainable Forest Management (PSFM) in Ban Xom, Khammouan Province, and the third has been conduction to show the contributions from the compensation to forest services paid back by the NT2 hydroelectric plant to forest conservation and rural development in 31 villages in Nakai Namtheun NBCA (NN-NBCA).

Table VI.2. Background information on the case study sites

Study site	Area of forestry considered	District/poverty ranking out of 45 poorest districts	Social services
Ban Nampheng	Organized NWFP marketing	Namo (38)	• Accessible year round • Engine generated electricity • 1 health care station • 1 primary school • Poor water supply
Ban Xom	PSFM in PDF	Xebangfai (not belonging to the 45 poorest districts)	• Accessible year round • Engine generated electricity • 1 health care station • 1 primary school • Poor water supply
31villages in Nakai Namtheun NBCA	PES through Forest Services	Nakai (46) Khamkeut (26)	• Difficult to access during the rainy seasons • No electricity • Primary schools in few villages • Health care stations in each village cluster

Case Study 1: Contribution of NWFP to Poverty Reduction: The Case of Ban Nampheng, Oudomxay Province

Background

From 1995 to 2001, the National Agriculture and Forestry Research Institute (NAFRI) and the World Conservation Union jointly implemented a NWFP project designed as an Integrated Conservation and Development Project. The project aimed to develop and pilot sustainable NWFP utilization systems that contribute to forest and biodiversity conservation and address poverty issues. It hoped to achieve these objectives by removing poverty-related factors that drive over-exploitation of NWFPs by local people, empowering local people to better control the access and use of forests by outsiders, and organizing local people through institutional building.

To meet these objectives, the project helped the village organize an NWFP marketing group for marketing bitter bamboo shoots collected by villagers in the village forests. All villagers who collected bitter bamboo shoots for sale were allowed to join the group. A Group Committee headed by the village chief with one-person units for monitoring, accounting and trade managed the group. All decisions were made collectively in meetings chaired by the Group Committee. After the success with bitter bamboo, the marketing group organized a similar regime for cardamom.

As part of the management regime, the marketing group set the dates for harvesting season each year, based on the natural characteristics and regenerative capacity of the NWFP, with the NWFP project assisting villagers in the form of ecological information and training. The harvesting season for bitter bamboo for sale usually lasted about 4.5 months between December and April. However, collection for consumption was permitted throughout the year.

All households involved in collecting NWFPs sell the collected products directly to the Group Committee, who then sells on a larger scale to traders. The benefit sharing system agreed upon by the members allows the individual collectors to take 85-90% of the final sale, while the remaining 10-15% is put in an NWFP Fund. The fund is used to support community projects (e.g. purchase of an electric generator), community services (e.g. provide loans), and pay the salaries of the monitoring, accounting and trade units. The marketing group collectively decides on the use of the fund and salary levels.

This case study aims to examine the contribution of NWFPs to poverty reduction in Ban Nampheng where an NWFP marketing group was organized to enhance local empowerment efforts. Discussions

in this case study are based on the assessment of Jason Morris conducted in 2002. Updated information was gathered during a field survey for this case study where the village committee and 30 individual households were randomly selected and interviewed in April 2011.

Ban Nampheng: Background information

Ban Nampheng is one of the poor villages in Namo District of Oudomxay Province. Ban Nampheng has a total forest area of 2,490 ha, out of which over 500 ha is covered by bitter bamboo. In 2011, there are 368 people in the village belonging to 89 households. All of them belong to the Kmou ethnic group, and almost all are farmers. Like the other poor Lao villages, Ban Nampheng has limited social services such as electricity, road access, and educational and health care services.

Because the village is located in a mountainous area, the paddy field areas are limited, specifically only 20.3 ha. About one third (29%) of the households practice shifting cultivation, 7% cultivate lowland rice, and 64% do both. Almost all households raise small additional incomes. Domestic animals, especially large animals such as cattle and buffalo, are assets held for household safety. NWFP collection is an important occupation for additional income-generation and is practiced by all households.

Although there are limited paddy areas in the village, the villagers have sufficient rice supplies for consumption because shifting cultivation is widely practiced. In a participatory wealth-ranking with the village committee, it was found out that majority of households (70%) are self-sufficient, 18% are better-off, and 12% are still classified as poor.

NWFP is an important income source in the village. All households in the village are involved in NWFP collection and are members of the NWFP marketing group. Previously, villagers sold their collected NWFPs separately with lower and unstable prices. Through their marketing group, villagers are now equipped with higher bargaining power with external traders and therefore can sell their products at higher prices.

In general, NWFP collection in Ban Nampheng is the task of women and children. Not a single man was reported to be involved in NWFP collection from the interviewed households. On average, a household collects NWFPs 116 times per year. From the total collection, around 80% are sold to the Village Marketing Committee, while the rest are used for household consumption and for other traditional exchanges or given as gifts. The average annual income from NWFPs per household is about LAK 1.6 million (US$ 200) or about 31% of total income. The income was ranked third after rice and other combined agriculture products. It would have been interesting to compare average earnings from NWFPs prior and after the establishment of the NWFP marketing group, but it was impossible to do so because of the absence of baseline information.

Five NWFP species were identified as economically important, including bitter bamboo shoots, broom grass, red mushroom, cardamom, and Meuak bark. While bamboo shoots are directly used for food, red mushroom, and cardamom for medicine, the use of broom grass and Meuak bark is not clearly known, except for the broom grass that is used for making local brooms. Their ranks of importance are illustrated in Table VI.3.

Table VI.3. Economic ranking of NWFPs in Ban Nampheng

NWFP	Ranking	Collected volume	Price	Natural availability
Bitter bamboo shoot	1	Increased	Stable	Increased
Broom grass	2	Stable	Down	Increased
Red mushroom	3	Decreased	Down	Decreased
Cardamom	4	Decreased	Down	Decreased
Meuak bark	5	Stable	Stable	Decreased

Source: Field survey.

As seen from the table above, bitter bamboo shoots and broom grass are most important for household cash incomes because of resource availability, even though the price for broom grass has gone down.

Phouthone Sophathilath

Bitter bamboo is a major source of income for majority of the households in Ban Nam Pheng. Establishing a sustainable harvesting regime is critical to sustaining this economic benefit. Organized selling of bamboo shoots by the women allows them to earn more their collected products.

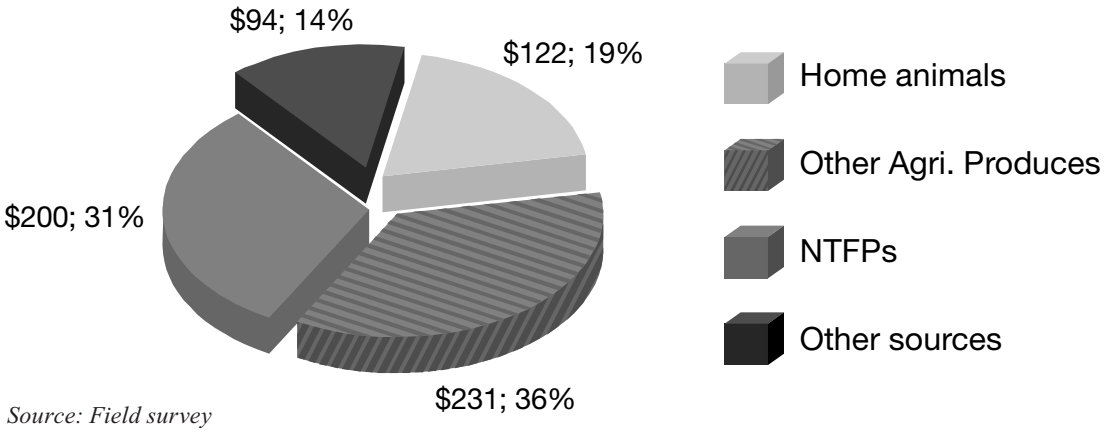
Many important NWFP species are reported as having declined in quantity, except for bamboo shoots and broom grass that can grow in open forests and fallow lands. Three underlying causes are reported to contribute to this negative trend: (i) over-harvesting; (ii) poor management; and (iii) shifting cultivation.

No clear solution was reported by the villagers to address these resource concerns. They proposed that PAFO and DAFO assist them in completing the land-use planning and land allocation in their villages and in updating the existing related regulations. Domestication of NWFP, especially cardamom, was introduced by the NWFP project during its implementation phase but was not scaled up. Villagers reported that prices dropped in the Chinese market in the mid-2000s, discouraging scaling-up.

Contribution to poverty reduction

Recognizing the importance of NWFP in poverty alleviation, the following sections discuss in more detail how NWFP contributes to poverty alleviation through the four areas in Figure VI.2.

Figure VI.2. Contribution of NWFPs to household cash income



Source: Field survey

As discussed above, NWFPs rank third in the total household economy, after rice and other combined agriculture products. However, since local farmers are reluctant to sell rice, cash income from NWFPs ranks second to agriculture products, but competitively higher than those from home animals and other sources. On average, it covers 31% of the total household cash income or around US$ 200 per year.

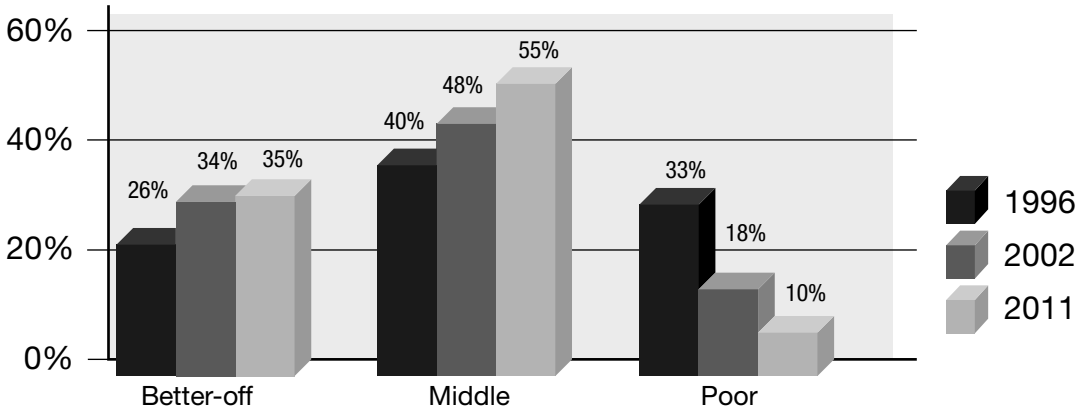
The contribution of NWFPs to the whole household cash income in this case study (31%) is relatively lower than the estimated share by Morris in 2002 (40%). This is primarily due to the increased share of new emerging income sources as a result of the introduction of new cash crops for Chinese markets since the mid-2000s. However, if compared only with the net income from NWFPs, there is an increase.

Indirectly, the income increase from the new emerging sources can be considered as NWFP contributions, since many villagers borrowed money from the NWFP-grounded Village Development Fund (VDF) for investing in new income alternatives. In addition, using the VDF for improving village infrastructure, such as road access, will enable market access into the village.

Contribution from NWFP to increased wealth and reduced poverty

Using wealth ranking as one way to measure changes in poverty, the village members were categorized in three classes: better-off, middle-class, and poor households. Two related wealth rankings were conducted in 1996 and 2002 as part of the impact assessment from NAFRI-IUCN NWFP project on poverty reduction. Using similar criteria and method, the third wealth ranking was conducted during the field survey in April 2011.

Figure VI.3. Wealth ranking at three different times



Source: Field surveys

Figure VI.3 compares wealth rankings at three different time periods during and after the implementation of the NWFP project. It illustrates that within the time period from 1996 to 2011, people in the village, in general, have been getting wealthier. This can be seen from the steady increase in percentage of better-off and middle-class households and a steady decrease in the percentage of poor households. Within 15 years, the percentage of better-off households increased from 26% to 35%, middle-class households from 40% to 55%, while the percentage of poor households decreased from 33% to 10% only.

The results from wealth rankings cannot be used solely to measure the impact of NWFP contribution to poverty reduction in Nampheng village. However, since income gained from NWFPs is significant to the household economy, it can illustrate the indicative contribution from NWFPs.

Contribution from NWFPs to improved infrastructure and services and other benefits

About 70% of the income of NWFP collectors are considered resource taxes and were put in the VDF. The remaining 30% was used to pay salaries for people in the marketing group. The fund was set up in 1999 and since then, the village used the fund to purchase one electric generator for the village, build a new village office and a village food and storage house, and renovate the school building. The village also used the fund to pay the teacher's salary at their school. Part of the money was also used as credits for private investments. Currently Ban Nampheng has savings ofLAK30 million (approximately US$ 3,750) in the VDF.

In addition to these tangible improvements, there are other indirect benefits that villagers gained from the initiatives. For examples, through the formation of the NWFP marketing group, villagers

were organized and empowered, and had more confidence in dealing with traders and other villages. Secondly, through technical assistance from the project, villagers acquired skills, such as improved harvesting techniques, marketing and business skills, and knowledge of ecology, which they used in managing and marketing their NWFPs. Finally, villagers reported to have improved their capacity to manage natural resources. The introduction of Land Use Planning/Land Allocation (LUP/LA) and the development of participatory NWFP harvesting regulations, for instance, restricted upland cultivation and illegal NWFP harvests with a system for punishing offenders and authority to deal with conflicts.

Villagers' concerns

Villagers also expressed concerns on how to sustainably manage their bitter bamboo forests. In particular they fear that their forests could be easily encroached by the increasing foreign investment since the LUP/LA[15] is still not complete in the village. In addition, a weak legal framework and law enforcement can exacerbate their situation. Thus, they request government, particularly PAFO and DAFO or relevant projects, to help them address these concerns.

Case Study 2: Contribution of PSFMS to Poverty Reduction: The Case of SUFORD in Ban Xom, Khammouane Province

Background

Lao PDR started to develop and pilot PSFMS for production forests in the mid-1990s through the FOMACOP[16]. The system was then further developed and expanded by SUFORD[17], known also as successor of FOMACOP.

Fully implemented in late 2005, SUFORD will phase out by the end of 2012. The main project beneficiaries are the villagers who live inside and around the production forests. These people receive benefits to reduce poverty not only through village development activities and forest-based livelihood development, but also from building their capacities and empowering them to more effectively address the causes of their poverty. Benefits expected from the implementation of SUFORD include:

1. village development and forest-based livelihood development;
2. development of skills and empowerment of the villagers to address their own poverty;
3. sustainable supply of forest resources, both wood and non-wood forest products, for subsistence use and cash sale; and
4. provision of environmental services to protect water sources and enhance agricultural productivity.

Currently, SUFORD works in 16 out of the 51 country's PDFs located within boundaries of more than 700 villages. Ban Xom, the site of this case study, is one of them.

This case study intends to examine the benefits of implementing in Ban Xom, Khamouane Province the PSFMS introduced by SUFORD in the earlier stage of the project. Due to a number of limitations, the discussion in this study is mainly based on secondary information from the SUFORD Project. In addition, information gathered from a field visit to Ban Xom was has been used to supplement the secondary data.

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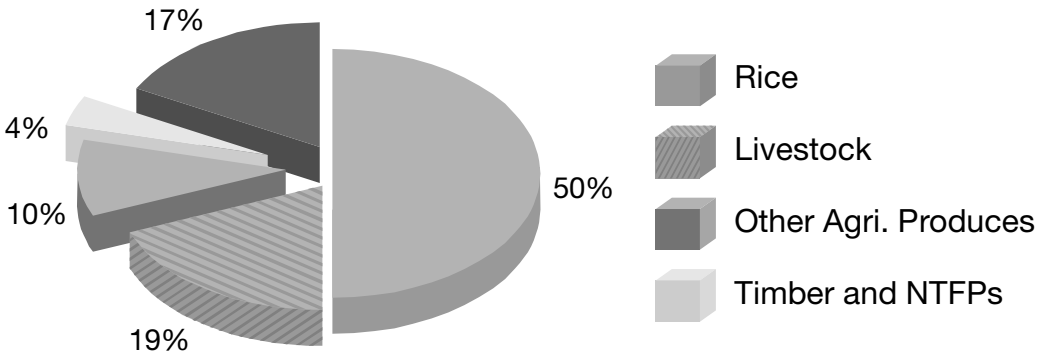
[15] LUP/LA is land use zoning and planning at the village level introduced by the GoL in the mid-1990s. It was seen as a tool to stop shifting cultivation and forest encroachment. However, due to a number of limitations, this was not further implemented and will be replaced by the newly developed "Participatory Land Use Planning at Village and Village Cluster Level".

[16] A forestry program co-funded by the World Bank, the Finnish Government, and the GoL was implemented by DoF from 1995-2000 in Savannakhet and Khammouane Provinces.

[17] A multilateral cooperation project between the GoL, Finland, and the World Bank to assist GoL to improve forest policy, legal and incentive framework to expand PSFM throughout the country; bring the country's PDF areas under PSFM; and improve villagers' livelihoods through benefits from sustainable forestry, community development and development of viable livelihood systems.

A brief about Ban Xom

Figure VI.4. Income distribution in Xom village 2011



Source: Field survey May 2011

Ban Xom is located at Sebangfai District, Khamouane Province. The village has a total population of 532 organized in 128 households. The village is located in one of the PDFs where SUFORD has operated since the start. All the people living in the village belong to the Phouthai ethnic group, which practices paddy rice cultivation as a main occupation (Figure VI.4). Livestock, cash crops, and NWFPs are additional important income sources in the village. People in the village also generate income from wages paid by SUFORD for carrying out project activities. Ban Xom is not located in the 45 poorest districts identified by the GoL, but people in the village are poor. Of the total number of households, 15 households were reported as having income surplus, 78 households are self-sufficient, and 15 households face food shortages. On average, rice is sufficient for 10 months during the year.

Project interventions

Since the village participated in the implementation of SUFORD, the village received LAK68 million (US$ 8,500) from timber sales as shared revenues from the participation in the PSFMS with the government. This revenue was put into the VDF and managed by the village committee. Utilization of the fund was authorized by a village agreement. The village also received a grant amounting to LAK66.9 million (US$ 8,360) from the project as a Rural Development Fund. The fund was to be used as a village revolving fund to support income generation activities.

Out of the grant, LAK63 million (US$ 7,800) was given as loans to six production groups comprising of 40 households. (Details of the distribution are illustrated in Table VI.4 below.) These production groups were established with technical assistance from project staff in terms of technical and managerial skills development. The main purpose of the grant fund was to increase and diversify incomes for forest-dependent households, especially for those with less opportunities to receive direct benefits from forest management.

Table VI.4. Rural development fund and beneficiaries

Activities	Amount (LAK)	Number of households
Expanding rice paddy field	15,000,000	10
Cattle raising	20,000,000	10
Goat raising	10,000,000	5
Chicken raising	8,000,000	8
Fish raising	5,000,000	2
Small scale trading	5,000,000	5
Total	63,000,000	40

Source: Field survey, May 2011.

Income from labor service in forest management activities is considered minimal since most of the forest management activities have been carried out at the stage of forest management planning, already completed during the time of FOMACOP.

Of the 30 interviewees, only two individuals were reported to be involved in forest inventory, especially in clearing survey lines for pre-harvesting inventory, and they received LAK 20,000 (US$ 2.5) per day as wages. One of them received LAK 2.5 million (US$ 312), while the other received LAK 200,000 (US$ 25) only.

Contributions to poverty reduction

In the field survey at village and household levels, almost all interviewees reported that the SUFORD intervention improved their livelihoods and living conditions. As shown in Table VI.5, all interviewees agreed that their incomes increased as a result of the introduction of new livelihood alternatives. The increased income was also attributed to the grant provided by the project for rural development activities, such as the access road and electricity network.

Table VI.5. Villagers' opinions on benefits from SUFORD

Conditions	Percentage of respondents, n=30			Contributions from SUFORD
	Improved	Un-changed	Worsened	
Improved income	100%	0%	0%	RDF diversified income alternatives, and involved in forest activities
Improved electricity	100%	0%	0%	One electricity transformation unit purchased by VDF
Improved education	100%	0%	0%	New school built with financial support from SUFORD (60%) and villagers contributed (40%)
Improved water supply	27%	73%	0%	Needs improvement
Improved road	100%	0%	0%	Used VDF gained from timber revenues to improve village tracks and the main road to the village
Improved health	100%	0%	0%	New health station at the village cluster level is using VDF from respective villages
Average	88%	12%	0%	

Source: Field survey, May 2011.

Education and health conditions were also positively reported and attributed to the construction of a new school and health care station from forest revenues. However, villagers are facing difficulties in water supply, a main concern of villagers.

In addition to livelihood improvement, villagers observed improved management capacity. This was considered to have been a result of village capacity-building and local empowerment activities by SUFORD and brought about the daily improvement of resource management. For example, villagers reported that previous land-use conflicts between villages or within the village were minimized as village management capacity improved.

Improvements were also reported in terms of minimized illegal logging and shifting cultivation practices as villagers were actively involved in the management of PDFs from which they shared benefits. As a consequence, forest conditions improved. Finally, the majority of interviewees reported that they had no problem in terms of their freedom to use the forest in accordance with their customary rights.

Table VI.6. Villagers' opinion on benefits from SUFORD

Conditions	Percentage of respondents, n=30			Contributions from SUFORD
	Improved	Unchanged	Worsened	
Land use conflict	100%	0%	0%	Clear boundaries resulted from sustainable forest planning practices and village agreements
Village management capacity	100%	0%	0%	Technical and managerial skills enhanced
Illegal logging	100%	0%	0%	Increased forest ownership of PDFs in village boundaries improved forest management and control of illegal practices
Stabilized shifting cultivation	83%	17%	0%	Improved forest ownership for villagers reduced shifting cultivation
Improved forest conditions	93%	0%	7%	Improved forest ownership for villagers improved forest management
Freedom in forest uses	70%	30%	0%	Improved village forest regulations and agreement provided clear guidance on forest uses
Average	91%	8%	1%	

Source: Field survey, May 2011.

Villagers' concerns

Villagers are happy with their involvement in the project because it improved their livelihoods, infrastructure, and their capacity. They believe that by continuing the effort, it will sustain the forests and their livelihoods. But concerns were also raised regarding the sustainability of the initiatives after SUFORD phases out in 2012. This is a concern not only for the villagers, but also for the responsible government officers. DoF recognizes the issues and is in the process of seeking solutions. Another concern raised by villagers was that the rural development grant provided by the project is limited in amount and they propose that SUFORD increase the fund amount and continue the project activities.

Conclusion

The project has showed initial positive impact on rural livelihoods. However, the improvements appear to have been mainly contributed by the grant provided by the project rather than the direct benefits gained from the share of forest revenues and labor service. While the share from timber revenues that go to the village development fund and forest management fund is still too low, it is early to say whether or not forest management under this system can be sustainable without external financial support, unless the GoL can afford to fund it. With the government's current capacity, it is more unlikely. However, because PSFMS is currently the best option that can be applied, the system should be further developed and tested while being expanded into the other PDFs.

Case Study 3: Contribution from PES to Poverty Reduction: The Case of NT2 Hydroelectric Project

Introduction

The Nam Theun 2 Hydroelectric Project (NT2) is one of the largest hydropower development projects in Lao PDR and is owned by private shareholders and the Lao Government. NT2 can generate an average 6,000 GWh of electricity per year. Most of this electricity will be exported to Thailand and will earn for the Lao government an average of US$80 million per year over the first 25 years of the project's

operation. NT2 is regarded as the first green industry in Lao PDR recognized by independent experts as having the potential to greatly contribute to the country's development objectives. The government sees it as a great potential for poverty reduction in the surrounding areas as well as for the whole country.

NT2 was designed to incorporate a complete set of economic, environmental, and social programs to mitigate its effects on local people and ecosystems, and to improve living standards in the areas over the entire project area. On the social side, NT2 has a long-term commitment to the welfare of these people through its livelihood and downstream programs. On the environmental side, the project has worked on the long-term protection of the surrounding watershed and the Nakai-Nam Theun NBCA. Toward these objectives, NT2 had agreed to provide US$1 million per year for the implementation of programs under this framework starting in 2005 as the commercial operation started. Provision of this fund will cover the whole operating phase of 25 years. On top of this, NT2 has provided US$ 6,500,000 to the WMPA for the construction phase.

The case study examines and highlights possible contribution of PES from the NT2 hydropower dams to reduce poverty of people living in the NBCA. The assessment in this study concentrates only on impacts from rural development activities rather than focusing on environmental impact. Because the project site is difficult to access during the rainy season, the analysis is mostly based on secondary information and additional information from key project staff.

Brief about the NT2 Watershed

The NT2 Watershed is the biggest watershed area in Lao PDR and Southeast Asia. It has a total area of more than 430,000 ha, covering 31 villages belonging to three village clusters. The watershed is easily accessible. The people living in the area have a diverse ethnic composition, comprising four main ethno-linguistic groupings of Vietic, Brou, Tai-Kadai and Hmong backgrounds. The livelihoods of all these different groups rely heavily on the forest, wildlife, and natural resources of the NT2 watershed.

In general, people in the area are poor and suffer from rice shortages. Almost one-third of the interviewed villages report that 76-100% of households are short of rice at some time during the year. Rice shortages last from one to 12 months, with the majority of villages reporting shortages of less than seven months. About 50% of the total households practice shifting cultivation, 35% combine shifting cultivation and paddy rice farming, and only 10% practice paddy cultivation with cash crops.

Livestock plays an important role in the daily life of villagers. These animals are used for food, labor, and income generation. In the last few years, livestock generated more than LAK 1,460 million for the villagers. The majority of people rear buffalos, pigs, goats, poultry, and a few cattle. Fishing activity is just an additional livelihood practice. Almost all (98%) of the surveyed villages indicate that many of the aquatic resource species are important food sources for households in their village and that fish is an important food source.

NWFPs are important for people's livelihoods in the area. About 96% of villages indicate that many of the edible plants are important food sources for households, including bamboo shoots, rattan shoots, and forest vegetables. NWFPs that are important for their incomes include cardamom, eaglewood, rattan, nuts, bong bark, orchids, bamboo shoots, "khrea haem" climbing vine, and broom grass.

Project intervention

To implement the NT2 commitments on environmental and social compensation, the NT2 Watershed Management and Protection Authority (NT2 WMPA) was established under Prime Ministerial Decree 25, on 26 February 2001 and updated by Decree 39/PM dated 21 February 2005. The role of NT2 WMPA is to manage, develop, and protect the NT2 watershed. The authority is backed up by technical assistance from NTPC. The Social and Environmental Management Framework and 1st Operational Plan (SEMFOP 1) was a guiding document for the period from April 2004 to September 2011 when it was developed and implemented. The implementation of SEMFOP 1 ends in September 2011 and the development of the 2nd Operational Plan covering 2011-2015 is being undertaken.

The purpose of the SEMFOP 1 was to ensure the effective, long-term protection of the biodiversity and watershed values of the NT2 catchment while safeguarding the wellbeing, traditional livelihoods, and cultures of the affected communities. The SEMFOP1 was implemented through three main programs: (i) land and forest planning and management and land allocation for management by local villagers and local authorities; (ii) biodiversity surveys, monitoring, research and protection; and, (iii) improving the living conditions of the people. The other two important programs—community outreach and conservation awareness and ecotourism—were set up to support the three main programs.

To ensure the integration of the three main components, the program was implemented through (i) involvement of beneficiaries; (ii) participatory NBCA management; (iii) establishing and implementing official tools such as agreements, contracts, and regulations; and (iv) implementing conservation and development activities.

To fulfill the objectives, WMPA implemented SEMFOP 1 through the Participatory Integrated Conservation and Development (PICAD) approach to seek a balance between regulation enforcement and community participation, between conservation and village development. The PICAD has three main component activities, including (i) Forest and Land Use Planning, Allocation and Management; (ii) Participatory Protected Area Management; and (iii) Livelihood Development for Conservation.

To ensure the participation of local people and equitable benefit-sharing in the watershed, extensive community consultations were conducted all throughout working process. The communication was enabled by setting up a Village Integrated Conservation and Development Committee (VICAD) in each village to work closely with the project teams in planning project activities in their respective villages. In addition, the VICAD set up its Village Conservation Monitoring Unit and Village Development Unit to participate in the programs of the WMPA and the district. The VICAD is also responsible for joint monitoring and evaluating the land use and land allocation in its own land and forest land. The following summarize the livelihood improvements.

Livelihood improvement

- Support for livestock raising, including livestock vaccination funds to 20 villages
- Support for domestic animal-raising funds of more than LAK 200 million; administering vaccination to 22% of cattle, 88% of pigs, 34% of goats, and 85% of poultry; and introducing fodder seeds (ruzy, guinea and stylo) to improve animal feed production
- Support for crop production, providing 2,410 kg of high-yielding varieties (Thadokkham 1, Thadokkham 11, Sebuta, Nok, Mahinsung, Laboul, Vieng), maize seeds, fertilizers, and vegetable seeds; and providing rice bank funds of 45 tonnes of rice for nine villages
- Support for the establishment of a savings fund in three villages amounting to LAK 43,972,000; giving LAK 4.5 million to the weaving fund and setting up a local trading and exchange group with more than LAK 40 million
- Support for villagers' income-generation activities in the amount of LAK 1 billion through participation in activities of the authority during the last five years.

Basic infrastructure development

- Improved and constructed 49.5 km of hand tractor-based tracks and 19 small bridges between villages within the NBCA
- Established three cluster centers with solar cells and IP Star communication facilities
- Established 12 water supplies for affected villages to use
- Provided 275 sets of solar cells and a small hydro-electric power station (10 kw)
- Conducted a feasibility survey and completed the design of three sites for small-scale hydropower, with one hydro plant (expected capacity of 40 kw), to supply affected villages with electricity from the dam.

- Constructed three small-scale irrigation systems with drainage capacity up to 20 ha
- Provided one small four-wheel tractor (50Hp) for paddy field clearance and tracks renovation.

Education

- Renovated and constructed primary schools, and one secondary school
- Supported educational materials (books and book boxes), sports equipment, and vegetable seeds for school gardens
- Provided LAK 572 million as salary payments to 47 teachers
- Provided accommodation in Nakai for four students from Navang cluster
- Cooperated with the vocational center on the future support of people from NBCA who intend to pursue higher studies in Nakai or other areas.

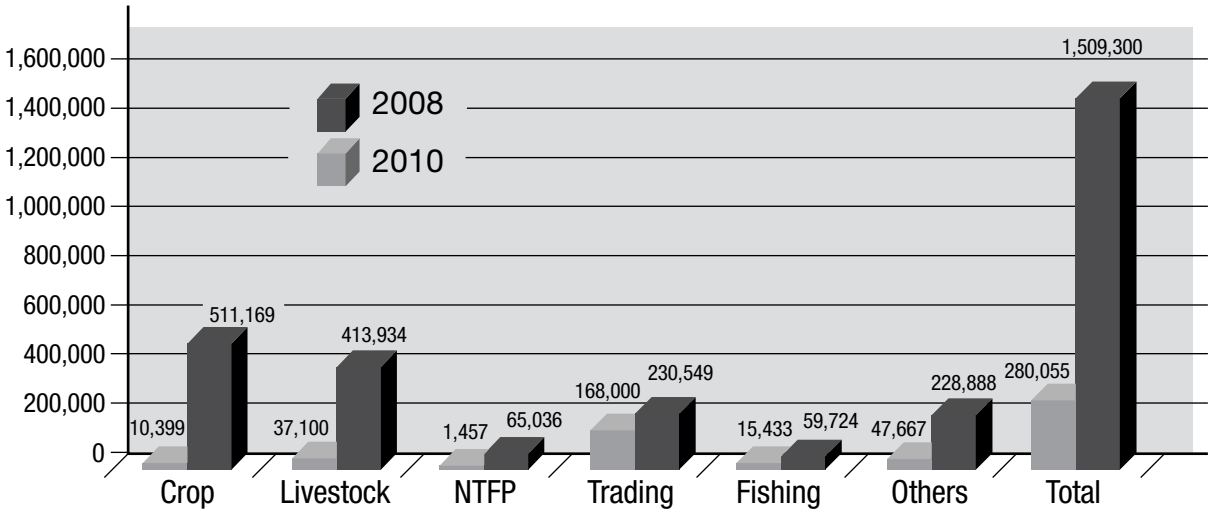
Health care

- Provided LAK 80 million to pay four nurses working in the NBCA (LAK 16 million per year) and more than LAK 3.4 million for medicine boxes of 11 villages (31 sub-villages) in the NBCA
- Supported the rebuilding and construction of four health care centers
- Built capacity for women of 11 target villages in the NBCA by providing training in family planning with the participation of 681 people, including 377 women.

Impact on livelihoods

According to the WMPA, the project intervention created a significant impact on people's livelihoods in the watershed. The quality of life of the people within NBCA improved. In terms of income, the average household cash income per year increased five-fold within two years, from about LAK 280,000 (US$ 35) in 2008 to LAK 1.5 million (US$ 187) in 2010.

Figure VI.5. SUFORD's impacts on livelihoods



Source: Modified from WMPA studies in 2010.

As can be observed from Figure VI.5 above, significant increases of cash income were from crop production and livestock-rearing as the project concentrated efforts on food security as the top priority. This is followed by incomes from small trading activities indicating the new emerging trading traffic into the areas. This could be attributed to improved accessibility to the areas or increased buying power resulting from increased internal income from the other sources.

In addition, rice production was reported to increase, narrowing down the gap of rice shortage from seven months in 2008 to four months in 2010. Even though rice production was still not enough, villagers no longer experienced starvation. They filled the gap with maize or cassava. Trading made rice accessible. Health care and education services were also improved. More children attended schools and the rate of illiteracy among the young generation was dramatically reduced. Figure VI.6 reflects improved people's livelihoods in the areas.

According to WMPA's wealth rankings in 2008 and 2010, eight households moved from medium to rich class, 37 households or 16% were freed from the poor category and could move up to medium class, resulting in a reduced number of poor households. However, the significant increase in number of households in middle class within two years is suspected to have resulted from resettlement.

In conclusion, the compensation from NT2 used by the WMPA to conserve and improve livelihoods of people living in NBCA provided significant contributions to poverty reduction in the areas. The impact on livelihoods would be certainly more obvious in a longer period, if the effort is continued. By that time, it is foreseen that there will be more income opportunities emerging and people will be less dependent on agriculture and forest resources.

Outlook for Forestry and Poverty Alleviation

Poverty is the key problem in Lao PDR. Forest resources provide a significant contribution to poverty reduction, especially for the majority of poor people who live in rural areas and whose livelihoods depend on forest resources for survival. Examples discussed in this study confirm that there are both direct and indirect contributions provided by forests and forestry to poverty alleviation. Direct contribution can be seen in the forms of food, income, medicine, other materials for household subsistence. Indirect contribution is in the form of the contribution to national income that the government partially uses for infrastructure development, such as road access, education, health care, electricity network, which in turn contribute to poverty alleviation.

However, the magnitude and sustainability of the contribution depend on the type and size of forests and forestry. The contribution of natural forests is more relevant to rural poverty, providing diversity and exceeding the contribution from plantations. Examples of the contribution from natural forest resources in traditional forestry illustrate how much rural people benefit from forest products for their survival. However, the contribution from the investments in commercial plantations does not show significant impact to poverty alleviation, especially for rural poverty, even though it is important for the national economy and forest policy targets. On the other hand, in many cases, the large plantations (through land concessions) exacerbate poverty as in the cases of the rubber investments in Champascak and Saravan Provinces.

In conclusion, forests and forestry provide significant contributions to poverty alleviation in Lao PDR, but the contribution decreases as deforestation continues.

Lao PDR experienced rapid deforestation in the last two decades. In the 1990s, deforestation was mainly attributed to shifting cultivation, a traditional upland farming system practiced mostly by poor farmers in mountainous areas. Shifting cultivation had poverty implications in the past, simply because it was then the only livelihood option that ensured food security in mountainous areas. This practice involved the clearing and burning of forests before cultivating upland rice. Recognizing the negative effects of shifting cultivation on natural forests, the GoL tried hard to stop the farming practice from the early 1990s onwards through the implementation of livelihood alternative projects and programs. But despite a massive reduction in the cultivation area, the absolute eradication of this practice targeted by the end of 2010 did not happen.

With the absence of better upland livelihood alternatives and with rural people needing rice for their survival, shifting cultivation is foreseen to continue for a while. To tackle this chronic and complex concern, the GoL has incorporated solutions in the 7th NSEDP and targets to eradicate the practice by 2015.

Another key driver of deforestation is unsustainable logging. An increasing demand on Lao timber from neighboring countries has put heavy pressure on Lao forests. Logging in Lao PDR is allowed only in PDFs with approved sustainable forest management plans. In special cases, logging is also allowed in forest areas with special permission from the GoL for infrastructure development projects.

While the GoL is in the process of putting all PDFs under PSFMS, logging is limited in 19 PDFs already covered by sustainable forest management plans and some development areas. These are not meeting the current wood demand. The supply capacity from these two sources does not meet the increasing demand for Lao timber. This has resulted in occasional illegal logging and trading but these illegal practices are increasing, particularly the illegal trade of rose wood. In response, the GoL has created the Department of Forest Inspection within MAF to control illegal logging and timber trading. With support from SUFORD, the GoL has strengthened the legal framework and capacity for law enforcement and taken serious actions to control the situation. However, with a special price incentive, illegal timber trading from unsustainable sources often reemerges. In this situation, if no measures are seriously taken, such illegal practices can accelerate deforestation in the country.

Another key factor directly affecting the Lao forests and forestry is the active pursuit of rapid economic growth, determined by a significantly increased FDI in natural resource base sectors, such as commercial plantations, hydropower electricity generation, and mining. In the last five years, Lao PDR has been successful in economic development. This growth has had substantial contributions from FDI in the natural resource base sectors such as hydropower electricity generation and mining. These sectors are expected to further grow in the next five years (2011-2015) to meet the share of 39% of the total GDP.

The investments in these natural resource base sectors, if developed effectively, can contribute significantly to national economic growth that in turn contributes to poverty eradication. But if not well-managed, these types of investments by nature have negative social and environmental impacts (Lao PDR Development Report 2010). The associated potential social negative impacts may include the loss of lands and other physical assets and reduced quality of water resources, and lead to changing livelihoods, food insecurity, loss of human capital, negative health impact, social tensions, and conflicts (Ibid.). The negative environmental impacts are directly associated with the loss of natural forest resources through the flooding of large forest areas for hydropower dams, clearing forests for plantations, for mining operations, and for accessing essential infrastructure improvements to support the development of these industries (Callander 2007). Recently, the impacts increasingly have appeared in the country as a consequence of careless decentralized land concessions and accelerated deforestation. The situation has become an immense public concern in the country and has caught international intention.

The existing situations, if not reversed, will endanger Lao PDR's natural forest resources. As a consequence, the rural poor will lose opportunities to utilize natural forest resources such as NWFP and other forest products to secure their livelihoods, and their poverty situation will worsen. The continuous destruction of natural forests and the loss of fallow lands to foreign investors will also impact greatly on the rural poor through reduction and minimizing not only of opportunities to collect forest resources needed for livelihoods, but also of their land available for agriculture production. This leads to unemployment as the investment often does not provide permanent and fair-compensation jobs. As poor people are placed in this situation, there is a high tendency to encroach on forest areas continuing their shifting cultivation practices. The other danger that most likely will occur as a result of continuous deforestation is compromising the implementation of green industries such as hydropower development and ecotourism, favored by the GoL for sustainable socio-economic development and raising the vulnerability of Lao people to natural catastrophes.

Recommendations

In conclusion, forests and forestry make a large contribution to the national economy as well as to poverty reduction. While man-made forests are expected to contribute more to national economy and policy targets in terms of increased forest coverage, natural forests are most relevant and contribute

mostly to reducing rural poverty. In comparison to commercial forestry, traditional forestry is essential for the local economy and for rural poverty alleviation, even if its contribution to national economy may not be significant. In particular, it contributes to enabling communities to meet local basic needs for survival.

With regard to investments in commercial plantations, all three models are expected to contribute to poverty eradication at different levels and magnitudes. But all the models, even with opportunities for rural poor to participate and obtain some benefits, are not well-suited for rural poor people who mostly lack capital and lands. Moreover, large-scale plantations, where lands are mostly obtained from land concessions, tend to exacerbate rural poverty. If not well-managed, these also cause deforestation, resulting in many kinds of social and environmental impacts, including worsening poverty.

In terms of FDI, it is recognized that it significantly contributes to the growth of the Lao economy, helping the country raise its GDP and HDI ranking. But due to weak management, the investments, particularly in the natural resource sectors, show social and environmental negative impacts, mostly deforestation and land use conflicts. If these situations continue, the Lao natural forests are in danger, ultimately resulting in social and environmental degradation.

There is an urgent need for the GoL to balance the situation between the promotion of economic growth, sustainable forest management, and poverty alleviation. For this to happen, the following recommendations are suggested.

Reconciling Land Use Conflicts

To maintain natural forests, land-use conflicts need to be reconciled. These conflicts are between forests and other development practices such as forest land conversion into agriculture production (shifting cultivation, commercial cash crop cultivation, and large-scale plantation), and infrastructure development (hydropower dams, communications network, mining, etc). The following recommendations are proposed to solve or minimize the problems:

Completing and enforcing the ongoing land-use zoning activities

To address land-use conflict and prevent forest encroachment, the GoL has spent efforts on land-use zoning at the district level in recent years. The zoning is not yet completed in all districts, but completion is expected to be effected in all districts by the end of 2011. There is an urgent need for the GoL to put more effort into completing the nationwide zoning and the legal procedures needed before handing over to local authorities for implementation.

The land use zoning at district level should also be further developed into land-use plans at village and village cluster levels to enable the actual land-use planning process to work effectively. The existing "Manual on Participatory Land Use Planning at Village and Village Cluster Levels" will be used to guide the planning process. For forest lands where areas were demarcated and mapped, efforts should be given to acknowledge ground markings to ensure that forest boundaries are clearly identified.

Another problem associated with land-use zoning is its ineffective usage in land-based development planning activities. Many reasons for the failure have been identified but are mostly related to the lack of enforcing regulations. Thus, a strong legal framework must be developed and enforced.

Improving the approval process for large-scale land lease and land concession

The other way to reconcile land-use conflict is to improve the approval process for large-scale land lease and land concession process to minimize social and environmental impacts from land uses. There is a need to improve coordination among government agencies through the integration and harmonization of sector strategies and clear division of roles and responsibilities.

There is also a need for GoL to enhance the relevant policy and regulatory framework. Although Lao PDR has a comprehensive set of investment, environmental, and social laws and regulations, these

contain several gaps and loopholes that need to be addressed. These include, for instance, uncertain land tenure and lack of protection for farmers. In addition, these laws and regulations are poorly implemented and enforced.

Another important issue in the land concession approval process is the weakness in the application and implementation of the Environmental and Social Impacts Assessments (ESIAs) resulting in negative environment and social impacts. ESIAs are required for all large-scale land-based projects but rarely practiced, and even the subsequent agreements are not always enforced. There must be stricter application and implementation of ESIAs.

Finally, to reconcile land-use conflict, it is necessary to increase transparency in the government's investment approval process by allowing a wider participation of stakeholders in the decision-making process.

Sustainable Forest Management and Utilization

Given the fact that natural forests provide the most benefits for poverty reduction, it is necessary to manage and utilize these resources in a sustainable and most effective manner. The Forest Strategy 2020 outlines the policy and strategic guidance and the following specific recommendations are proposed to guide actual implementation.

For production forests, GoL should expand the Participatory Sustainable Forest Management Approach applied under the SUFORD project to cover all 51 PFAs throughout the country. The benefit-sharing system should also be revised to ensure that sufficient funds are made available for forest management and fair local benefits.

For protection forests, the GoL should develop clear strategies for the management of demarcated production forest areas throughout the country. The strategy should encourage participation from all stakeholders with fair incentives and be linked to PES schemes and to commercialize forest rehabilitation schemes, such as fuelwood production and management for NWFPs. The implementation of protection forest strategy and its supporting regulations and guidelines must be developed and enforced.

For conservation forests, the 'Participatory Conservation and Development' approach will be applied in conjunction with PES schemes such as ecotourism and other suitable recreation activities. The approach applied by NT2 WMPA will be further developed and applied where applicable.

For all forest categories, forest management should incorporate NWFPs as one component to maximize benefits to rural people and all can be well-linked to ongoing efforts to implement REDD plus R-Plan of the Lao government.

Increasing Value for Forest Land and Resources

In view of the rapid decline of forest resources and the potential contribution of forests to sustained poverty reduction, there is a need to maximize benefits from the resources. This can be done through the increased value of both forest resources and forest lands.

Local people have rights to use forest land, especially degraded forest land. This type of forest land is found in all forest categories and is accessible for rural people in adjacent villages, except for the core zones of PTF and NBCA. Thus, to increase the contribution from forest land to poverty alleviation, the following are recommended:

- Promoting commercial forest-based activities such as NWFP plantations and fuelwood production in degraded forest land;
- Reconsidering large-scale concession while promoting small-scale and contract farming plantations;
- Promoting agro-forestry in commercial plantations;

- Enhancing existing mechanisms and systems for collecting and distribution of compensatory payments from forest environmental services and ensuring that the payment is fairly distributed to rural development and poverty alleviation; and
- Increasing land lease rates and taxes for FDI projects.

Lao forest resources, especially NWFPs, are traded mostly in raw material form. These resources can provide significant additional values if processed internally. The processing of forest products is strongly promoted. The promotion of NWFP processing and marketing should be given high attention as it is more relevant to poverty alleviation. This should be promoted in the form of small-scale Lao enterprises as experiences of this type already exist in the country. The formation of community-based marketing groups for these products as in the case of Ban Nampheng should be further developed and applied. The other option is to increase the value of Lao timber through forest certification.

Capacity Building

One of the forestry sector's weak points in implementing FS2020 is the insufficient human capacity; hence, the need for the forestry sector to strengthen human resource development (HRD). While concentrating on HRD, the forestry sector will face a temporary staff shortage but this can be addressed by enhancing institutional collaboration with partnering institutions. HRD must be well-planned and based on periodic projected needs.

In terms of financial capacity, there are emerging opportunities from involvement in REDD schemes. Efforts should be given to the enhancement of the Forest Development Fund, and focus on PES as an important source.

References

Bond, I. et al. (2009). *Incentives to sustain forest ecosystem services: A review and lessons for REDD.*

Center for International Forestry Research (CIFOR). (2003). *Exploring the forest-poverty link*. Information Brief No. 7. CIFOR.

Clarke, M. et al. (2010). *The village rice-buffalo economy in Lao PDR: Household and village case studies on the SUFORD project's village development grants and funds.*

Clearing-house mechanism, http://chm.aseanbiodiversity.org

CPC. (2003). *The Lao PDR's national poverty eradication programme (NPEP): A comprehensive approach to growth with equity.* Lao PDR: Committee for Planning and Cooperation.

Department of Forestry (DOF). (2010). *Annual review of REDD+ in Lao PDR 2009: Report prepared for the national REDD task force of Lao PDR*. Vientiane: Department of Forestry

DOF. (2010a). *Mid-term review of Sustainable Forestry for Rural Development (SUFORD) project, Lao P.D.R., evaluation report, November 2010.* Department of Forestry.

DOF. (2010b). *Report on current forest cover in Lao PDR* (in Lao language). March 2010. Department of Forestry.

DOF. (2010c). *SUFORD status and direction, October 2010.* Department of Forestry.

Emerton, L. (2005). *Making the economic links between biodiversity and poverty reduction: The case of Lao PDR*. The World Conservation Union, Ecosystem and Livelihood Group Asia, Colombo.

Foppes, J. & Ketphanh, S. (2004). *Non-timber forest products for poverty reduction and shifting stabilization in the uplands Lao PDR.*

FRC. (2008). *Forest products market and trade in the Lao P.D.R.: A case study from Vientiane and*

Savannakhet provinces. Lao PDR: Forestry Research Center

Gaillard, L. (2010). *Biofuel research and development in the Lao PDR: Perspective of one research institute in South East Asia*. Paper presented at the Third Bio-regional EU-SEA S & T Stakeholders Conference Collegium, Budapest.

Gaillard, L. et al. (2010). *Biofuel development in the Lao PDR: Baseline assessment and policy evaluation*.

Government of Lao PDR (GoL). (2011). *Report of the Lao president to the IX party congress* (Lao language), June 2011. Government of Laos.

Lao PDR Development Report 2010. Background paper. Social impact mitigation from hydropower and mining in Lao PDR: Examining potential for benefit-sharing approaches.

Lao REDD Task Force. (2010). *Final draft R-PP of Lao PDR submitted to FCPF on 23 August 2010. Reducing emission from deforestation and forest degradation*.

Lao REDD Task Force. (2008). *Lao-FCPF-R-PIN. Reducing emission from deforestation and forest degradation*.

Peskett, L. et al. (2008). *Making REDD work for the poor.* Paper prepared on behalf of the Poverty Environment Partnership (PEP).

Leonard, R. (2008). *Socio-economic and environmental implications of large scale rubber plantations invested by three Vietnamese companies in Lao Gname and Bachieng districts.*

LIRE (N.d.). *Survey on fossil fuel consumption for energy efficiency conservation to promote the new technology of bio-fuel in Lao PDR*. Final Report. Lao Institute for Renewable Energy.

LNTA. (2004). *Statistical report on tourism in Laos*. Lao National Tourism Administration.

MAF. (2005). *Forestry vision 2020.* Ministry of Agriculture and Forestry.

Manivong, K. (2008). *Lao PDR's response to climate change and the role of forestry sector.* Paper presented at the conference Managing Forests in Mekong Countries for Carbon Sequestration and REDD, Hanoi, Viet Nam.

Manivong, V. & Cramb, R. A. (2007). *Economics of smallholder rubber production in northern Laos.* Contributed Paper 51st Annual Conference, Australian Agricultural and Resource Economics Society, Queenstown, New Zealand.

Midglay, S. et al. (2007). *Towards improving profitability of teak in integrated smallholder farming systems in northern Laos*. Canberra.

Midglay, J. (2006). *Position paper on tree plantation in Lao PDR*.

Ministry of Agriculture and Forestry. (2010). *MAF's 5- years progress report of the implementation of FRDF.* MAF.

MPI. (2010). *Report on the high level round table meeting 2010.* Ministry of Planning and Investment

MPI. (2010). *Poverty reduction and environmental management: Joint development goals for sustainable growth.* Issue brief 01. Ministry of Planning and Investment, Poverty-Environment Initiative (PEI).

MPI. 2010. *Poverty-environment initiative, Lao PDR*. Issues Brief 05/2010: Investment in bio-fuel. Ministry of Planning and Investment.

National Agriculture and Forestry Research Institute (NAFRI). (2009). *Rubber development in the Lao PDR: Ensuring sustainability*, a collection of posters from the ASEAN rubber conference, July 17-

18, 2009. National Agriculture and Forestry Research Institute.

NAFRI. (2010). *Rubber development in Lao PDR: Opportunities and challenges*. A report prepared by Policy Research Center for the Ministry of Agriculture and Forestry (in Lao language). National Agriculture and Forestry Research Institute.

Oksanen, T. (2003). *Forests in poverty reduction strategy: Capturing the potentials*. EFI Proceedings No. 47/2003.

PM Decree No. 38 on the Forestry and Forest Resource Development Fund, 2006.

Phimmavong, S. (2009). *Forest and plantation development in Laos: History, development and impact for rural communities*. International Forestry Review Vol.11(4).

Rebeca, L. (2008). *Socio-economic and ecological implications: large scale rubber tree plantations*. Bachieng & Lao Ngame Districts, Champassak& Salavane, Lao PDR.

Report on the high level round table meeting 2010, Vientiane, 20-21 October 2010.

Sawatvong, S. (2010). *Progress in REDD+ preparation in Lao PDR*. A paper presented at the International Seminar on REDD, Tokyo, Japan.

Schipani, S. (2008). *Impact: Alleviating poverty and protecting cultural and natural heritage through community-based ecotourism in Luang Namtha, Lao PDR*. Bangkok: UNESCO.

Schoenweger, O. *FDI in land and the need to establish a concession inventory: The case of Lao PDR*.

Sengdala, K. (2010). *Final report on oil extraction from planted agar wood in three provinces: Vientiane, Bolokhamxay, and Champasack, Lao PDR*.

Setboonsarng, S. et. al .2008. *Rice contract farming in Lao PDR: Moving from subsistence to commercial agriculture*.

Sirivath, H. (n.d.) 'REDD': *Some real challenges for local communities in Laos.*

Sophathilath. P. (2006). *Poverty–environment nexus in Lao PDR, a case study on non timber forest products (NTFP)*. Prepared for Poverty –Environment Nexus Study II, the PEN Project Group EASEN/DECRG/EASPR, World Bank.

UNPD. (2010). *Human development report 2010, 20th anniversary edition*. United Nations Development Program.

Whiteman, A, Noulak, V, & Broadhead, J. (2006). *The current and potential contribution of forest-based ecotourism to poverty alleviation in Laos*, Working paper for Asian Development Bank RETA Project No. 6115-REG.

Voladeth, S. (2009). *Sustainable development in the plantation: An examination of the role of the Ministry of Planning and Investment*. International Institute for Sustainable Development.

VII

Assessment of the Contribution of Forestry to Poverty Alleviation in Nepal

Bishnu Hari Pandit*

Introduction

Forest Situation

Allocation of tenure over forest resources in Nepal is complicated, and there is a need to assess different forestry modalities and agriculture land tenure arrangement and other factors. Nepal is diverse in terms of geography, forests and other social conditions.

Based on estimates, the total forest cover of Nepal in 2010 stands at 3.6 million ha or 25% of the country's total land area (14.3 million ha), while other wooded lands coverage is almost 1.9 million ha or 13% (Table VII.1) (FAO 2010). Heavy deforestation in the country occurred from 1990 to 2000, at an annual rate of 2.09% (Ibid.), which decreased to 1.39% from 2000 to 2005. During the last five years (2005-2010), forest cover remained constant (Ibid.). The primary reason for the constant forest cover in recent years is the community forestry program implemented mostly in the hills.

Table VII.1. Total land area, population, GDP and forest cover

Description	Unit	Figure
1. Total land	Ha	14,318,000
2. Population	Density per sq km	2.1
	Growth rate (%)	1.8
	Rural (%)	83
3. GDP (2008*)	Per capita (ppp)	1,104
	Growth rate (%)	5.3
4. Poverty level change (%)	1996	42
	1996-2004	31
	2005-2010	25.4
5. Total Forest Area	Ha	3,636,000
	% of land area	25
6. Other wooded land	Ha	1,897,000
	% of land area	13
7. Forest cover change (%)	1990-2000	-2.09
	2000-2005	-1.39
	2005 – 2010	00

Source: FAO, 2008, 2010 & World Bank, 2010.*

The Forest Policy 2000 classifies the forests in the country into eight categories, namely (i) government managed forests, (ii) community forests, (iii) leasehold forests, (iv) religious forests, (v) private forests, (vi) protected areas, (vii) conservation areas and (viii) protected watershed.

More than two-thirds of the country's total forest area (85%) is still managed by the Department of Forests (DOF) as national forests. Of this forest area, government manages around 51% and the rest is under community and leasehold forest management regimes

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(Table VII.2). Government-managed forests (GMFs), over which local people have no legal rights, are distant from settlements. However, of the government-managed forests, around 10% is traditionally managed by local people (Pandit 2003) and, de facto, they continue to have access over the forest resources. The DOF, as the caretaker and manager of these forests, is not able to successfully manage the forests in the hills and mountains due to the forests' remoteness and the department's shortage of resources. The management objectives for GMFs are oriented towards protection and extraction of timber, especially in the terai region (the southern belt of Nepal, usually a plain area below 1,000 masl with sub-tropical climatic conditions). The main work of the District Forest Office (DFO) is the protection of forest resources for future use. Non-wood forest products (NWFPs) are given less focus in GMF management plans.

Table VII.2. Forest management practices by type of forests

Type of regime	Management Practices	Coverage
Government managed forests	• Most forest areas in upper zones are open access due to remote location and lack of DOF human resources • Management objective is oriented towards forest protection • District Forest Offices (DFO) mainly issue permits for NWFP collection and occasionally for timber	2,812,346,000 ha (50.83%)
Protected area forests	• PA management is under the Department of National Parks and Wildlife Conservation (DNPWC) • Act (1996) includes provision for buffer zone community forest • In some PAs, some people are allowed to collect fodder, grasses, and dead and fallen firewood. Partial access to forest resources is allowed subject to the approval of the park warden.	830,000 ha (15%)*
Community forests	• Forests are managed based on CF operational plan (OP) prepared by users in collaboration with DFO. OPs provide rules for harvesting of forest products, including timber. • Non-FUG members are not permitted to use any forest resources.	1,652,654 ha ** (29.85%); 17,685 CFs; 2,177,858 households
Leasehold forests	• Forests (mostly degraded) are allocated to the poorest households of the community; rich and non-poor households are excluded from the program • Users are granted rights on land and forests usually for 40 years	35,000 ha (0.63%); 6,041 LFs; 56,018 households
Religious forests	• Religious forests are allocated to a trust or community for religious purposes. • Users collect fodder, deadwood, dry branches and twigs and tree felling is prohibited. There is no mention of the use of other NWFPs. • Outsiders are not permitted to collect forest products.	Very few
	Total Forest area including wooded lands	**5,533,000**

*Source: Compiled from different sources, * Kanel 2010, **Department of Forests 2011.*

The Government of Nepal (GoN) has tried various community based forest management models to devolve power to the local level and reduce poverty. The community forestry (CF) model is more aligned with the objective of devolving power to the local people, where local stakeholders have the equal chance to participate. On the other hand, the leasehold forestry (LF) model is considered more relevant to the aim of reducing poverty, but outcomes still need to be assessed. The LF concept has also emerged to address poverty reduction and ecosystem degradation. The CF model has been in practice since 1978 after the development of the Forestry Sector Master Plan. However, the wider implementation of this model has taken place after the promulgation of Forest Act 1993 and Forest Regulation 1995. CF area covers almost 30% of the forest area of Nepal, involving 17,685 community forest user groups (CFUGs) (DOF 2011). The total LFs issued make up barely one percent of the total forest area.

Protected areas (PAs), which include national parks and reserves, cover more than 15% of the total land

area of Nepal. PA management is under the Department of National Parks and Wildlife Conservation (DNPWC) and individual Conservation Area Management Committees (CAMCs) organized for each PA. In some PAs, partial access to forest resources by the communities is allowed, subject to the approval of the park warden. People are allowed to collect fodder, grasses, and dead and fallen firewood. Buffer zone community forests can also be established. Also, 30-50% of income from PAs (for example, from fodder collection or visitors' entrance fees) is for local communities.

Religious forests are areas within the national forests allocated for a religious purpose to a trust or community, upon request. Villagers believe that such forests are shelters for deities or spirits; therefore, tree felling is strictly prohibited. However, the collection of fodder, dead wood, and twigs for fuelwood is allowed. Communities are responsible for conserving and developing religious forests based on agreements with the DFO. There are very few religious forests registered with the DFOs in Nepal.

The private forests are within the jurisdiction of country's agricultural (cultivated) land owned by individual households. The total cultivated area of Nepal is more than 23% (or three million hectares) of the total land area of Nepal.

Economic Situation

In 2010, the gross domestic product (GDP) of Nepal grew at the rate of 5.3%, and per capita GDP was US$ 1,104. The agriculture sector contributed about one-third of the total GDP (NPC 2010a). The agriculture sector growth rate during the fiscal year 2009-2010 was estimated as 3.3%. This growth rate was possible because of the promotion of cooperatives, irrigation, agriculture roads, agriculture credits, research and technology dissemination, rural electrification, and development of market mechanism. In the next three-year period (2010-11 to 2012-13), the agriculture sector is estimated to grow by 3.9% and the non-agriculture sector, by 6.4%. This would be possible only by enhancing the above factors. Remittance, tourism, and trade also contributed significantly to the national economy. Remittance alone contributed 18% of the total GDP (Ibid.). Of the 4.83 million households in Nepal, 1.45 million (about 30%) receive remittances (GoN 2010).

The forestry sector is very important in terms of providing necessary goods and services to many rural people (Pandit and Kumar 2010). The share of the forestry sector to the GDP is lumped with the contribution of the agriculture sector, which accounts for about 33% of the national GDP. Only about 10% of this contribution from the agriculture sector is estimated as the contribution from the forestry sector (DFRS 2010). This report states that the positive contribution of forestry to the economy of Nepal and derived environmental benefits are underestimated.

Poverty Situation

Human poverty incidence varies across regions and sub-regions and forest cover in the country. Poverty incidence is higher in rural areas and the mountain belt (Human Development Report 2009). It is highest in the western mountains and in the far-western hills, where it is about 1.6 times higher than that of the central hills, where HPI is lowest. The overlay between forest cover and poverty incidence shows that poverty is more severe in areas where forest cover is low, and is less in high and dense forests.

Reviews reveal that the overall poverty and human indices in Nepal significantly improved in recent years. The National Planning Commission (NPC) estimated a reduction of 11 percentage points in absolute poverty level, from 42% in 1989 to 31% in 2005 (NPC 2008). The poverty level was further reduced to 25.4% in 2010 (NPC 2010a). If this trend progresses, the country may be able to achieve its Millennium Development Goal (MDG) 1 target on poverty reduction—reducing extreme poverty to 21%—in 2015. The reasons for this improvement are multiple, including increased wage rates, increasing trend toward urbanization, increasing proportion of active human resources and inflow of huge amounts of remittances (Ibid.). Remittance is a major source of income in rural Nepal. Despite the decrease in absolute poverty level, the Gini coefficient (which shows the inequality of income distribution and reflects the gap between the rich and the poor) increased from 0.34 to 0.41 from 2001

to 2006. On the other hand, the human development index (HDI) slightly improved from 0.513 to 0.527 (NPC 2008). However, Nepal still remains as a country of low HDI and is placed at the 138th position in the global HDI ranking (HDR 2009).

In achieving the MDG targets and three-year approach plan (2011-2013), the forestry sector's contribution is vital. Over 80% of Nepal's population lives in rural areas, and subsistence agriculture including forestry is the main source of living.

Despite the increasing emphasis on the role of forests in poverty reduction, there are limited studies and information available for assessing what exact roles forests play in this aspect. A number of literature reported the large contribution of household income from forest and environmental resources (Bapton and Cammaert 2007; Chand and Ghimire 2007; Pandit et. al. 2009; Rayamajhi 2009), but documentation is lacking. Some authors state that forest resources can help improve the livelihoods of the poor (Pandit et. al. 2009). Others argue that forests have a limited potential to contribute to poverty reduction and that forests sustain poverty (Angelsen and Wunder 2003). For instance, poor households mainly rely on forests for subsistence and safety nets rather than as a pathway out of poverty. These two contrasting viewpoints on the potential role of forests in relation to poverty reduction point to the critical need for a further investigation of this issue.

Poverty Reduction and Forestry in National Policy

National Poverty Reduction Strategy

It is understood that the poverty reduction agenda will be undermined if the major renewable natural resource base, such as forests, is threatened. Poverty reduction has been a strong agenda of national development strategies of the GoN since the adoption of the United Nations Millennium Declaration. Poverty is defined as pronounced deprivation in wellbeing, in terms of material deprivation (in income and consumption), lack of education and health services, vulnerability and exposure to risks, lack of opportunity to be heard, and powerlessness (World Bank 2000).

The 10th Five-Year Plan (2002-2007), also known as the Poverty Reduction Strategy Paper (PRSP) of Nepal developed by the National Planning Commission, explained poverty by many dimensions including high illiteracy, poor health, low sanitation, low food productivity or food insecurity, high child malnutrition, poor access to basic services, and inequalities among different socio-economic classes of people (NLSS 2004). Based on these factors, poverty is defined as a lack of wellbeing. Since the mid-1980s, poverty concepts changed from the simple consideration of income or consumption to definitions that include multiple dimensions of deprivation and wellbeing such as basic needs, self-determined lifestyles, choice, assets, capabilities, social inclusion, inequality, human rights, entitlement, vulnerability, and empowerment (CIFOR 2007; HDR 2009).

The development discourses in Nepal during the last three planning periods (8th Plan 1990-1995; 9th Plan 1996-2001, 10th Plan-2002-2007) targeted to reduce poverty in the country. The 10th plan was directly related to poverty reduction strategies of Nepal and divided poverty into three main categories—income poverty, human poverty and social exclusion—which capture various facets of poverty. The sole objective of the 10th plan period was to reduce the poverty level remarkably over the five-year period. To this end, the four pillars of poverty reduction strategy were formulated, namely: (i) achievement of high, sustained and broad-based economic growth; (ii) social sector and rural infrastructure development; (iii) targeted programs; and (iv) good governance.

Forestry Policy

To address the challenges of poverty and environmental degradation, Nepal designed various policies, programs and strategies, including acts and regulations. These changes were in accordance with the political changes of the country. The enactment of the Panchayat Forest Rules and Panchayat Protected

Forest Rules in 1978 introduced for the first time the concept of "handing over" government forests to local communities with control of Panchayat[1]. Out of this legislation, a need for the community based forest management approach that focuses on the poor emerged. Based on these, the GoN enacted its 20-year policy and planning framework in the Master Plan for Forest Sector (MPFS) 1988 for the development of Forest Sector (Table VII.3). One of the objectives of the MPFS was to reduce poverty and provide basic forest product needs of the rural people. This agenda was re-emphasized in the Forest Act 1993 and the Forest Regulation 1995 (Ministry of Forests and Soil Conservation 1995) after the inception of democracy in 1990.

Table VII.3 Time line of forest sector policy*

Forests managed privately for 104 years	
• Up to 1846 • Up to 1846	– Era of forest conversion to agricultural land – Privatization of forest by autocratic regime
Transition Period (six years)	
• 1950-1956	– Transition in the change in forest ownership from private to state ownership
Forest managed by the state for 36 years	
• 1957-1960 • 1961-1975 • 1976-1986 • 1987-1993	– Nationalization of private forests as State property – State control and command approach – State property managed by local government (local bodies) – Master Plan for Forestry Sector policy and legislative framework in place
Development of Community based forest management (17 years)	
• 1993-2000 • 2000-2010	– Development of community based forest management (community and leasehold forestry) and inclusion of the poverty reduction agenda – Recognition of the contribution of community forestry and leasehold forestry to national development goals, including poverty reduction

*Note: *Revised from Pokhrel et. al. 2007.*

Legally, the forests managed by the DOF are classified into two categories, national forests and private forests, depending on the ownership of land on which trees grow (Pandit et. al. 2009; Kanel 2010). For private forests, private entities own both the lands and the trees, while for national forests, the lands belong to the State, but management responsibilities of the forest resources are vested either with the government as GMF or with organized groups such as CFUGs, leasehold forest users groups (LFUGs), or religious groups. Buffer zone CFUGs are under protected area management. The 1993 Forest Act and 1995 Forest Regulation govern national forests that include CFs, LFs, RFs and where ownership of land belongs to government. In the GMF, the three forest management regimes (CFs, LFs, and RFs) only grant use rights to local communities.

On the other hand, the DNPWC governs the forests managed under the protected area system. The forest resources managed under DNPWC are for biodiversity conservation and the poverty reduction role is secondary. Approximately 15% of such forests are under the protected area system, which also include buffer zone areas. If wetlands, grasslands, ice lands and water bodies are included, the PA covers 23.1% of the total land (NPC 2010b). PAs were established in 1970 but only became effective after the promulgation of the National Park and Wildlife Conservation Act (NPWCA) in 1973. National parks and reserves are also considered protected forests. The NPWCA allows all revenues generated locally to be used in local community development and conservation through the CAMCs. The Local Self Governance Act of 1998 delegates authority to the village development committee[2] (VDC) to collect 30-50% tax on all natural resources throughout the country, including income from the conservation areas. This income is generated mainly through revenue collected from forest products use (for example, fodder, fuelwood, timber, sand, gravel, and visitors' entrance fees).

[1] Panchayat is the partyless political system proclaimed by King Mahendra in 1961 when all political parties were declared illegal. At the local level, the existing village development committee used to be the village panchayat before the onset of democracy in 1990.

[2] The village development committee or VDC is the lowest administrative political unit in Nepal.

The community based forest management (CBFM) approach with special focus on reducing poverty evolved as a key strategy of Nepal over the past few decades. One of the assumptions behind this strategy is that local communities, when legally empowered to take control of the forest resources, can develop local-level institutions to organize the sustainable use of natural resources, thereby reducing poverty (Ojha et. al. 2007; Pandit and Kumar 2009). These community-based models are community forestry, leasehold forestry and buffer zone community forestry under protected areas.

The GoN adopted various strategies to conserve forest resources and benefit local communities. Leasehold forests and community forests incorporated the poverty reduction agenda of the 10th plan (2002-2007) or the PRSP of Nepal. LF is focused on providing livelihood benefits to poor and landless people through forestry-related activities. The latest Forest Policy 2000 highlighted the following poverty reduction agenda:

1. Employ the poor and landless in nursery, plantation and management work, construction, forest harvesting, and forest-based industries
2. Train individuals, provide financial support to establish private nurseries, and purchase their products
3. Prioritize people below the poverty level in allocating leasehold forests, but only encourage them to engage in forestry if the benefits will exceed the costs. Avoid the practice of giving 'poor land to poor people'
4. Employ the poor and landless on government and leasehold forest plantations, including those using agro-forestry techniques
5. Initiate programs and incentives to establish and manage tree farms on leasehold forest land for industrial and multiple use products
6. Pay a just income to the rural poor who collect raw materials like medicinal and aromatic plants for industries based on such forest products

The above agenda were reinforced by the three-year interim plan (2007-2010) and three-year approach paper (2010-11 to 2013-14) and pro-poor policies, such as providing 35% of the income of community forests to the poorest of the poor in the community; providing 30-50% of the total income from protected areas for economic and social upliftment of the poor and deprived groups; granting a mixed share of revenues earned from government managed forests to the poor; and investing funds accrued from forests' environmental services and benefits for poverty reduction activities (NPC 2008).

Past and Current Contribution of Forestry to Poverty Reduction

Subsistence Use of Forests and Allocation of Tenure Over Forest Resources

Traditional use of forests

From ancient times, local people managed government forests located close to villages for subsistence use. Prior to the implementation of the 20-year Forest Sector Master Plan (1988-89 to 2008-09), most forests of Nepal were managed traditionally. Forest management by organized local community groups started to increase only during the 1990s. In the traditional forest management system, the rights are not yet formally handed over to local communities, though some local clans claim certain forest areas they have long been using as their own and exercise control over their claimed forests. Having made uninterrupted use of these forests since the establishment of their villages, clans consider themselves the real owners and do not care about legal ownership. They refer to these forests as hamro ban, meaning "our forest" or "indigenous forests." Some of these traditionally claimed forests were owned by clans before the nationalization of all forests in 1957, which the clans deemed an unfair action and which they do not recognize. The claimants actually continue to

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A hanging foot bridge constructed using income generated by a CFUG

exercise exclusive rights to use and manage these forests and strictly prohibit outsiders from access, though there is no legal base for said prohibition.

There are many such forests particularly in the hills above 1,500 masl where control and management of forests by the DOF is weak. A study conducted in the mountains of Nepal in 2003 showed that there were four traditionally managed forests with 26 households each in hills above 1,500 masl and two traditionally managed forests with 65 households each in the lower elevation zone (below 1,500 masl) in three village development committee areas (Pandit 2003). On average, each VDC in the middle hills of Nepal has one such traditional forest. The proportion of traditional forests to community forests in the upper elevation was estimated at more than 10% and in the lower elevation, which cover almost 5% of the total forest area. Comparing this figure to the national average of community forests, there are 1,125 traditional forests managed by local communities without DFO intervention (Ibid.). Only those claiming such forests have the rights to use and manage these forests. As users are not concerned about the conservation of forest resources, the members of the households have free access to the resources and may collect as much as they can. Therefore, forest degradation is relatively higher compared to that in community forests (Ibid.). The contribution of traditional forests to the household economy cannot be directly interpreted because of lack of data, but local people are able to meet their subsistence needs.

Allocation of tenure over forest resources

Many agencies and projects in Nepal are involved in supporting CFs and LFs for the sustainable use and management of forest resources and achievement of the GoN's poverty reduction goals, which are consistent with the MDGs. These include the Food and Agriculture Organization of United Nations, Nepal Swiss Community Forestry Project, Livelihood and Forestry Program of UK Department of International Development, Leasehold Forestry and Livestock Program of the Government of Nepal, and Western Upland Poverty Alleviation Program.

The government implemented the Hills Leasehold Forestry and Forage Development Project (HLFFDP) from 1992 to 2003 in 10 districts of the country, with funding support from the International Fund

for Agricultural Development (IFAD). Building on the success of the HLFFDP, the GoN started the implementation of the Leasehold Forestry and Livestock Program in 2005 and undertook a bridging program during 2003 to 2005 without funding support from international agencies. To create better economic situations for the mid- and far-western districts of Nepal and contribute to improving livelihoods of the poor, an agreement was reached between the International Fund for Agriculture Development and GoN on 5 February 2002 to launch the Western Uplands Poverty Alleviation Project, which became effective in January 2003 with a time frame of 11 years.

Community forests

In accordance with the Forest Act of 1993, national forests can be handed over to local communities for forest development, conservation, and utilization for the collective benefits of the members. Access rights and management responsibilities are assigned to the responsible community forest users groups. CFUG members cannot sell their allocated forests nor transfer their rights of use to other people outside of the group. Any revenue generated from such forests has to be deposited in a CFUG bank account. The money can be used for various purposes, such as forest management, community drinking water supply, or income generation projects. The government has fixed the proportions of the total income to be spent for specific purposes: 25% for forest management, 35% for poverty alleviation, and the rest for community development works (for example, school repairs, drinking water system and roads improvement).

Based on the Forest Act of 1993 and Forest Regulations of 1995, the CFUG handover process requires the formation of a forest users group and submission of the group's constitution, together with an operational plan (OP) for a designated area of forest. The OP outlines the management strategies of forests and use patterns of forest products. CFUGs set clear rules for the collection of forest products in their OPs. In most cases, forest users prepare the constitution and OPs, in collaboration with the DFO and NGOs. Forests are handed over to the responsible CFUGs upon approval by the DFO of the constitution and OP, leading to the transfer of the forest management and use rights from the government to the CFUGs. The CFUGs also have the right to exclude non-CFUG members from the use of their designated community forests.

Many studies argued that the benefit-sharing mechanism in CF is not equitable (Kanal and Niraula 2004; Pokhrel 2007; Pandit and Kumar 2009).

Although poverty is given a lot of attention these days, poverty is reduced in few isolated cases where community groups support targeted pro-poor and locally-planned activities. A study conducted by Kanel and Niraula (2004) investigated that CFs generated a total of US$ 10 million annually from the sale of forest products, of which only 3-5% was spent for the poor. The bulk of the money was spent on various activities including forest conservation, community and local infrastructure development (hospital building, school building, drinking water and rural road construction). The recent CF guidelines (2009) set by the DOF provides the allocation of 35% of the CF income to poorer households.

RECOFTC/FAO (2009) revealed that villagers in Nepal benefit directly from community forestry if they are members of a CFUG, and indirectly through the development and improvement of local infrastructure. However, it appears that the wealthier members can take more advantage of the infrastructure projects. This is particularly apparent in the installation of electricity and the construction or improvements of irrigation canals. Many poor households do not have electrical appliances and either own little land or have no land at all that will benefit from irrigation systems. RECOFTC/FAO cited in Dev and Adhikari (2009) indicated that the CFUG contributed to half of the costs for construction of rural trail in Sindhupalchok District and 35% to the construction of irrigation canal.

The contribution of CF to the household economy varies according to the types of intervention carried out and local initiatives taken in the respective community forests. Rana and Subedi (2009) confirmed that the household income of group members increased by 26% in seven Livelihood Forestry Program (LFP) districts. This change is directly attributed to the support provided for the CFUGs.

Leasehold forests

Leasing out public forests to the private sector was officially conceptualized in the mid-1970s with the promulgation of the Leasehold Forestry Regulation pursuant to the 4th Amendment of Forest Act, 1961 (Bhattarai et. al. 2007). The main aim of leasehold forestry was to mobilize private resources to increase the productivity of forest lands for the benefit of both the government and investors. Very few leasehold forests were handed over to the poorest groups until 1993.

The Forest Act of 1993 classified leasehold forest as one of the five categories of national forests in terms of management modalities. Portions of the forest are leased out to the poorest of the poor households for a tenure of 40 years, subject to renewal for another 40 years. The poorest of the poor households eligible for leasehold forest application are selected based on standard criteria set by the government. One of the criteria used for defining various categories of poor is food security. Household with food sufficiency for less than three months are considered ultra-poor households; those with food sufficiency for 3-6 months are poor; while households with 6-12 months food sufficiency are medium poor. Households that have food sufficiency throughout the year are considered non-poor and are not qualified for leasehold forestry support. Land ownership remains with the government, and a lessee has the right to manage and use all forest resources within the leased plots. The typical size of forests handed over to one group is 2.7 ha, which is then shared among the members. The average size for one household is 0.5 ha (FAON 2008). Annual fees are charged for leasehold forests handed over to industries or corporate bodies depending on the ecological region and size of the land. However, the fees are waived for the pro-poor leasehold forests.

The GoN implemented a pro-poor-focused leasehold forestry program, the Hills Leasehold Forestry and Forage Development Project (HLFFDP), in 10 districts in 1993. The aim of this project was to raise the income of families in the hills who were below the poverty line and to contribute to the improvement of the ecological conditions in the hills. The project ended in 2003. In 2005, the GoN started the implementation of the Leasehold Forestry and Livestock Program (LFLP), which is a continuation of HLFFDP, in 22 districts. The LFLP program builds on the success of the HLFFDP in helping set up leasehold forestry groups that are to be developed into village based pro-poor institutions and that will serve as village level finance institutions (Kafley 2007). A total of 5,113 leasehold forest groups (LFUGs) were formed at the end of 2010: 3,077 LFUGs during the LFLP implementation and 2,036 LFUGs during the HLFFDP phase. There are 16,502 households now involved in the leasehold forestry program. Less than one percent of the total land of Nepal is used for leasehold forestry. Some authors claim that many of these groups are recognized as viable groups for natural resources conservation and poverty reduction (Thomson 2000; IFAD 2003; LFLP 2005). These groups are federated into several inter-group associations and some of them developed into cooperatives for marketing of their products and to avail of the low interest rate loans.

A study commissioned by FAON (2008) indicated that 11% of the total leasehold member households (169 households) of 18 LFs in six districts had sufficient food. Of the total, 96 ultra-poor households before the leasehold forestry project 10 years ago, only seven percent shifted to medium poor, five percent to poor and 11% to rich category. The change in livelihood status in the control site was very low, where the same number of households was interviewed. Such an improvement in the wellbeing status of the leasehold forestry members was mainly attributed to their involvement in small livestock raising supported through

Table VII.4. NWFP trade records, Fiscal year 2009/2010

Development regions	Amount traded (kg)	Royalty earned (NR)
1. Eastern region	140,468	665,991
2. Central region	113,510	1,002,083
3. Western region	78,858	777,422
4. Midwestern region	352,535	2,814,393
5. Farwestern region	1,486,152	15,590,874
Total	**2,171,523**	**20,850,763**

Source: Department of Forest 2010; US$ 1 = NR 72

grass and fodder production in both leasehold plots and private farmlands, growing of multi-purpose species in leased plots, and vegetable production in private lands, as well as in other entrepreneurial activities such as collective fish raising, NWFP production, and bamboo and broom grass production in leasehold plots. The above-mentioned increase of wellbeing is evidenced by an increase of cash income among the sample households (at 2008 prices). Before the leasehold forestry program, the sample leasehold member households had an average annual cash income of Nepalese Rupee (NR) 25,589, which in 2008 increased to NR 43,768.

Commercial and Industrial Forestry

Nepal is lagging behind in terms of promoting commercial forestry. Some initiatives on ecotourism, village industries, and bio-energy are under way and their impacts are not assessed yet. A naturally beautiful country, Nepal is expected to earn more foreign currency and generate greater employment opportunities through ecotourism. Most of these initiatives are largely based on private sector investments. Public sector investment in commercial forestry is not so encouraging. The government's efforts in commercial forestry are limited to the marketing of timber and NWFPs through private sector involvement.

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Selling NWFPs, such as Zanthoxylum seeds, to middle men in the village can be a direct way of generating cash, although the value for the collector is usually low.

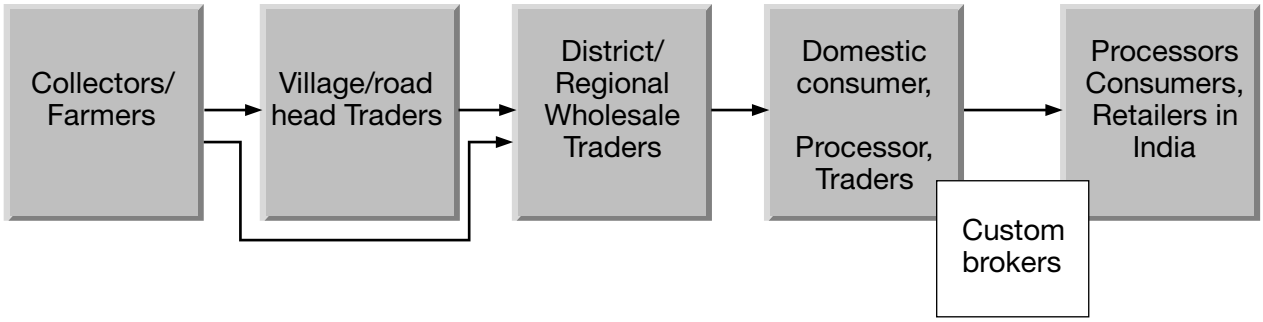
A study facilitated by CIFOR (2007) examined the effective practices and constraints of various community-based village and smallholders' NWFP enterprises in 13 districts of Nepal, which were focused on providing benefits to the poor. The tenure reform, i.e. clarifying and strengthening tenure rights at community level, through various village-based programs in Nepal in the last few decades enhanced opportunities for the rural poor to benefit from such enterprises. However, a key concern as these programs advanced over the years was whether the poor were getting benefits, given their high dependence on forests. The practices of these enterprises that were effective in increasing income benefits include representation of the poor and marginalized groups in executive committees in the CFUG-based enterprises and targeted employment of the poorest households in the collection of NWFPs and in processing units in networks, and enabling the poor to own share capital in cooperatives and companies (Pandit et. al. 2009).

NWFP Commercialization

NWFP collectors in Nepal commonly sell NWFPs in raw or unprocessed form (Pandit and Kumar 2010). They sell these either to the village or to road head traders, who in turn sell the products either to wholesale traders based in the terai-plain areas or to national traders in the capital city (Figure VII.1). These are the key actors in the marketing chain who provide the vital link between the collectors-producers and buyers. Because of the presence of these intermediary traders, the share of collectors' income in the final price is considerably reduced.

Apart from the income from the sale of their products, the poor can also earn some income from carrying the raw products from the villages to the road heads or serving as porters. In community-based enterprises, the poorest of the poor households were employed.

Figure VII.1. Actors in NWFP value or product chain



Sixty-five different species of NWFPs were traded from July 2009 to July 2010 (GoN 2010). The total revenue from the royalties earned from these NWFPs was more than NR 20 million, and the volume traded was 2,171 tonnes (Table VII.4). The market price of this sale is estimated to be at least 10 times higher than that of the royalty collected by the government.

Because most of NWFPs are sold outside of the formal markets, NWFP contribution to poor people's livelihoods is not fully recognized and recorded and is much lower than what is really earned from NWFP trade.

A study conducted in 2005 by the Livelihood Forestry Program in the eastern hills of Nepal indicated that traders legally export very few quantities (almost one-tenth of what is really exported). The rest is exported without paying royalties to the government. Evidence showed that a total of 13,988 tonnes of NWFPs were exported from 10 eastern districts (through three main borders) to India in 2003. It is surprising to note that this volume was almost equal to the NWFPs traded from a single district, Sankhuwasaba (LFP 2004). Where did the NWFPs collected from the other nine districts go? This indicates the illegal trading going on in the border to avoid royalty payments to the government.

The commercialization of NWFP to benefit the poor faces market-related problems. One of these is that small-scale producers face more difficulties in markets compared to those for timber and agricultural goods because the markets for NWFPs tend to be small, dispersed, and lucrative.

Timber Commercialization

The government of Nepal seemingly gives priority to timber marketing compared to NWFPs because timber marketing is easy and does not involve high risks from market failure.

Records of the DoF on the timber harvested or sold from July 2009 to July 2010 show that around one-half of the total timber volume for the period was sourced from private forests and around one-fifth from government managed forests (Table VII.5). Community forests accounted for almost 27% of the timber sold, in addition to the five percent of the timber used by CFUG members. CFUGs paid the national government US$ 0.77 million in royalties and US$ 0.94 million in value added tax (VAT).

Timber market values vary according to the quality of timber and ranges from NR 400-1,200 per cu ft at the farm gate price. If we consider the average of two values, the total income from timber is NR 5.47 billion, which contributes about NR 210 per capita income per year. The annual royalty collected from CF is also significant to the national income, which is more than NR 55 million (Table VII.5).

Table VII.5. Total timber volume (cu ft) collected or sold from GMF, CF, and PF

Forest Type	Timber collected and placed at government depot (cu ft)	Timber sold or internally used		Royalty (NR)	VAT (NR)
		Volume (cu ft)	%		
1. Government managed forests	2,014,042	1,297,641	19	-	-
2. Community forests	4,631,995	1,821,064	27	55,747,441	67,678,797
	-	372,271**	5		
3. Private forests	232,494*	3,347,391	49	-	50,051,815
Total		**6,838,367**	**100**	**55,747,441**	**117,730,612**

*Source: Department of Forest, 2010, Note: * Number of private trees cut, ** Internally used*

The rules related to the collection of royalty and VAT vary with the forest regimes. For instance, from GMF, 90% of the total royalty plus 13% VAT collected are deposited in the government treasury and the rest (10%) is sent to the District Development Committee (DDC). From CF, 15% of auctioned amount for tree species (Shorea robusta and Acacia catechu), if sold outside the CFUG, is deposited to government treasury, and similarly, a 13% VAT is paid for all sold wood outside the CFUG. From private forests, the 13% VAT is deposited to government treasury if sold to outsiders. The contractor who bids in the auction pays NR 5 per cu ft for the Forest Development Fund (FDF) to be deposited at the DFO.

Any individual or company seeking to buy timber should take part in the auction of the DFO. All timber harvested from GMFs is auctioned. The Timber Corporation of Nepal (TCN) is also allowed to harvest a fixed quantity of timber from each district and is generally half of yearly production. In Nepal, timber is marketed through three agencies: (i) DFO, (ii) TCN, and (iii) CFUGs.

The DFO harvests timber from GMFs as per management plan. In the terai, half of the total quantity to be harvested is given to the TCN for sale. However, both organizations (DFO and TCN) have to auction all the timber harvested in separate lots. Sawmill owners and the furniture industry take part in the government auction of timber and the highest bidder gets the lot. On the payment of the required amount plus 13% VAT, the DFO issues permits for the transportation of logs to different destinations. The bidder deposits an extra NR 5 per cu ft, as discussed earlier in the Forest Development Fund at DFO. CFUGs also auction the wood that are not consumed or utilized within the CFUGs.

Plantations and processing

The government undertook large-scale block plantations in various locations in the terai region in Nepal (such as Kerkha in Jhapa district, Sagarnath in Sarlahi district, Tamagadi in Bara district, and Kohalpur in Kailali district). The GoN also initiated the establishment of some processing and manufacturing companies. The Virkuti Paper Mills is run with government support in Chitwan district. Similarly, NWFPs are processed in the Herbal Production and Processing Company Ltd. (HPCCL) in Kathmandu. The contributions of these plantations and manufacturer companies are not assessed in detail.

The Department of Forest Research and Survey (DFRS) did some assessments on the contribution of private sawmills and companies and the employment generated through these companies in three districts (Makawanpur, Kaski and Rupandehi). There are 194 sawmills in the three districts that generate about NR 177 million of cash earnings in one year. These sawmills provide employment to at least 114 people per district. The laborers working in these sawmills are poor people who migrated from hills and mountains.

Payments for Environmental Services and Carbon Payments

The recent discussions on the role of forest in carbon sequestration are gaining interest in Nepal, but sustainability is a question as the contributions are from very few cases. It is believed that carbon forestry has the potential to generate funds for local people. A survey conducted in the mid- and high-hills of the Himalayan region indicated that the mean carbon pool size of a community-managed forest (excluding litter, herbs, and shrubs) is 504.31 tC02 per ha (Karky et. al. 2009). This also includes soil organic carbon up to one meter depth. Of the total carbon, the mean annual increment rate of carbon capture was found to be 7.04 per ha (Karky et. al. 2009). An ICIMOD report (2010) shows that 16 CFUGs in Kayarkhola watershed of Chitwan District received US$ 22,000 for their contribution to reducing carbon emissions (REPUBLICA 2011).

A study commissioned by the Ministry of Forest and Soil Conservation estimated the forest sector's contribution to the GDP using both direct and indirect use values. The result revealed about 9.5% contribution from the direct use values. The direct use values are consumptive goods such as timber, fuelwood, grass/fodder/bedding materials, NWFPs, sand, and boulders. Non-use values, such as recreation, ecotourism, soil conservation and carbon sequestration, provide an estimated contribution to the national GDP of 27% (Acharya et. al. 2009).

Case Studies

Selection of Case Study Sites

Three case study sites were selected for this study based on some criteria of poverty such as remoteness, poverty level, scarcity of food/land and water, low educational attainment, and health conditions.

This report deals with the impacts of four initiatives in community forestry, leasehold forestry, conservation area forestry, and commercial forestry to poverty reduction from three districts, one each from terai, middle hills and high hills. Community forestry and commercial forestry (furniture enterprise) initiatives were selected for site 1, which is found in the Sewarkhola sub-watershed in Dang District. There are many furniture and sawmill industries in Dang District. Community forestry and leasehold forestry initiatives were selected for site 2 (within Sukekhola sub-watershed, Pyuthan District). Lastly, conservation area forest management (indigenous forest management) initiative was selected for site 3, which is located within the Lete sub-watershed in Mustang District.

Table VII.6. Characteristics of case study sites

Case study sites	Basanta Hariyali Forest Users Group	Jaspur community forest and Barahasthan leasehold forest	Lete conservation area forest
Location	Sewarkhola sub-watershed, Dang (Inner Terai)	Sukekhola sub-watershed, Pyuthan (Middle Hills)	Lete sub-watershed, Mustang (High Hills)
Forestry initiative	Community Forestry and commercial forestry (Furniture making)	Community and Leasehold forestry	Conservation area forestry (indigenous forest management)
Name of FUG	Basanta Hariyali	Jaspur CF and Barahasthan LF	Lete conservation area forest
Area coverage (ha)	276	280	150
Number of households Start/Current	368/430	127/133	70/77
Sample Households Male/Female	16/8	15/5	12/4

Ethnic or caste composition	Tharu, Brahmin, Chhetri and Dalit (BK, Priyar and Sarki)	Magar, Brahmin, Chhetri and Dalit (BK, Priyar and Sarki)	Thakali, Gurung, Magar , Dalit (BK, Priyar and Sarki)
HPI	36.8	40	48.1
Food sufficiency	9-12 months	6-9 months	Less than 6 months
Literacy rate (%)	76.8	60	52.1
Forest types	Broad leaf sub-tropical Sal forest	Subtropical evergreen to semi-evergreen forests	Conifer and mixed broadleaf sub-temperate forests
Agriculture crops	Paddy, maize, millet, and wheat	Maize, paddy, millet	Wheat, oat, millet

Source: Field survey 2011.

Initiatives in Site I - Sewarkhola Sub-watershed of Dang District

Community Forestry Initiative

Ten years ago, the DoF handed over a community forest to the Basanta Hariyali Community Forest Users Group in Dang District through the initiative of the local people and the Livelihoods and Forestry Program funded by DFID. The total user households in the Basanta Hariyali CFUG increased from 368 in 2006 to 430 as of March 2011.

In the 10 years after the community forest was handed over to the Basanta Hariyali CFUG, the forest area increased by almost 10%. The members related that with the increasing number of users, the group faced the problem of meeting their fodder and fuelwood demands. Therefore, they increased the CF area by planting fodder trees (Leucaena leucocephala), grass (stylo and molasses), fuelwood species, and some NWFPs (Cinnamomum tamala, Cinnamomum glaucescens, Asparagus racemosus) in degraded common lands adjacent to the CF area.

Benefits from the CF

It is claimed that fodder tree plantation and grassland substantially contributed to supplying the fodder demand of the community. This is proven by the fact that almost 513 tonnes of green fodder were harvested from 2010 to 2011, valued at around NR one million. According to the CFUG members, "Our forests not only provided feeds to our animals, but also added organic matter to our farmlands and increased our crop production." The villagers collected a lot of leaf litter from the forest for compost making that contributed to soil fertility and increased farm production.

Box VII.1. Increased women's participation in the Basanta Hariyali CFUG committee

The secretary of the Basanta Hariyali CFUG committee, Ms. Laxmi Buda, (age 35) said that the representation of women and marginalized users from indigenous groups increased in the CFUG committee, which generated their enthusiasm in the CFUG. Out of 21 members, 13 are from indigenous and dalit communities.

In the beginning, there were no women in the committee, but now, there are six and four of them are dalits. "We are making decisions in favor of women and the poor in the distribution of CFUG fund and forest resources in an equitable manner." She says, "I am working for the CFUG as a CFUG staff and paid NR 2,000 per month. Aside from this direct benefit, the participation of the women and the poor in the CFUG activities, including decision making, increased. We are more hopeful that this system will continue in the future so that we can ensure CF benefits are directed to the poor and to the women." She further added, "In the past, our voice was not considered but now, what we say also count and we are asked as well. We women are involved in the decision making process, unlike our minimal participation in the past."

The CF initiative was successful in fulfilling the demand of fuelwood for almost 60% of the members. An estimated total of 255 tonnes of fuelwood was harvested from this CF. Surplus quantities of fuelwood were sold in the market by employing poor local laborers (dalit or lower caste households). The CFUG generated group funds (NR 78,319) from this firewood surplus sale. The CFUG also employed some members from indigenous families (Box 2). Indigenous families are different from the dalits who form the "untouchable" caste in the Hindu hierarchy system.

The contribution of timber use and sale to poverty reduction was not very significant as shared by some members, primarily because no ultra-poor households were able to get benefits from the timber use within the CFUG. The value of timber sale is highest among other forest products harvested from the CF, but the benefits mostly reached the better-off households. The reason for the poor not benefitting from timber extraction is very simple: they are not able to invest money for house construction. The total timber volume used was 4,814 cubic feet (CFT), valued at more than NR three million. The money was used for forest development and management, a scholarship program for intelligent students from poor and disadvantaged families, community development (drinking water supply, school construction, etc.), and income generation activities (goat raising, vegetable production, asparagus cultivation, etc.) (Table VII.7). The bulk of the money was spent on income-generation activities followed by infrastructure and social support activities. On the other hand, the value of NWFPs produced was relatively smaller, but the benefits usually went to poorer households as members from poorer indigenous people form the majority in the CFUG committee. Respondents shared that on average, one household receives about NR 1,000 per year from sale of NWFPs in this CFUG.

Table VII.7. Use of CFUG and CAMC funds (in NR)

Activities	Name of Forest User Group		
	Basanta Hariyali CFUG (Dang)	Jaspur CFUG (Pyuthan)	Lete CAM forest (Mustang)
Forest management (nursery, plantation, weeding, pruning, and thinning)	65,060	40,335	17,364
School construction	-	452,990	-
Drinking water	15,266	-	12,600
Road or trail improvement	-	-	29,750
Income generation (asparagus cultivation, goat raising, vegetable production, hotel, cloth sewing, and other business)	52,050	40,119	254,317
Employment (peon and watchers, and administration staff)	97,252	54,813	11,033
Scholarship to intelligent poor and disadvantaged students	5,000	-	-
Capacity building (training and study tour)	-	4,709	46,048
Total	234,628	592,966	371,112
Use of CFUG funds/year	46,925	118,593	74,222

Source: Field survey 2011.

In discussing what proportion of the people's livelihoods was forest-based and how this initiative helped, local people found it difficult to respond. They concluded that the CF initiative was successful in contributing to at least 15% of their household income.

An equally relevant question was whether the forest resources were being degraded due to overuse or were being improved through sustainable harvest since the CF handover. Based on the CFUG members' observation, the changes in the forest conditions with respect to different components, such

as tree cover, biodiversity, NWFP, plantation and wildlife density, were positive. In 2000, forest cover and wildlife density were relatively higher in government forests compared to community forests. However, now, the situation has changed and community forests are better in terms of biodiversity in species, forest cover, NWFP availability, and wildlife population. These direct environmental benefits, including indirect benefits such as increased milk production due to increased fodder and grasses, increased organic matter content in farmlands due to use of compost from forest leaf litter collection, were not accounted in the contribution of household benefits as discussed above.

In another CF, Sunpur, also in Dang District, the CFUG generates income from a form of payment for an environmental service their CF provides. The forest, which includes about 20 ha of *Bassia butyraceae* trees (locally called *chiuri*, a fruit tree with multiple benefits) planted about 35 years ago by the local people is being accessed yearly by hundreds of honeybee entrepreneurs from other districts for grazing their beehives. They pay NR 100 per beehive grazing. Every year, during the *Bassia* tree flowering time (November to January), the CFUG earns at least NR 100,000 and this is used for community development activities. Additionally, 30-50 families of this CFUG collect *Bassia* fruits and make herbal ghee. From the sale of this fruit, one household earns an average of NR 6,000-9,000 per year.

Commercial/Industrial Forestry Initiative

Despite the huge diversity and quantity of timber and NWFPs in Dang District, forest products were not effectively utilized in the past. For the last five years, more than 100 sawmills and less than 10 NWFPs enterprises operated in the area. Only four of the 100 sawmills were community-run. The other sawmills and furniture enterprises were mostly run by individuals. Rich and elite families mostly used the benefits generated from these sawmills, and small benefits (such as employment) went to poorer households. More than NR 87 million was invested in sawmills and furniture enterprises, and that doubled gross returns to these entrepreneurs. A total of 993 local people (all men) were employed in these enterprises in the whole district (DFO 2011). Access to market information was limited among local traders, and there was no provision for financial services (P. Subedi, personal communication).

Bishnu Hari Pandit

Well-managed shorea forest of the Basanta Hariyali CFUG in Dang District which is a source of fodder, grass, fuelwood, timber and other non-wood products.

Community forestry is increasingly recognized as an effective tool for forest management, resource distribution, and community development in Nepal. But it lacks commercialization that is crucial for employment creation, income generation, and economic benefit provision to local communities. Timber is one of the valuable products in the CF, but it is still not used for commercialization, product development, and marketing by the community. The CFUGs get nominal prices for the wood and timber compared to the actual market price (LFP Report 2011).

The sawmills and furniture enterprises in Dang during the field visits were not effective in incorporating local carpentry skills into its development framework and in improving the rural economy. Although many of the local people are well-experienced in woodwork, their skills were confined to traditional activities, such as making khatiya (wooden cut), halo (plough), juwa (yoke), and some local furniture. Though there was a large area of forest around the foothills of Dang valley and plenty of available timber, utilization of resources was confined only to firewood, grass, and leaf litter. A large number of sal trees (Shorea robusta) in the forests that are fallen every year were wasted, lying unused. This is because it is prohibited for CFUGs to collect and trade Shorea timber if this is not included in the CF operational plan of their respective forests. The CFUGs seemed to have overlooked this potential cash earning resource readily available within their surroundings, as they expected only external support from the donor agencies.

In view of the above problems, the LFP initiated capacity building and pro-poor social inclusion activities in the commercial forestry sector. This program was implemented through collaboration with various stakeholders (including government agencies, international NGOs, and NWFP trading agencies) in Dang District. Policy feedback and support were other important interventions of the LFP. To promote pro-poor and socially-inclusive forestry-based commercial activities, LFP focused on the private public partnership approach that includes the collaboration with private sector agencies (along with a support package) for the sustainable management of the local resource base, and community-led processes and ownership. LFP facilitated the promotion of three furniture enterprises, two NWFP essential oil distillation units, and one spice enterprise in Dang District. Of the three furniture enterprises, two are run by mutkakamaiya or freed bonded laborers. Historically, freed bonded laborers used to be the slaves of big landlords and merchants for generations. Bonded labor is a form of contemporary slavery in which big landlords force poor people (belonging to the Tharu caste) to work in their farms and households for their entire life. The traditional caste system of Nepal forced them to stay in the lower social strata, and these people were in a suppressed and discriminated position. Most of them were dependent on working in rich people's houses to fulfill their basic requirements. When they were freed from the bonded labor, their livelihood strategies were mainly through wage-earning from farm work and seasonal migration for unskilled labor.

Establishment of a small furniture enterprise for the poor

One of the three furniture enterprises that the Livelihood Forestry Program supported in Dang district is run by two freed bonded laborers. Kaman Chaudhary and Rishi Chaudhary were freed on 17 July 2000. Both were conflict victims during the Maoist insurgency movement. Following the review of the Bonded Labor (Debt Bondage) Act after the people's revolt in 2006, the two men were freed along with other *mutkakamaiya*.

They established a furniture shop with a small sawing machine and other equipment (hand saw, circular saw, drill machine, sawn wood production machine, plunger, etc.) in 2009. The sawn wood production machine and other equipment were installed in a rented house located along the main road of Ghorai Bazaar. The rented house is old, crudely built, made of mud and stone, and roofed with thatch grasses, highly vulnerable to earthquakes and monsoon rains. The furniture shop was deemed a feasible enterprise considering the availability of forest products, easy access of the shop from the road and transportation network, high demand of processed timber from nearby markets, and availability of electricity.

Operational management

Bishnu Hari Pandit

The freed bonded laborers, Kaman Chaudhary and Rishi Chaudhary, in their furniture making shop

The operation and management of this enterprise is vested on the two freed bonded laborers, but the supply of wood and some investments are responsibilities of the Kafli Sota Manaiyadanda CFUG (of which the two freed bonded laborers are part) and the LFP. The CFUG has 70 households, of which 14 households are freed bonded laborers. LFP provided a grant support of NR 21,000 to this enterprise for buying the main machine and small equipment. The Kafli Soti CFUG provided the two shop owners with an interest-free loan of NR 4,000 to buy raw wood and timber for the enterprise. In accordance with the operational plan that the CFUG committee and the LFP decided recently, the two will operate the enterprise as a privatized unit under a number of terms and conditions. The two owners will be fully responsible for the operation and maintenance of the furniture industry, including the costs and expenses for labor input and electricity bills. They will pay back the loan of NR 4,000 to the CFUG. In the event that they will not be able to operate the industry or if they want to shift to other occupations, they must return the facilities to Kafli Sota Manaiyadanda CFUG. Every year, the CFUG committee and the two proprietors will review the input-output information and decide on the future management of the mill. The two should provide skills development and employment opportunities to the local people with the newly-established technology. The CFUG committee will provide them with dead wood and fallen trees and logs from the community forests at an agreed low price rate (NR 2,000 per cu ft for hardwood, NR 1,000 per cu ft of soft and low quality wood), and if necessary, the CFUG will officially issue an authorization letter to sell and transport the door and window frames and other products of the furniture mill in the local markets.

Benefits of furniture enterprise

Both owners expressed that the people previously did not put much value in fallen trees and logs they found lying on the ground within their community forest. However, after establishing the furniture industry, the members gathered the fallen wood and sold these at the shop. The prices of the trees have gone up, although the CFUG members have not standardized the rates. One of the main factors affecting the price determination of the goods and services is the purchasing capacity of the people. This is especially relevant in rural areas where cash is limited and non-monetary factors play an important role in price determination. Partly because of this, they expressed that it was very much difficult to determine the prices of the fallen trees and logs in the community forest and to prepare a standard price list of different items.

Apart from the costs incurred for the wood supply, the other costs for making furniture include glue, plywood, and investments on the plunger, sawing machine, and other equipment and materials. They estimated that after deducting all their operational costs for making furniture, they earn NR 400-500 per day, which is almost NR 12,000-15,000 per month.

The Chaudarys shared that their furniture shop provides them employment in their village, so they need not leave their community in search of wage labor and temporary employment. In addition, they also employed five additional local poor people.

In early 2009, they were sent for a month-long training on furniture making and carpentry. After their training, they started producing timber products such as racks, benches, chairs, sofa sets, and others. They make the pieces of furniture according to the specific orders of their clients. But there is competition from other furniture-making shops nearby that have long been operating. The Chaudarys are developing their skills to meet the increasing product orders. Their increased earnings will allow them to repay their loan to the CFUG in one to two years.

Box VII.2. Furniture making enterprise: Providing livelihood for freed bonded laborers

Mr. Rishi Chaudary, aged 31, belongs to a Tharu tribal community. The Tharus are a group of indigenous peoples of Dang valley. Mr. Chaudhary and his family were former slaves for a long time in a rich family. There are 10-15 other Tharu households in this community. In 2007, when the government of Nepal passed the Bonded Labor Act, they were free to look for work like other people, and were no longer slaves.

Rishi became a member of the Kafli Sota Manaiyadanda CFUG. Prior to his involvement with furniture enterprise, he had no any alternative work except for working under a landlord. He is landless and has no other alternatives for livelihood. He related, "I had no other work alternative before this mill was established. My family lived in subsistence. I have one son and two daughters. My son, who is now nine years old, was not enrolled in school prior to this job. Now, I am able to send my son and daughter to the school. I had a very difficult time feeding my family. Two years ago, the LFP provided us NR 21,000 to buy equipment and machines for the furniture enterprise. My partner (Mr. Kaman Chaudhary, also a freed bonded laborer) and I now share this property."

With this work at the shop, he claimed, "I am able to maintain my family. I have money every day." On top of this, he says, "We have been able to give employment opportunities to five other local youth. Our past was very painful, terrible, and shocking, but now we are relieved and we can work toward ensuring the security of our livelihood activity."

Initiatives in Site II - Sukekhola Sub-watershed

Community forestry initiative

The Jaspur community forest, which comprises 280 ha of sub-tropical evergreen and semi-evergreen forest, was handed over in 2000 to an initial group of 127 households. Now, the membership has increased to 133 households. This means that one household has more than a hectare of CF land for their use and management. The main tree species found in Jaspur CF are *Schima wallichii* (*chilaune*), *Engelhardtia spicata* (*mauwa*), and *Castanopsis indica* (*dhalne katush*).

The socio-economic and environmental benefits derived from this CF are similar to those from the Basanta Hariyali CF. In terms of the socio-economic benefits, more dalits and disadvantaged members joined the CFUG committee. The CFUG committee reported that their voices are being heard by the elite, and the poor and the women are getting equal benefits from the use of fodder, firewood, and other forest products, except timber which is mostly used by richer members of the CFUG. The quantity of fodder harvested from this CF is almost the same as the Basanta Hariyali CF. Income from fodder and grass was valued at more than NR 5,000. Community members reported that more than 560 tonnes of leaf litter were collected from this forest for compost making, and used as organic manure in the farmlands. This is a free resource that enables the community to address the issue of excess removal of surface grasses and crop residues from farm lands. Further, a total of 200 tonnes of firewood, mostly from dead wood and fallen tree branches and twigs, were collected from this CF last year (2009-10). Jaspur CFUG earned NR 17,300, which was lesser than what Basanta Hariyali earned. Fuelwood demand is higher in Basanta Hariyali CFUG and the poorer households sell fuelwood in the nearby market. Selling fuelwood is less profitable in Pyuthan-Jaspur CF because it is in a rural area where there are fewer buyers compared to Basanta Hariyali CFUG that is situated in a semi-urban setting and there are more buyers.

With regard to timber use, Jaspur CF utilized 1,548 cu ft, mostly for construction, repair, and maintenance of their houses. The total timber used was valued at NR one million. This CFUG also had higher per capita timber production than Basanta Hariyali CFUG. According to their records, Jaspur CFUG generated higher group funds (NR 605,848) from the sale of timber harvested than Basanta Hariyali CFUG (NR 155,526). Like in Basanta Hariyali CF, the money generated from sale of timber was used for the construction of the school building, health clinic, and irrigation systems.

Leasehold forestry initiative

The Barahasthan Leasehold Forest covers three hectares and is located in Dhungegadhi VDC-1 in Pyuthan District. In 2003, this forest was handed over as leasehold forest to six poor households (one Rai and five Magar) for 40 years. Each household is allocated half a hectare of forest land for their own leasehold forest. Prior to the handover of this degraded forest, there were very few sal saplings and trees growing in the area, and regeneration was very poor due to overgrazing and excessive harvesting. This area was almost open to everyone. At present, this area is converted into a greenery with various trees, shrub, and grass species. The various tree species include *sal*, *gideri*, *khaniyo* (*Ficus cunia*), *kutmero* (*Litsea monopetala*), *ipil-ipil* (*Leucaena leucocephala*), while the fruit trees include mango and lemon. The LFP promotes the fodder trees and fruit trees. Other crops grown are bananas, pineapples, and grasses that include *mott napier*, *Setaria sp*, and *amriso* (broom grass). NWFPs collected are molasses, stylo, Asparagus racemosus, *Agave sp*, and *Jatropha sp.*

Four of the six user households shared that they are not getting significant tangible benefits from their leasehold forests yet because the trees that they planted are still young and are not yet harvestable. However, there are still other direct economic benefits, through incomes generated from the sale of goats and milk of cattle and buffaloes. These income-earners benefitted from increased fodder and grass supply from the leasehold forestry plots. From a three-hectare plot, the six households obtained a gross return of NR 28,150 in one year. On the other hand, the intangible benefits were high, mostly from the rehabilitation of degraded forest lands. The women members are empowered and can talk about their rights. Natural regeneration took place as a result of the controlled grazing activities in the area, which allowed the growth of saplings and the seedlings they planted. Discussions with the user households revealed that the significant impacts brought by the LF initiative are improved conditions in terms of the quality and species diversity of their leasehold forests. It was further revealed the resilience of the sub-vegetation ecosystem is sufficient to reverse the process of soil degradation. These changes in the greenery, forage, trees, productivity of the forest land, and biodiversity were observed. The members of the LFUG reported that their LF area was heavily degraded prior to the implementation of LF, and now, the degraded forest area has been reduced to almost one-half.

Table VII.8. Forest products harvested and used in Barahasthan LFUG

Forest products	Total quantity and per household benefits		
	Total quantity	Rate (NR)	Amount (NR)
Timber-pole size (number)	300	15/pole	4,500
Firewood (kg)	5,400	2.5/kg	13500
Fodder and grasses (kg)	6,000	1.5/kg	9,000
NWFPs (broom number)	50	30	1,500
Total amount (NR)	-	-	28,150
Benefit (NR per household per year)			4,692

Source: Field survey 2011.

Box VII.3. Enhancing the capacity of women, Barahasthan LFUG

> Ms. Kousila Gaha, 24, is a member of Barahasthan LFUG. She shared that now she can take part in the group discussion without hesitation. This is because the group meetings, in which she actively participates, provide her a venue to practice her oral communications skills. She said, "Now, women's voices are heard in the community and we are respected by the male partners as well."

Through the project support, women in the group started planting vegetables in their farms and banana saplings in the leased plot. Goat-raising increased her income substantially. From the earnings generated from the sale of brooms made out of the broom grass harvested from their LF, her group raised NR 1,500 during the last growing season. She is very happy with all these achievements from the leasehold forestry initiative.

Site III - Lete, Mustang District

Conservation Area Forestry Initiative

In 1992, the Annapurna Conservation Area (ACA) in the Lete VDC was extended to its current size of 760,000 ha. The conservation area forest is located in Letekhola sub-watershed of Lete VDC, which is within the larger Kaligandaki watershed. The National Trust for Nature Conservation (NTNC) has overall management of the ACA, with the active participation of local communities who use the natural resources in the conservation area. The protection status of the area is Class VI according to the IUCN category of protected areas, in which all traditional land uses are permitted but large-scale conversion is restricted (Rayamajhi 2009; Cristensen 2009).

In 1999, the Annapurna Conservation Area Project (ACAP) constituted various sub-committees for forest management, tourism management, and ward-level women's group committee as a strategy for effective implementation of the activities of the conservation area management committee (CAMC) for Annapurna Conservation Area in Mustang District.

There are three such sub-committees in the Lete VDC, which are also supported by a council of 13 members headed by the mukhiya (village headman) at VDC level. This headman system is an indigenous system, which was legally abolished more than 50 years ago but still prevails in many villages. The mukhiyas are appointed by village assemblies for each village and they execute their functions independently on cultural matters and in coordination with the CAMC with regard to resource use (Rayamajhi 2009).

The forest area in the ACA covers approximately 150 ha in three wards of the Lete VDC. The conservation area forest management sub-committee (CAFMSC) consists of 77 member households, with a population of 384 people, and has 11 executive members (five members are female). This sub-committee was registered with the CAMC under ACAP in 1999. The management of the forest area is decentralized to the CAMC with responsibilities delegated to this forest management sub-committee. The sub-committee has a written constitution and operational plan for regulating the use of the forest and other natural resources. They have rules for assessing the timber demand, issuing timber permits, marking trees for felling, and monitoring and supervising conversion activities. Rules related to the use of a number of forest products are strictly enforced and punishments are imposed for those who violate the rules.

Majority of the population (60%) belong to the Thakali, who are known as the "best" business people of the high hills, and originated from the Thak Khola region of the Mustang District in the Dhaulagiri zone of Nepal. Other caste groups are the BK, shoe makers and *magar*.

Two main forest products directly attached to people's livelihoods in Mustang District

Some of the members in Lete village identified two forest products, fuelwood and seabuckthorn, as

the primary forest products that contributed to their livelihoods in the area under the conservation area forestry (CAF) initiative.

Because of the cold climate, local people heavily depend on fuelwood for heating their houses. Almost all households use fuelwood for cooking. Many poor and dalit families make their livelihoods by selling fuelwood collected from forests located about one to two km away from their settlements. They are allowed to collect fuelwood from the dead trees and fallen branches and twigs. Most Thakali households are involved in business and those who have restaurants and resorts buy fuelwood from the collectors. Some families migrated from other parts of Nepal to Lete for work. Fuelwood collection is the main work for such people. They make fuelwood by cutting dead wood logs from the standing trees using an axe, in place of a saw. This practice is still used from olden times. Laborers involved in cutting big trees are paid relatively higher wages compared to other labor work, such as farm cultivation and grass and fodder collection. One of the fuelwood cutters is Mr. Hira Bahadur Gurung, who migrated to Lete village 10 years ago. He has a family with three children and his house is made of stone and thatch roof. He earns at least NR 500 a day, enough to buy food, clothes, and other basic needs for his family. He earns more than the existing local rate for fuelwood collection of NR 25-35 per hour (or about NR 200-280 a day), because he usually gets contracts from local hotel and resort owners to make fuelwood from larger dead wood logs, and not from small branches and twigs. He said fuelwood cutting was a lucrative business for him since he first moved to live in Lete village. There are 5-10 other households (out of 77) who are dependent on fuelwood and NWFP collection in the village. More than 16% of the household's income came from fuelwood.

As related by some villagers, the CAFMSC has strong rules and regulations to prevent over-harvesting of forest resources including timber, fuelwood, fodder, and NWFPs. No one is allowed to cut fuelwood and timber within a vicinity of one to two km from the conservation area. Beyond the limits, the users can apply for permit from the sub-committee to collect fuelwood, dead wood, fodder, and NWFPs. They pay a specified amount of royalty to the sub-committee. If somebody is found guilty of violating the rules, the person will be fined by the sub-committee based on the rules. At least two sub-committee members visit the forest area every day to monitor and do patrolling. In this way, the forest is protected from degradation.

Seabuckthorn's support of people's livelihood in Lete village

Seabuckthorn is a deciduous, nitrogen-fixing thorny shrub naturally growing in Lete area and other parts of the country's high hills. Seabuckthorn has multiple values including medicines, food, fodder and fuel wood, biodiversity conservation, and soil conservation.

Though seabuckthorn has multiple purposes and is a vital species for upland rural poor, it is one of the least known, unexplored, and underutilized plant species in the Nepal Himalayas (TISC 2001). The high mountain areas in Nepal, where seabuckthorn natural stands are found, face severe development problems. They have poor regeneration (Ibid.) due to various factors, i.e. extreme coldness, human interference, glacial flood effect, high velocity wind, and improper harvesting of the plant. The seabuckthorn forest is also declining due to fire and open access grazing and cutting (Koirala 2002). Many studies (Hilbert 1997; TISC 2001; Koirala 2002; Baral 2006) reveal that local people are underutilizing the plant products, harvesting the fruits traditionally, and over-cutting the shrub, thus hugely exhausting the resource base.

The villagers have yet to harness the rich potential of seabuckthorn to produce food, medicines, juice, and cosmetic products. Considering these values of seabuckthorn, ACAP is helping the people in Lete and other areas in Mustang District, to manage and make more practical uses of the seabuckthorn, such as using its wood for fuelwood, its fruits for manufacturing juice and concentrates, and its foliage for fodder, green manure, and beddings of livestock.

The Taramukhi Women Group was formed a few years ago and is involved in the Lete conservation area. The group helped to set up a seabuckthorn nursery in the village and produced 700-800 seedlings. Some of the seedlings were already planted in degraded forest lands.

Every year, the forest is open to people for three to four days to collect seabuckthorn fruits. Each household is allowed to visit the forest to collect seabuckthorn fruits based on a rotational basis. Many households, particularly the poor and deprived ones, visit the seabuckthorn forest for their collection of fruits in winter (November to December). Each household earns about NR 2,000-2,400 annually by selling seabuckthorn juice to the nearest market. Various government and non-government institutions are involved in promoting seabuckthorn in the study area, ACAP being the main supporter. Recently, the Taramuhki Women Group brought a juice extraction machine to increase the juice production and also their income.

Forest Sector Contribution to Household Incomes

Distribution of income across ecological regions

Forest income is considered a very important source of income among all economic classes in the study area. For all households across the three ecological regions, forest income accounts for 26% of total income (Table VII.9). The highest percentage of forest sector income was seen among the households in the middle hills region compared to those in the high hills and inner terai regions. It is attributed to the effectiveness of the implementation of two forestry programs, including community forestry and the leasehold forestry program. In terms of absolute income, however, it is almost same in the high hills and middle hills. Of the various forest products, households in the high hills have the highest proportion of fuelwood contribution (16%) to the household economy. Timber contribution is generally low: 9% in the middle hills, 7% in the terai region, and 1% in the high hills. The dependency on forest products is highest among households in the middle hills (31%), followed by those in the high hills (26%), and terai (21%). Compared to the per capita income of Nepal (NR 15,162) (NLSS 2004), the average income in all the three site falls below the poverty line.

Table VII.9. Farm, forest and off-farm income per year per household

Income sources	Dang (Inner Terai)		Pyuthan (Middle Hills)		Mustang (High Hills)		Total	
	NR	%	NR	%	NR	%	NR	%
Farm Crops - Crops	8,789	11	11,157	15	13,138	18	11,028	15
- Fruits and vegetables	5,633	7	6,854	9	5,938	8	6,141	8
- Livestock	14,225	18	7,500	10	3,450	5	8,392	11
Sub total	**28,646**	**36**	**25,511**	**35**	**22,525**	**31**	**25,561**	**34**
Forestry - Timber	5,375	7	65,266	9	625	1	4,175	6
- Fuelwood	5,448	7	7,168	10	11,969	16	8,195	11
- Fodder	999	1	4,070	6	1,625	2	2,231	3
- Leaf litter	250	0.32	1,016	1		0	422	1
- NWFPs	4,281	5	3,854	5	4,642	6	4,259	6
Sub total	**16,353**	**21**	**22,634**	**31**	**18,860**	**26**	**19,282**	**26**
Off Farm - Pension	834	1	2,400	3	3,156	4	2,130	3
- Salary and Remittance	19,791	25	6,510	9	8,281	11	11,527	15
- Business	12,115	15	12,780	18	19,702	27	14,866	20
- Labor	1,136	1	2,850	4	781	1	1,589	2
Sub total	**33,876**	**43**	**24,540**	**34**	**31,921**	**44**	**30,112**	**40**
Grand Total	**78,875**	**100**	**72,685**	**100**	**73,307**	**100**	**74,956**	**100**

Source: Field survey 2011, NR 71 = US$ 1 and per capita income according to NLSS, 2004 is NR 15,162

It is not surprising to note that the high hills have the highest percentage of income from off-farm sources. This is because the majority Thakali caste have their own businesses including lodges and restaurants catering to foreign trekkers, which is a well-known tourist activity. They also have small business such as teashops, mule transport, liquor distillery, local trades, and other skill-based activities. The location of Lete VDC on a main trekking and pilgrimage route allows for diversification of income opportunities. The bulk of the labor needs for the lodge and restaurant businesses, including fuelwood cutting, is sourced from outside the district.

Distribution of Income among Well-being Classes

Income inequality is common in Nepal. In this section, the income differences in four well-being classes of people across various income sources is assessed, with particular focus on forestry income (Table VII.10). The results revealed that overall contribution from forestry sector is highest among ultra-poor households (40%), followed by the poor (26%), medium (24%), and rich households (16%). However, the absolute income from the forestry sector is higher among medium and rich families. Comparing income from timber, the rich households derive the highest proportion (7%) of their income, although this is almost the same (6%) for the medium and poor household groups. The ultra poor group benefits the least (2%) from timber. In terms of NWFP and firewood distribution, the ultra poor received the highest percentage of total household income (Table VII.10).

Table VII.10. Distribution of income by wellbeing class

Income Source	Wellbeing classes							
	Rich (Whole-year food sufficient)		Medium (Food sufficiency: 6-11 months)		Poor (Food sufficiency: 3-6 months)		Ultra poor (Food sufficiency: < 3 months)	
	Income (NR)	%	Income (NR)	%	Income (NR)	%	Income (NR)	%
Farm Crops - Crops	18,150	15	11,427	13	4,519	7	2,291	6
- Fruits and vegetables	3,997	3	5,208	6	5,125	8	4,070	11
- Livestock	9,653	8	9,322	10	8,606	13	1,354	3
Sub total	**31,799**	**26**	**25,956**	**29**	**18,250**	**28**	**7,715**	**20**
Forestry - Timber	8,437	7	5,464	6	3,854	6	755	2
- Firewood	3,982	3	8,754	10	7,148	11	10,245	26
- Fodder	2,602	2	2,149	2	1,966	3	2,040	5
- Leaf litter	390	0	342	0	615	1	226	1
- NWFPs	4,312	4	4,875	5	3,074	5	2,320	6
Sub total	**19,724**	**16**	**21,583**	**24**	**16,656**	**26**	**15,586**	**40**
Off Farm - Pension	4,667	4	4,822	5	2,596	4	0	0
- Salary and remittance	29,615	24	19,500	22	5,209	8	2,991	8
- Business	37,179	30	17,571	20	14,791	23	11,733	30
- Labor	0	0	0	0	6,696	10	714	2
Sub total	**71,461**	**58**	**41,893**	**47**	**29,293**	**46**	**15,438**	**40**
Grand Total	**122,984**	**100**	**89,432**	**100**	**64,199**	**100**	**38,739**	**100**

Source: Household survey 2011.

Outlook for Forestry and Poverty Alleviation

Despite political instability and other difficulties, Nepal is making progress in achieving the MDG 1 target on poverty reduction in 2015. Nepal's three-year approach plan is to reduce poverty to 21%. The poverty rate by the end of 2010 was 25.4%, down from 31% in 2005. The reduction of 5.5 percentage points in the last five-year period is laudable. If existing efforts are continued and prevailing trends persist, Nepal will be able to achieve MDG targets in 2015. To achieve the MDG targets and three-year approach plan (2011-2013), the forestry sector's contribution is vital. Access to equitable benefit distribution is vital to reduce the gap between the rich and the poor. Nepal should critically assess the disparities between and across different ethnic, gender, and wellbeing groups. The outlook (future projections) for the forestry sector's contribution to poverty reduction is very important. This outlook will provide feedback and choices for the policy and decision makers.

In Nepal, various forest governance modalities have been piloted. The institutional systems involved in the forest governance modalities are very complex. Community forestry is popular in terms of governance and institutional development aspects. Leasehold forestry model is considered to be a good strategy for degraded land rehabilitation and poverty reduction, whereas conservation area forests are meant for protection of forests and other biological resources. A major challenge in the coming years, in terms of poverty reduction through the implementation of these various institutional modalities, would be in the mediation of the differing views of diverse interest groups in the forestry sector and to channel their energies into productive forestry activities.

Community Forestry Scenario

The community forestry program provides more "space" for marginalized users to participate in decision-making through innovations to processes and institutional arrangements, especially nested (small and community-based) decision-making. The increase in space for marginalized users' voices is very important for getting and sustaining their interests in the CFUG agenda in the long-term. However, there will be a fear of overexploitation of forest resources if the government is unable to monitor the forest resources given its inadequate personnel. Strengthening the coordination between government staff and community forestry officials will help sustain forest resources. The government's reluctance in promoting the community forestry program in the terai region needs to be re-thought since the CF program implemented in the study district has been making progress. The reluctance on the part of government to promote the CF program in the terai is primarily political, as government fears the destruction of the quality and high value Shorea forest.

There is also the question of equitable participation and representation of the poor and deprived members in the CFUG committees. Some of the leadership positions (vice chair and secretary) are occupied by women and marginalized group members in the CFUG committees, but this is not always ensured. An increase in leadership positions for women and the poor is necessary for ensuring a change in the actual "space" in decision-making, a challenge for the CFUGs to sustain in future.

The community forestry handover process is currently slow and is concentrated in the middle hills. The high hills and terai regions have not received enough attention in terms of CF program implementation, which should be considered in future CF program implementation.

Leasehold forestry scenario

The marginal and degraded forests handed over to poor people have not benefited them as expected by government and other stakeholders, including donors and bilateral agencies. Because of this, the leasehold forestry handover process will also be slowed down. There should be a provision in the law that the productive forest can also be handed over to poor people. In this case, a strong monitoring mechanism has to be developed.

Although there are set criteria for the selection of households eligible for the leasehold forestry program, the selection process may not always rigidly follow these. With the inclusion of the elite in the LFUG,

there is a greater chance of program failure in the future. The government of Nepal needs to deliberately send circulars to the concerned DFO and District Livestock Service Office to avoid elite inclusion in the group and the enforcement of such regulations should follow local people's decisions.

The contribution of the LF initiative to land rehabilitation, control of soil loss, and environmental improvement has not been considered part of poverty alleviation until recently. The government of Nepal should recognize and count these values in the GDP, so that the MDG and the three-year approach targets are achieved.

Conservation area forestry scenario

The agency involved in the management of forest resources in protected area forests is the Department of National Park and Wildlife Conservation, with its conservation area program, along with the conservation area management committees. CAMCs are relatively larger entities to look after the forest resources within their respective sub-committee areas. People's interest and trust in such a system may dissipate. To increase the social and environmental performance of conservation area forests, these stakeholders for forest resource management need to support the achievement of the targeted goals. The community forestry approach within the conservation area is emerging.

Timber and industrial wood products

It is obvious that the demand for all industrial wood products (particularly logs) will increase significantly as the country moves to timber commercialization. In one district, an average of 50 or more sawmills and furniture enterprises exist. This trend will increase with quality production of sawn wood products. Despite a considerable production of timber and industrial wood products, Nepal will be increasing its imports of industrial wood products. However, there is likely to be some significant local deficit of industrial wood products because of local forest degradation. This will be exacerbated by anticipated consumption of timber through rapid urbanization. The country will face severe pressure on its wood supplies. The contribution of timber to poverty reduction has been found to be less than NWFP contribution, and it is skewed toward richer people. The contribution of timber to household economy will be even reduced. However, the current skewed distribution or gap in contribution of timber between the rich and the poor will be minimized. It means more and more poor people will be involved in commercial timber processing through participation of both private and public sectors.

Fuelwood energy, NWFPs, fodder and grasses

Considering the increasing use of fuelwood due to population growth, the demand for fuelwood is likely to increase. With increasing forest degradation, fuelwood will be sourced from private lands with multipurpose tree growing. Currently, the energy demand being met by fuelwood is more than 80% in the high hills, 64% in the middle hills, and more than half in the terai region. The role of alternative energy (solar and bio-fuel) is increasing. The current contribution of fuelwood energy to GDP is moderately significant (11%), and is expected to increase by another 5% in 10 years. Strategic policy support and action will be required if wood energy programs are to become core elements of the energy and economic development planning.

Until today, NWFPs are mostly used in raw form and in traditional ways. NWFPs are likely to be moving toward commercialization as various agencies and groups show great interest and commitment to support the development of NWFP processing plants. The commercialization will further exploit the NWFP resources available in the forests. There is a critical need for integration of some high value NWFPs into the agriculture cultivation. This will reduce the subsistence use of NWFPs with emerging alternative source of income. People involved in subsistence use of NWFPs will slowly decrease and shift to commercial work. This is demonstrated from the shift of raw seabuckthorn use to improved processing enterprise in the high hills. In terms of poverty reduction, the current status of NWFP contribution to household economy (6%) will increase by at least 10% in 2020.

With rising livestock population and secure income from the livestock sector, the exploitation of fodder and grasses from the forests will increase. People will be seeking to introduce new grass and fodder species in their farmlands. This will be adopted more by people from the middle and low economic classes who do not have alternative livelihood opportunities. There is broad consensus among recent studies that the fodder and grasses carrying capacity is far below the actual requirements. The forest so far can supply about 52% of the fodder and grass needed and this will be reduced by another 10%. The gap will be fulfilled by private fodder and grasses plantation. The direct contribution of fodder and grasses to household income will increase with indirect benefits (such as meat and milk production) from fodder production in private lands.

Forests' environmental services and carbon payments

Nepal has not been able to capture the full commercial potential from the conservation of its environmental resources. The benefits accrued from potential decrease in soil loss through forest management activities, biodiversity conservation, land rehabilitation, and increase in carbon stocks have not been assessed. Greater efforts are needed for the communities in and near the forests, especially the poor, to benefit commercially from these resources. The potential to conserve more biological resources in future will be constrained by various factors including government commitment and mandate, population pressure, livestock, and technological developments. There is no need to increase the protected areas in Nepal as these already cover 23.1% of the total land area, of which forest area is 15%. The benefits from carbon capturing will increase substantially. But the exact scenario can be assessed upon government's commitments and action in the next two to three years. The result of the action will depend on the decisions made through international negotiations, which could be a major investment opportunity for forestry sector in Nepal.

Conclusion and Recommendations

Findings of the study lead to the overall conclusion that the forest sector has a significant contribution to reducing poverty in Nepal, though the level of contribution varies across sites and forest program modalities and also type of valuation methods used. The conclusion in terms of the forest sector contribution to poverty reduction is discussed with respect to the four dimensions or pillars of PRSP (2002-2007).

1. Enhance economic growth: At the local level, the study revealed that some initiatives in community forestry, leasehold forestry (the commercial component of establishing a furniture-making shop) and conservation area management have contributed to increasing the income of rural poor households. This contribution is however varied across ecological zones. For the sample in the middle hills, the overall contribution of forest-based activities is almost one-third (31%) of their income. For the sample in the high hills, the contribution of the forest-based activities is about one-fourth (26%) of their income and for the sample in the plains, the contribution is about one-fifth (21%). Forest resources are contributing considerably to reducing seasonal shocks and vulnerabilities as well as providing a safety net to the poor households for meeting subsistence needs of fodder, firewood and NWFPs.
2. Social sector and rural infrastructure development: Community forestry initiatives have contributed to the development of needed rural infrastructure in the case study sites. The notable examples include support for school building construction (almost NR half million in Jaspur CFUG in five years), potable water systems, and trail or road construction. Conservation area forests have also contributed to the rural infrastructure work.
3. Targeted program: There is effort to prioritize the poorest of the poor households for support under the leasehold forestry program. Trees, however, need a few years to grow before the benefits (in the form of timber, fuelwood, fruits, fodder) can be realized. Nonetheless, fodder and grass harvested from the leasehold forests have supported the villagers' livestock animals. Another example of targeting benefits to the poor is providing deserving students

from poor and marginalized families educational support, as being implemented by the Basanta Hariyali CFUG of Dang District.

4. Good governance: Community forestry is providing not only economic benefits to the rural poor people, but also a venue for them to participate in forest management. CFUG members are more responsive, and funds are being used in a transparent way. Participation and representation among women and the poor have been increasing over time. However, their election into leadership positions remains low.

General Recommendations

1. It is apparent that most of the firewood, timber, fodder and NWFPs are used by local people but are not sold. This needs to be also accounted in the present calculation of the economic contribution of the forestry sector. This would increase the contribution of this sector to poverty reduction significantly. Until today, the government has not done such calculation for defining forestry sector contribution to poverty reduction. The depletion of forest resources is also ignored both in physical and monetary terms. The study identified these deficiencies in the current national income and forestry accounting framework.
2. It is easy to calculate the value of timber, fuelwood, fodder and other forestry products that are directly used and marketed locally and internationally. However, for non-marketed forestry products such as fodder, leaf litter, firewood, and unofficial trade of NWFPs, one needs to account market substitution or willingness to pay methods for valuation, which is lacking in the valuation of existing statistics of the government.
3. Other economic contributions such as stone and sands from forests, forest-based tourism/ trekking, timber-based industry, eco-benefits, bio-fuels, water recharge due to forestry, carbon sequestration and oxygen release by trees need to be considered in the calculation of overall contribution of the forest sector to the national economy (i.e., GDP).

Site Specific Recommendations

Sites I and II: Community Forestry Initiative

1. The issue on income inequality between the rich and the poor needs to be addressed by providing more space and access rights to poorer households. The provision of allocating 35% of CFUG income to identified poor households should be strictly enforced by the CUFGs to be monitored by the government.
2. Leasehold forestry concept should be integrated into or implemented within community forestry to provide more access rights to poorer communities.
3. Gender and social inclusion strategy should be effectively implemented by ensuring participation of at least 50% women and disadvantaged members in the CFUG committee.

Site I: Commercial Forestry Initiative

1. The small business which the freed bonded laborers started two years ago with some capital investment has currently generated some capital including equipment, raw materials and work place. However, these people are not self-sufficient in running the sawmill business with such a small investment. Therefore, it is recommended that access to loans for poor and deprived people for forest-based commercial activities be supported.
2. Business skills training is needed for local people who are involved in forestry enterprises.

Site II: Leasehold Forestry Initiative

1. It is evident that the handing over of small and degraded plots to poor households is not cost-effective in many ways. This has increased work burden to poor members. This needs to be re-assessed and alternatives should be explored. There should be a provision in the law that the productive forests can also be handed over to poor people. However, in this

case a strong monitoring mechanism has to be developed by the agencies concerned.

2. It was raised that the six households who got the forest lands on lease were not all the poorest of the poor. There is a need for participatory identification of the households for the leasehold forestry program to better target the poorest of the poor.
3. Goats provided by the project in the form of grants to poorer households helped increase their income level. However, this has created dependency and the poor expect such support every time. Another form of support could be in the form of interest-free loans so that the borrowers feel that they have earned the money from their own labor.
4. The livelihood improvement program for the forest-dependent poor and indigenous ethnic groups should be launched with provision of forest enterprise development funds.

Site III: Conservation Area Forestry Initiative

1. CAMC's jurisdiction sometimes overlaps with that of VDCs and DDCs, particularly on taxation, use of natural resources and development priorities. The changing political context is exerting pressure for CAMCs to become more participatory, transparent and accountable so that the money generated in conservation areas will be effectively utilized for poverty reduction purposes.
2. The funds generated by the conservation area forest are mainly used for social and infrastructure activities such as trail improvement, school and community building construction. Their use in income generation activities is low. Therefore, there should be some provision in the law to use such funds for livelihood improvement activities of the poor as that of the community forestry initiative.

References

Acharya, K.P., Dangi, R.B., & Shearma, P. (2009). Understanding forest degradation in Nepal. In Aharya, K.P. et al. *Ready for REDD? Taking stock of experiences, opportunities and challenges in Nepal*. Kathmandu: Nepal Foresters Association, Mass Printing Press.

Angelsen, A., & Wunder, S. (2003). *Exploring the forest-poverty link: Key concepts, issues and research implications.* CIFOR Occasional Paper no. 40.

Bamberger, M. (2009). Strengthening the evaluation of programme effectiveness through reconstructing baseline data. *Journal of Development Effectiveness* 1:1,37-59.

Bampton, J. & Cammaert, B. (2007). Can timber rents better contribute to poverty alleviation through community forestry in the terai region of Nepal? In R. Oberndorf, P. Furst, S. Mahanty, K. Burslem, & R. Suzuki (Eds.), *A cut for the poor: Proceedings of the international conference on managing forests for poverty reduction: Capturing opportunities in forest harvesting and wood processing for the benefit of the poor.* FAO RAP publication number and RECOFTC Report No. 19. FAO, RECOFTC, Bangkok.

Baral, S. R. (2002). Present status and opportunity of developing seabuckthorn (*Hippophae Linn. spp*). In Nepal: *A review. Van Ko Jankari. Kathmandu, Nepal*: Department of Forest Research and Survey. Vol. 12, No. 2. pp 33-41

Bhattarai, B., Dhungana, S.P., & Kafley, G.P. (2007). Poor-focused common forest management: Lessons from leasehold forestry in Nepal. *Journal of Forest and Livelihood*, 6(2): 20-29.

Cavendish, W. (2002). Quantitative methods for estimating the economic value of resource use to rural households. In B.M. Campbell & M.K. Luckert, (Eds.) *Uncovering the hidden harvest: Valuation methods for woodland and forest resources*. London: WWF/UNESCO/Royal Botanical Gardens, Kew, Earthscan Publications Ltd. pp.17-66.

Chand, P. B. and Ghimire, K. (2007). Unlocking the value of pine forest for sustainable livelihoods: A case study from Hile Jaljale "KA" Community forest in Kabhre Palanckok District of Nepal. In R. Oberndorf, P. Furst, S. Mahanty, K. Burslem, & R. Suzuki (Eds.), *A cut for the poor: Proceedings of the international conference on managing forests for poverty reduction: Capturing opportunities in forest harvesting and wood processing for the benefit of the poor.* FAO RAP Publication Number and RECOFTC Report No. 19. FAO, RECOFTC, Bangkok.

Center for International Research (CIFOR). (2007). *Towards well-being: A source book for local governance bodies*. Indonesia. CIFOR.

Cristensen, M., Rayamajhi, S., & Meilby, H. (2009). Balancing fuelwood and biodiversity concerns in rural Nepal. *Ecological modelling*, 220 (2009): 222-232.

Deaton, A. & Grosh, M., (2002). Consumption. In M. Grosh & P. Glewwe (Eds.), *Designing household survey questionnaires for developing countries: Lessons from 15 years*. Living Standards Measurement Study, Vol. 1. Washington, DC: World Bank, pp. 91–134.

Dev, O.P. & Adhikari, J. (2007). Community forestry in the Nepal hills: Practices and livelihood impacts. In O. Springate-Baginski & P. Blaikie (Eds.), *Forests, people and power. The political ecology of reform in South Asia*. London: Earthscan. pp. 142-176.

DFD Fund Guidelines. (2008). *District forest development fund guidelines*. Government of Nepal.

DFRS. (N.d.). *Forest resources contribution to GDP.* (Unpublished paper). Babarmahal, Kathmandu: Department of Forest Research and Survey.

FAO. (2008). *Effectiveness of leasehold forestry program to poverty reduction*.

Food and Agriculture Organization (FAO). (2010). *Global forest resource assessment, main report*. FAO Forestry Paper No. 163. Rome, Italy: Food and Agriculture Organization of United Nations.

FAO. *Nepal and leasehold forestry and livestock program.* Government of Nepal.

Government of Nepal. (2010). *NTFP and timber trade report of the Department of Forest*, Ministry of Forest and Soil Conservation.

Government of Nepal(GON)/ADB/FINNIDA. (1988). *Master plan for the forestry sector in Nepal: Main Report*. Kathmandu, Nepal: Government of Nepal.

Hilbert, P. (1997). *Seabuckthorn – Chinese experience*. Report on a Nepalese Study Tour to China 24th November to 6th December, 1996.

HMG/DANIDA. *Tree improvement programme*. Hattisar, Kathmandu, Nepal. His Majesty Government/ Danish International Development Agency.

Human Development Report (HDR). (2009). *Nepal human development report*. Kathmandu, Nepal: UNDP. Human Development Report.

IFAD. (2003). *Interim evaluation: Hills leasehold and forage development project*, Vol. I, Main Report. Rome, Italy: IFAD Office of Evaluation, Via del Serafico. International Fund for Agricultural Development

Department for International Development (DFID) - Nepal. (2010). *Livelihood and forestry program of DFID*. Kathmandu: Department for International Development.

Kafley, G.P. (2007). *Annual work plan of institutional and technical capacity building in support of leasehold forestry project*. Ministry of Forest and Soil Conservation/Food and Agriculture Organization.

Kanel, K.R. & Niraula, D. (2004). *Twenty five years of community forestry: Contribution to Millennium Development Goals. Proceedings of the Fourth National Workshop on Community Forestry held in Kathmandu*.

Kanel, K.R. (2010). Community forestry in Nepal: Moving ahead in the future. In M.K. Balla & A. K.Singh (Eds.), *Proceedings National Conference on Forest – People Interaction. Institute of Forestry, Tribhuvan University.* Teku, Kathmandu: The Rising Sun Printers.

Karky, B.S., Skutsch, M., & Baskota, K. (2009). Implications for community forest policy under the proposed REDD policy. In K.P. Aharya et. al. (Eds.) *Ready for REDD? Taking stock of experiences, opportunities and challenges in Nepal*. Kathmandu: Nepal Foresters Association, Mass Printing Press.

Koirala, A. K. (2002). *An assessment of seabuckthorn development activities in Mustang District (A case study carried out in the Lower Mustang)*. (B. Sc. Forestry Dissertation Paper) Pokhara, Nepal: Institute of Forestry.

Leasehold forestry and livestock program (LFP). (2004). *A study on non-timber forest products (NTFPs) marketing system in Eastern Nepal*. Livelihood and Forestry Program.

LFLP. (2005). *Leasehold forestry and livestock program report*. Kathmandu: Department of Forest.

NLSS. (2004). *Nepal living standard survey.* Government of Nepal: Central Bureau of Statistics, National Planning Commission of Nepal.

NPC. (2008). *Annual report of the National Planning Commission*. Government of Nepal. Singha Darbar. Kathmandu. National Planning Commission.

NPC (2010a). *Poverty measurement practices in Nepal and number of poor*. Kathmandu: National Planning Commission.

NPC (2010b). *Three year plan approach paper (2010/11-2012/13)*. Government of Nepal: National Planning Commission.

Ojha, H.R., Timsina, N.P., Kumar, C., Belcher, B., Banjade, M.R., Chhetri, R., & Nightingale, A. (2007). Community-based forest management. programmes in Nepal: An overview of contexts, policies, practices and issues. In H. Ojha, N.P. Timsina, C. Kumar, M.R. Banjade, & N.B. Belcher (Eds.), *Communities, forest and governance: Policy and institutional innovations from Nepal*. New Delhi: Adroit Publishers.

Pokharel, B.K., Branney, P., Nurse, M., & Malla, Y. B. (2007). Community forestry: Conserving forests, sustaining livelihoods and strengthening democracy. In H. Ojha, N.P. Timsina, C. Kumar, M.R. Banjade, B. Belcher (Eds), *Communities, forest and governance: Policy and institutional innovations from Nepal*. New Delhi: Adroit Publishers.

Pandit, B.H. (2003). *Prospects of promoting non-timber forest products in the mountains of Nepal*. (PhD dissertation) Asian Institute of Technology, Bangkok, Thailand.

Pandit, B.H., Adrian, A., & Kumar, C. (2009). Community based forest enterprises in Nepal: An analysis of their role in increasing income benefits to the poor. *Small Scale Forestry, 8 (4)*: pp 447-463.

Pandit, B.H. & Kumar, C. (2010). Factors influencing the integration of non-timber forest products into field crop cultivation: A case study from eastern Nepal. *Journal of Sustainable Forestry*, 29: 671-695.

Rajchal, R. (2007). *Biomass production of aeabuckthorn (Hippophae salicifolia) and its role in income seneration*. (Unpublished masteral thesis), Institute of Forestry, Pokhara.

Rana, B. & Subedi, R. (2009). Contribution of community forests in reducing economic poverty. *In Proceedings of the Community Forestry International Workshop held in Pokhara in 15-18 September, 2009*. Kathmandu: Ministry of Forest and Soil Conservation.

Rayamajhi, S. (2009). *Forest dependency, livelihoods and conservation of high altitude forests in Nepal*. (PhD dissertation), University of Copenhagen: Faculty of Life Sciences, Forest and Landscape, Denmark.

RECOFTC & FAO. (2009). *Is there future role for forests and forestry to reduce poverty?* Working Paper No. APFSOS II/WP/2009/24. Regional Office for Asia and Pacific. Bangkok, Thailand. Regional Community Forestry Training Centre for Asia and the Pacific and Food and Agriculture Organization of the United Nations.

REPULICA (2011, July 4). *Chitwan community forests gets USD 22,000 prize*. The Republica.

Thompson, T.H. (2000). *Assessment of the impact of HLFFDP on participating households from the household survey data 1994-1999.* Kathmandu: Project Coordinator Office, Leasehold Forestry Division.

TISC. (2001). *Proceeding of workshop on ecology and distribution of seabuckthorn (Hippophae spp) Resource in northwest mountains of Nepal*. HMG/DANIDA NARMSAP, Tree Improvement and Silviculture Component, Hattisar, Kathmandu.

World Bank (2000). *The world development report: Attacking poverty.* New York Oxford University Press.

World Bank. (2010). *World development indicators database*. Data for 2008 Retrieved from http://databank.worldbank.org/ddp/home.do?Step=12&id=4&CNO=2

VIII

The Contribution of Forestry and Poverty Alleviation in Papua New Guinea

Gae Yansom Gowae*

Introduction

It is generally estimated that in Papua New Guinea (PNG), about 97% of land and 99% of forests are customary owned and more than 80% of the population live in rural areas and depend on these lands and forests for their livelihoods. This societal structure was well-recognized from the colonial period up to the country's independence in 1975 and subsequently guaranteed in the Constitution.

Major forest policy changes have been targeting effective participation of customary forest owners in the development of their forest resources to improve their socio-economic status and thus their living standards. Apparently, there have been great mixtures of outcomes. Customary landowners either become worse off with the loss of their forests for subsistence living, or better-off with re-investments into other alternative land uses in agriculture. However, often during major natural phenomenon like drought, flooding, and cyclones, those without forests suffered more than those with forests for protection and sources of food.

The forestry sector provides major revenue-earning opportunities to the government, as well as to customary forest owners. But questions on how well these revenue earnings are translated into improved living standards of the majority of the people, particularly those affected by the development of these forests, are not clearly answered. The government's recent development strategies (PNGDSP 2010-2030 and MTDP 2011-2015) recognize the forestry sector as an important sector that will continue to contribute immensely to the national economy as well as to the improvement of the livelihoods of rural people.

This study reviews the impacts of forests and forestry developments towards poverty alleviation in the country. Poverty alleviation in this case is assessed using the composite Millennium Development Goal (MDG) index as individual data on poverty indices are not readily available at the sub-national level, a situation well highlighted in PNG's first MDG report of 2004 and the second report in 2009.

Extent of Forest Resources

PNG hosts the third largest intact tropical rainforests in the world. These forests and forestry have played an important role in the livelihoods of the people of PNG for many years. The forests have provided a source for food, fruits and nuts, building materials, medicinal plants, habitats for refuge, and a wealth of other services (FAO 2009).

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Shearman et al. (2008) estimated that the initial total forest cover in 1972 was 33.2 million ha (72%) and by 2002, about 28.3 million ha (61%) of the land was still under forest cover. Of this, about 25.3 million ha (55%) was still intact while about 2.9 million ha (6%) was degraded between 1972 and 2002. FAO (2010) estimated that the initial forest cover in 1975 was 33.7 million ha (73%), and by 2010, about 28.6 million ha (62%) was still under forest cover, of which about 24 million ha is still intact. The last national forest inventory, conducted by PNG Forestry Administration (PNGFA) in 1996, provided an estimation of 30.7 million ha (66%) of total forest cover remaining. Obviously there are inconsistencies in the estimates of remaining forest cover.

Of the 33.7 million ha of total forest cover, PNGFA estimated that about 15 million ha were considered accessible commercial forest areas, and by 2010, about 12 million ha were acquired by the State through PNGFA, for which about 10 million ha were allocated under timber permits (TPs). It is therefore estimated that at the end of 2010, about three million ha of accessible commercial forests remain while two million ha of accessible commercial forests are yet to be issued timber permits. It was also estimated that by 2010, about 4.5 million ha were logged-over forest areas (PNGFA 2009). The state of these logged-over forest areas is not known.

Using FAO (2010) figures, it would be estimated that at the end of 2010 about 18.6 ha of forest were intact, of which 13.6 million ha would be inaccessible, three million ha not yet acquired by the state from the customary land owners, and another two million ha already acquired but not yet allocated to developers. FAO (2010) and Shearman et. al. (2008) both suggested that forest cover under other wooded-type forests (swamp, mangrove and dry evergreen) comprised 4.5 million ha and remain unchanged. This suggestion could not be verified as there is no data available on the extent of disturbances and clearance of these forest types.

The PNG report for the United Nations Framework Convention for Climate Change (UNFCCC) during the Countries of Parties meeting 11 (COP11) in 2005 indicated a deforestation rate of 4.54%, with subsistence farming as the main leading driver (33.9%), followed by mining (19.5%) and logging (18.2%) (UNFCCC 2006). FAO (2005) estimated the rate of deforestation to be 0.5 %. Shearman et al (2008) estimated that 1.41 % of PNG's tropical forests were being deforested or degraded annually between 1972 and 2002. FAO (2010) however indicated a rate of 0.3% deforestation rate annually between 1990 and 2010.

Subsistence farming as the main driver is quite contrary to the claims by Bourke and Harwood (2009) and Filer and Sekhran (1998) that agricultural practices in PNG were more intensified than clearing new forest areas. Given these inconsistencies in both the estimates of the remaining total forest cover areas and the deforestation rates, FAO (2009, 2010) recommended the urgent need for a national forest inventory, since the last national forestry inventory was undertaken in 1996.

Forest Ownership and Management

PNG is a predominantly tribal country and ownership of land and forest resources is communal. Forest ownerships are strongly linked to the two land tenure systems: State land tenure and customary land ownership. Forest ownerships under State land tenure system are generally classified as public ownership. In the large commercial forestry activities on customary land, States only acquired the rights over trees. Where there is a forest concession or forest plantation, the rights over the trees are then vested in either the State or the private entity, but the land rights is with Indigenous Peoples (FAO 2010).

Allocation of tenure over forest resources through State acquisition for industrial and commercial forestry purposes was through the Timber Rights Purchase (TRP) mechanism under the old legislation, the Forestry Ordinance 1936. This was replaced by the Forest Management Agreement (FMA) mechanism under the current legislation, Forestry Act 1991. The TRP mechanism allows the State to acquire the rights to harvest only the trees, whereas under the FMA mechanism, the State acquires the rights to harvest the trees as well as manage the residual forests for the next cutting cycle. The tenure period for the TRP mechanism ranged from five to15 years and was considered

a medium-term lease arrangement whereas the FMA has a minimum period of 35 years and is considered a long-term lease arrangement. Each mechanism was crucial for forestry development in the country and also for rural development and poverty alleviation.

Under the TRP and FMA systems, infrastructure developments like roads and bridges including wharves, classrooms, and health centers were negotiated and established in rural villages during the tenure period. The FMA is an improvement from the TRP system, which includes agriculture and reforestation levies, and others. These levies provide financial incentives for spin-off activities in agriculture and forestry. Results and impact are mixed for both TRP and FMA systems.

The Local Forest Area (LFA) mechanism on the other hand was allowed under the Forestry (Private Dealing) Act 1971, where customary forest owners were granted rights to apply to have their forests declared a LFA and sell their timber directly to outsiders, subject to the approval of the Forest Minister. The LFA mechanism, through the landowner company concept, however appeared to be very abusive in terms of resource exploitation, loss of benefits, and environmental destruction. Although the concept was good for promoting self-reliance and social and economic development at the community level, the execution and the quality of leadership and management were very poor and centered on a few self-appointed and so-called landowner representatives and left majority of the landowners locked out in terms of loss of benefits and environmental destruction (Barnett 1990).

A major challenge that still remains is the effective management of forests under customary ownership. The Barnett Inquiry (1990) into the allegations of rampant corruption in the forest industry sector and the ODI (2006) report revealed that effective management and planning, including benefits-sharing under clan arrangements through the Incorporated Land Group (ILG), appeared problematic. Planning and management of forest resources under such arrangements have sometimes resulted in over-cutting, resource depletion, unintended environmental impact, and uncertainty about the long-term capacity of forests to supply the future needs of local communities or industry. Development and use of forest resource is seen by most sectors of the community as an integral component of national development. However, accommodating diverse community interests in planning forest development and the application of sustainable forest management (SFM) principles are significant challenges (Amos and Gowae 2008). Even more challenging is evaluating the impact of forestry development at clan level.

Poverty Situation

Poverty is generally defined as deficiency of elements or resources that are needed or desired, or that constitutes richness. It is the quality or state of being poor or indigent. Poverty deprives people of their security and wellbeing, of not only safe water and adequate food, clothing and shelter, but also education and healthcare. It takes away people's rights, and their freedom, dignity and peace of mind, and puts people's lives in danger and robs them of their future.[1]

PNG's Medium Term Development Strategy (MTDS) 2005-2010 described the poverty situation in PNG as *relative poverty* than *absolute poverty*. The MTDS 2005-2010 recognized that while absolute poverty is not widespread, a significant proportion of the population is affected by relative poverty. Absolute poverty implies no livelihood based-support or means (e.g. no food, water, finance) and people continuously live in that circle without any chance of getting out of the circle, whereas relative poverty implies at least the presence of livelihood support (e.g. garden) (Faiteli, personal communication, 2011).

PNG, as well as the rest of the South Pacific Region, considers the MDG concept of "income poverty" which is income-focused (and to a lesser extent "consumption poverty") and in particular the way these concepts are measured, as inappropriate or even offensive. It is widely believed that absolute poverty that exists in many developing countries does not exist in the region, including PNG. Consequently, poverty in PNG is defined in a much broader way based on the concept of "poverty of opportunity" which refers to many areas of life, such as inadequate infrastructure, isolation, and lack of access to

[1] http://www.ThinkExist.com

markets and basic services like health and education. The concept is strongly linked with vulnerability and lack of access to services and choices (MDGR 2009).

PNG's 1st MDG Progressive report (MDGPR) in 2004 reported that in spite of the continuing emphasis of the government on poverty reduction, the very limited evidence suggests that the proportion of people under the national poverty line has not changed significantly during the last two decades (1980-2000). The report was based on the 1996 Independence Household Survey which estimated that 30% of the population lived under the lower poverty line of US$ 137 over the period. This baseline figure was adopted in the MTDS (MDGPR 2004). The national MDG 1 target under MTDS 2005-2010 was to reduce the proportion (30%) of the population living under the lower poverty line to 28% by 2009 and subsequently to 27% by 2015, which is still far higher than the global target of 15% by 2015.

The progress towards achieving the poverty component of MDG 1 was monitored through several proxy indices associated with "poverty opportunity." It appears that since the 1990 MDG base, the combined impact of all these proxy indices led to a small improvement of about five to 10 % in the poverty situation. This improvement is approximately the same as that envisaged by the National Target 1 included in the 2005-2010 MTDS. With regard to the rather modest national targets, PNG is more or less on track in 2009. However, none of the far more demanding global targets of MDG 1 can be achieved by the 2015 deadline. The continuing very high Gini coefficient (0.51) is a clear indication that improvement in the poverty index does not necessarily translate into development in which the citizens of the country share equally.

PNG's 2nd MDG Report for 2009 reported that the measurement on the eradication of extreme poverty and hunger was hampered by the fact that since the 1996 Independence Household Survey, no new information on income and consumption has been available. Monitoring of the poverty component of MDG 1 was carried out using a "basket of proxy indices" related to education and literacy, labor force participation, longevity, household facilities, etc. Based on these data, it was concluded that there was a marginal decrease in "poverty of opportunity." The decrease is approximately the same as that envisaged in the country's 2005-2010 MTDS (MDGR 2009).

Forestry and poverty situation

The forests have played a vital role in maintaining the health and wellbeing of the majority of the population and providing them with the means to live, and more recently, to generate income (Shearman et. al. 2008). The PNGFA annual reports (2007-2010) indicate that the forestry sector contributes on average between US$ 10-14 million annually to the rural sector in terms of timber royalties to customary forest owners. The forestry sector also brings in social infrastructure development, such as roads, bridges, schools, and health centers to rural areas. These infrastructure developments provided the proxy indices of "poverty opportunity" as described and were used in measuring poverty indices in PNG.

Table VII.1 provides a simple comparative analysis of poverty alleviation using the relationships between the size of land, forests and timber royalties, and population size to the MDG composite indices and the HDI by province. The 2004 MDG composite indices and HDI are used here to assess impact, as there are no update indices available. The table is arranged in the descending order of the proportion of forest areas to the total land area. The MDG indices and HDI are also given their rankings in brackets for comparative purposes between the provinces. The timber royalties paid between 2007 and 2010 were also provided for those provinces that PNGFA collected timber royalties from during the period to assess impact. Given the significance of land and forests to the people of PNG, the table aims to portray whether the sizes of land forests influenced the MDG composite indices and the HDI for each province.

Table VIII.1. Total land area with comparative forest size and the composite poverty indices by provinces

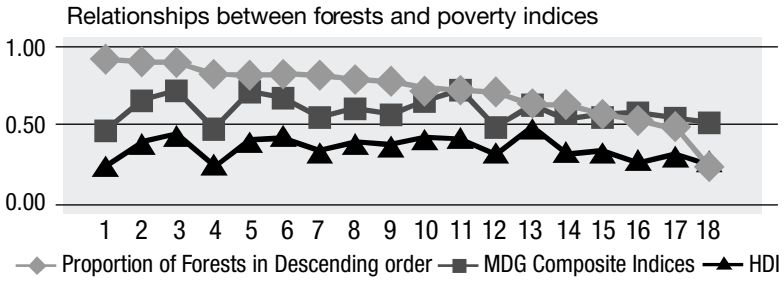
Province	Total Land area (ha)	Total Forest Area (ha)	Population (2000 census)	Timber Royalties (2007-2010) (US$)	MDG composite indices (2004)	HDI (2004) [2]
West Sepik	3,604,000	3,365,100 (93%)	185,741	12,703,803	0.478 (18)	0.252 (18)
West New Britain	2,046,000	1,850,300 (90%)	184,508	7,713,108	0.658 (6)	0.384 (8)
East New Britain	1,536,000	1,373,900 (89%)	432,972	3,322,726	0.723 (2)	0.431 (2)
Southern Highlands	2,569,000	2,143,000 (83%)	546,265	Nil	0.478 (18)	0.274 (16)
New Ireland	962,000	800,800 (83%)	118,350	2,193,547	0.715 (3)	0.398 (6)
Milne Bay	1,428,000	1,182,600 (83%)	210,412	501,515	0.683 (4)	0.420 (4)
Madang	2,907,000	2,366,600 (81%)	365,106	1,347,776	0.557 (13)	0.335 (10)
Northern (Oro)	2,271,000	1,790,900 (79%)	133,065	913,147	0.611 (9)	0.385 (7)
Morobe	3,393,000	2,646,600 (78%)	539,404	1,685,989	0.570 (12)	0.369 (9)
Bougainville	944,100	747,400 (76%)	175,160	No data	0.676 (5)	No data
Central	2,968,000	2,222,900 (75%)	183,983	1,408,978	0.656 (7)	0.403 (5)
Manus	214,900	156,800 (73%)	43,387	493,751	0.727 (1)	0.431 (3)
Gulf	3,465,000	2,484,600 (72%)	106,898	6,869,694	0.489 (17)	0.331 (10)
Western (Fly)	9,854,000	6,672,800 (68%)	153,304	8,101,978	0.630 (8)	0.472 (1)
Chimbu	615,700	405,000 (66%)	259,703	No data	0.574 (11)	0.320 (13)
Eastern Highlands	1,120,000	669,400 (60%)	432,972	No data	0.554 (14)	0.325 (12)
Western Highlands	915,000	478,100 (52%)	440,025	No data	0.587 (10)	0.282 (15)
East Sepik	4,375,000	2,049,800 (47%)	343,181	No data	0.551 (15)	0.304 (14)
Enga	1,177,000	263,700 (22%)	295,031	No data	0.514 (16)	0.263 (17)

Sources: PNGRIS 1996 Kiele, UPNG 2011 and MDG Progress Report for PNG 2004.

It appears that there is no clear trend of relationships between proportion of forests and the poverty indices, suggesting no impact of the forests on people's living standards. Provinces with a large proportion of forest areas like Sandaun and Southern Highlands have low indices, while those with a small proportion of forest areas have better indices. The same can be said about the relationships between land size and the two indices.

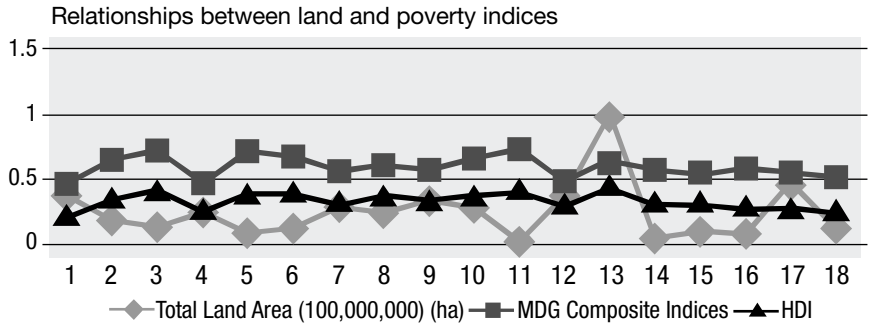
Figures VIII.1 and VIII.2 below illustrate the relationships between the proportion of forests and total area of land with the indices by provinces. The figures confirmed the lack of relationships between the proportion of forest and the total land area with the indices.

Figure VIII.1. Forests and poverty indices



[2] As of the writing of this report, no updated MDG composite indices and HDI for sub-national level (provinces) were available; hence the 2004 figures were used to give some ideas of the trends.

Figure VIII.2. Land and poverty indices



The trend at point 13 is very obvious, representing the Western Province with the largest land area and forest size in the country, though the forest proportion may be relatively less, compared to other provinces. The Western Province trend could be strongly influenced by the multibillion BHP mine closure preparation programs for OK Tedi mine, managed by the PNG Sustainable Development Limited.

Figure VIII. 3: Timber royalty and poverty indices

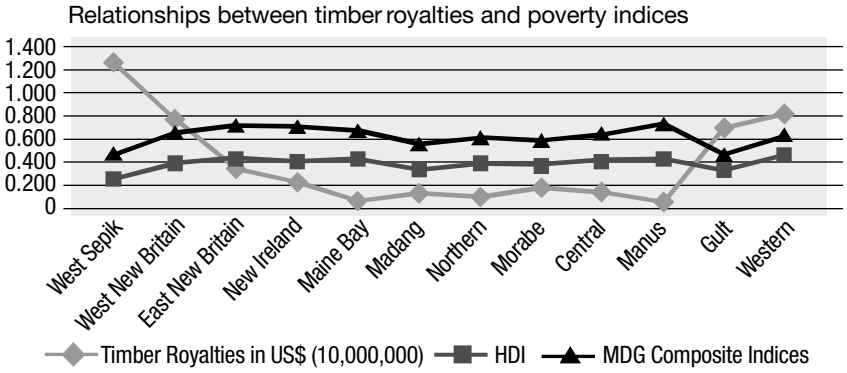
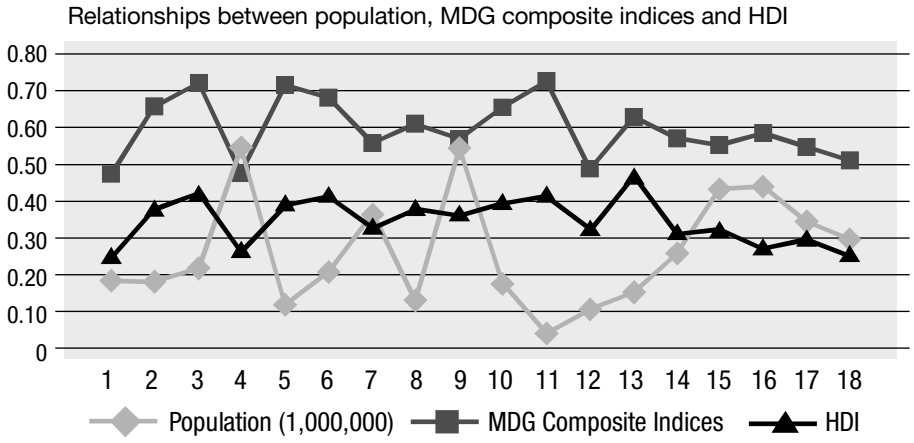


Figure VIII.4. Population and poverty indices



Figures VIII.3 and VIII.4 show the relationships between timber royalties and poverty indices and the population and poverty indices, respectively. There is a strong relationship between population and poverty indices. The relationship suggests that the higher the population, the lower the indices, and vice versa, suggesting that population strongly influences living standards. A higher population leads to low living standards and vice versa. Point 4 in Figure VIII.4 represents the Southern Highlands Province which has the largest population but with the lowest MDG composite indices while point 11 represents Manus Province which has the smallest population but with the highest MDG composite indices. Overall, there are no clear trends to suggest the influence of forests on poverty alleviation. The main constraint of the analysis is the lack of updated information or data on poverty indices since the only data available is from the 1996 Independence Household Survey. PNG as a whole is currently hampered with no updated data for its MDGR as the planned 2010 Independence Household Survey never took place.

National Economic Development

PNG has an estimated population of 6.7 million people in 2009 and a population density of 14.5 people per km^2. The total gross domestic product or GDP (nominal) in 2009 was estimated to be US$ 7.9 billion with a per capita income of US$ 1,247 (IMF 2010). The 1996 Gini coefficient was 50.9, which reflects a relatively high inequality in income distribution in the country. The human development index (HDI) in 2010 of 0.431 was rated medium and ranked PNG at 137th place out of 169 countries in the world (UN 2010).

PNG's economic development is predominantly dependent on natural resources and the export of raw materials. The main natural resources are in agriculture, forestry, fisheries, minerals, and petroleum. Currently, the economy is dominated by non-renewable resource sectors contributing approximately 80% of the total GDP while renewable resource sectors contribute about 20% (MTDSP 2010). The forestry sector contributes about 8.5% (ITS 2006). The economic growth in 2011 is 8.5% (ADB 2011) with an average population growth of 2.7% (AusAid 2009).

The forestry sector is ranked 3rd after mining and agriculture but its contribution to the rural economy and poverty alleviation is crucial. The sector provided approximately a net of US$ 10.3-13.5 million between 2007 and 2010 in timber royalties to landowners, with an average of US$ 17 million per annum, an increase of 4% from 2007 to 16% in 2010 (PNGFA 2007-2010). This was a result of the increase in timber royalties from US$ 4 per m3 for all species to US$ 14 per m^3 for *kwila* (*Intsia bijuga*), US$ 10 for group one species[3] and others at US$ 6 per m^3 (PNGFA 2008).

However, poverty indicators of the provinces with major forest areas do not really reflect the magnitude of revenues generated from timber projects. There is a strong suggestion of poor financial management by forest owners and a lack of fair distribution of generated revenues back to the provinces where the forest resources came from. Recent reports by National Economic and Fiscal Commission (2011) revealed that some provinces with huge fiscal capacities spent less on basic services, and the trend is that these are the provinces rich in natural resources.

Poverty Reduction and Forestry in National Policy

The GoPNG does not have a National Poverty Reduction Strategy (NPRS) for the country. Instead, the national poverty reduction strategies were integrated into medium-term and long-term development strategies to eradicate poverty and may not necessarily meet the global targets set for 2015.

National Poverty Reduction Strategy

The NPRS was incorporated in the MTDS 2005-2010. The Department of National Planning and Monitoring (DNPM), responsible for MDG compliance, decided to have one document, instead of two. The reason was partly because the National Poverty Reduction Strategic Plan (NPRSP) concept of the World Bank did not align with the government's definition of poverty and therefore, the DNPM produced the MTDS in the context of the PNG situation (Lina,4 personal communication). These NPRSP views are further translated into PNG's Vision 2050, a long-term strategy supported by PNG's Development Strategic Plan (PNGDSP) 2010-2030. The PNGDSP 2010-2030 will be implemented through four rolling Medium Term Development Plans (MTDP) and the first one is MTDP 2011-2015.

MTDS 2005-2010 was based on the government's program for recovery and development, and its three interrelated objectives of good governance, export-driven economic growth, and rural development, poverty reduction and empowerment through human resource development were also the basis for its development strategy, including good governance, and the promotion of agriculture, forestry, fisheries, and tourism on a sustainable basis. The strategy was to be realized by empowering people, especially

[3] Species groupings by international log exports markets.
[4] An officer with the Department of National Planning and Monitoring (DNPM).

those in the rural areas, to mobilize their own resources for higher living standards. MTDS 2005-2010 was a strategy towards achieving the Millennium Development Goals.

This strategy appears strongly focused on rural development. All the 10 principles interconnect with a focus on rural development, except Principle 5. Principle 8 provides for the facilitation of the strategic impact project interventions in least-developed districts and provinces with a particular focus on the "poverty corridor." The poverty corridor is a regional zoning system of poverty areas transformed into economic corridors of comprehensive and effective networks of transport and utilities, quality education, and health services. Within this region, businesses are able to operate at low cost with design incentives, thereby encouraging foreign and domestic private sector investment. The strategy assumed that while absolute poverty is not widespread, a significant proportion of the population is affected by relative poverty. The strategy acknowledged that poverty is a multi-faceted issue that requires integrated and sectoral responses. Thus poverty reduction would be addressed by investing in people through education and health and by promoting broad-based economic growth (MTDS 2005-2010).

Papua New Guinea's Vision 2050

Papua New Guinea's Vision 2050 is a long-term strategy that maps out the future direction for the country and reflects the aspirations of its people with a vision of a *"Smart, Wiser, Fair and Happy Society by 2050."*

Vision 2050 emphasizes the effective utilization of PNG's rich natural resources—land, cash crops, forests, and fisheries—to improve its socioeconomic development status. Equally important are other areas that can contribute to economic growth and better living standards for people, including human capital development, an improved infrastructure network, and an efficient service delivery mechanism for public goods and services.

Based on the deterioration of the provision of public goods and services and lack of meaningful participation of the rural people in income-earning activities and their aspirations to do better, Vision 2050 incorporates the National Government's Strategic Directional Statements that will drive development over the next 40 years.

Medium Term Development Plan 2011-2015

PNG's Medium Term Development (MTDP) 2011-2015 is a five-year development plan providing a clear, accountable plan for investment. It sets sector strategies, targets, deliverables and their projected estimated cost implementations. The MTDP is aimed at translating the PNGDSP 2010-2030 into tangible results. It also takes into account the lessons learned and experienced from the previous MTDS 2005-2010. The MTDP outlines the specific players responsible for achieving key deliverables and strengthens the national government's ability to monitor and evaluate investments over the coming years.

MTDP 2011-2015, under its overall objective of economic sector strategies, sets the goal of building a forestry sector that is sustainable and highly profitable. It recognizes that the forestry sector continues to contribute immensely to the national economy as well as to improving the livelihoods of rural people. MTDP also recognizes that the sector operates in the most remote areas of the country, thus creating opportunities for rural communities to engage in formal employment to improve their living standards. Companies involved in the sector have provided the basic social and economic infrastructure services like roads, bridges, schools and health centers. In the absence of government services and support, the presence of the forestry industry in rural communities is vital since it provides some of the basic services which government should typically provide.

National Forest Policy

Forest policies, though placing emphasis on rural development and forest owners' effective participation, lack focus on poverty alleviation in the rural areas. Consequently there is a great mixture

of results in the outcomes and impact on living standards of rural communities after major forestry development, particularly the sustainability of income sources and maintenance of facilities built during the operations.

Forest policies and forestry developments can be seen as products of their times, reflecting the different phases of development and changes PNG has gone through from the colonial era to its experience as an independent nation (Turia 2005 and Montangue 2002 in ODI 2006). However, the major policy developments following the Barnett Inquiry (1990) and recommendations could be seen as imperative approaches towards protective and effective forest management for socio-economic growth. Thus, the overarching objectives of the new Policy (National Forest Policy 1991) are to ensure the sustainability of the forests through proper management practices of forests as renewable resources, and that forests are harvested to bring about economic growth, job creation, increased participation of Papua New Guineans in the forest industry, and further domestic processing (Genia 1991).

The 1991 Forestry Act and Forestry Policy, and the creation of PNGFA and National Forest Service (NFS) in 1993 were believed to be in the new era of customary forest owners' interest following the Barnett Inquiry (1990). The Barnett Inquiry revealed abuses in the forestry industry sector, thus depriving traditional forest owners of their rights and benefits from the development of these resources. However, more than two decades after the Barnett Inquiry, the ODI (2006) report suggested that the trends of abuses and deprivation of customary forest owners are still there.

Forest policy implications

A major conflict in PNG's forest policy that still exists from pre-independence to post-independence and even after the Barnett Inquiry is that while majority of the forests (99%) is customary-owned, the forest resources by legislation design are regarded as national resources and the development of these resources is for the "national interest". This implies that even if the development of the forest resources in the country were 100% controlled by the customary forest owners through ILG and landowner companies, the ultimate objective would still be to generate revenues to meet the political aspirations of the current government.

The other major conflict is that while more than 80% of the people live in rural areas, more than 80% of the timber resources are under State control for large commercial timber-harvesting purposes. The State does not encourage small-scale timber operations in rural areas and does not provide technical and financial support through PNGFA.

Major policy changes were targeting customary landowner participation in the development of their forest resources. However, the record of customary owners' involvement in forestry development to date has been very poor (ODI 2006). Poor management of landowner companies that resulted in uncontrolled logging and destructive timber harvesting practices and pervasive corruption in the logging industry was uncovered and investigated, leading to the Barnett Inquiry in 1987 (Holzknecht and Golman 2009). The Barnett Inquiry reports revealed that landowner company officials, including local politicians, were colluding with Asian timber companies for their self-interests, thus denying their clan and community members the rights to the benefits derived from their resources under the landowner company concept.

The management of timber agreements was very ineffective and customary forest owners lost in terms of infrastructure development. The under-utilization of the levies collected from forest development did not create much impact on customary forest owners and rural communities. In general, forest policy objectives are much broader for the national interest than for customary forest owners.

Past and Current Contribution of Forestry to Poverty Alleviation

Subsistence Use of Forests and Allocation of Tenure Over Forest Resources

Traditional forest management

Traditional forestry and subsistence use of forests continue to be the basis for survival of most people in Papua New Guinea. Currently, around 85% of PNG's population still lives in rural areas and depend on forests for their traditional and subsistence living. Forests are still major sources of traditional wealth and cultural inheritance.

However, traditional forestry management and subsistence use of forests are now transformed into modern market commodities to meet the growing demands of people in rural areas. For instance, traditional medicinal plants and other forest produce that used to be cultivated and domesticated through traditional forestry practices are now sold in the informal sector markets for cash income. Firewood, which used be the only source of the energy in rural areas for cooking and lighting, is now also sold in towns and cities for additional cash income.

Therefore, while traditional forestry and subsistence use of forests continue to maintain their traditional values and significance, the erosion of their traditional values and practices also contribute to poverty alleviation in rural areas. This trend of contribution to poverty alleviation will continue to grow as traditional forest values find their way to modern markets and provide cash incomes.

Allocation of Tenure over Forest Resources

Allocation of tenure over forest resources in PNG is through traditional tenure arrangements or formally through the acquisition of timber rights for commercial purposes. The traditional tenure system is generally through cultural inheritance, often a long-term arrangement and passed on to the next kin from generation to generation. This arrangement continues from the past to the present and has significant impact on poverty alleviation in rural areas because through this arrangement, individuals and families are able to practice traditional forestry and subsistence use of forests and generate cash incomes to improve their living standards. This allocation of tenure over forest resources currently contributes more significantly to poverty alleviation than in the past as individuals and families become more innovative and aware of the commercial values of non-wood forest products (NWFPs).

Allocation of tenure over forest resources through timber rights acquisition has been the main policy strategy in bringing development in rural areas with mixed results. The past trends during pre-independence appeared more effective in terms of distribution of wealth and benefits from the development of the forest resources than the post-independence and current eras as reflected in the Barnett Inquiry Report (1990) and the recent ODI Report (2006). Although the magnitude of the benefits derived from the forest resources during the post-independence and current era may be huge, the impact on poverty alleviation in rural areas is somewhat less impressive compared to the pre-independence era as reflected by the level of services to rural communities. Consequently, there is an urgent need for a major forest policy review to reflect on the current scenarios if PNG is to achieve its poverty eradication strategy as incorporated in its MTDS 2011-2015.

Community forestry

Community forestry was never a concept in PNG though clan ownership of forests played a major part in benefit-sharing in forestry development. However, community forestry is currently seen as the main mechanism in forestry to alleviate poverty in rural areas. Community forestry through partnership with local communities and NGOs has proven successful in rural areas promoting small-scale downstream processing using portable sawmills and eco-tourism. Such examples included the local-based NGO Foundation of People's Community Development (FPCD) and The Nature Conservancy in Madang

Province. FPCD, which is the only certified forestry management practice in the country under the Forest Steward Council (FSC) certification system, was recently discussed during the International Year of Forests conference on *Forestry in PNG – The Next 40 Years and Beyond*, as a model to consider in sustainable forest management and poverty alleviation in rural areas.

Other community forestry activities, though providing small benefit flows to communities, are possible poverty alleviation strategies in rural areas. These include community forestry activities like afforestation of large grassland areas in the Highlands region, a classic example of which is the One Keto Community Forestry Project.

Family and Individual forestry

Family and individual forestry was not practiced in PNG in the past. However, given the increasing population pressure on forest resources to meet increasing demands for modern living, family and individual forestry is slowly gaining popularity for cash income generation in rural areas. In the Highlands and the Island regions where forest resources are becoming scarcer, this practice is now gaining momentum. In the Highlands region, family and individual forestry practices through afforestation of grassland areas are becoming very common, a classic example of which is the Mount Elimbari community in the Chuave District of Chimbu Province. The benefits derived include prevention of soil erosion and sale of firewood and timber.

Family and individual forestry practices are replacing agricultural crops with forestry crops to restore soil fertility from disease and pest infestation, as currently witnessed in the recent outbreak of cocoa pod borer disease in the country in 2008, where families and individuals replaced their cocoa plantations with balsa (*Ochrohoma spp.*) plantations. Many families and individuals suffered badly through loss of income. To completely wipe out the disease, individuals and families are replacing cocoa trees with balsa trees as a short-term measure. This approach also sustains the flow of income for families and individuals from the loss of cocoa plantations.

This trend of forestry contribution to poverty alleviation currently may not be significant but will certainly be a force as forest resources become scarce and demands for improved living standards in rural communities increase.

Commercial Forestry and Industrial Forestry

Commercial forestry in PNG is dominated by large-scale forest industrial activities and is one of the major contributors to the economy. As incorporated in the government's long-term development strategies for the next 40 years (2050), the forestry sector is important for rural development and poverty alleviation.

Nearly half of the forest resources in the country are classified as commercial forests for industrial logging purposes in which the State, through PNGFA, has a major interest. Large-scale commercial forestry activities contribute to improving rural communities' living standards through infrastructure development and services like health, education and transportation, while at the same generate necessary revenues through timber royalties and taxes to enable the government effectively undertake its major functions and roles.

However, government needs to ensure that services are effectively delivered to rural communities. Maintenance and sustainability of the infrastructure and services established during logging have been great concerns in the past and even at present, leading to many criticisms of the logging industry. Government should assist in the maintenance of these infrastructure and services following the cessation of logging operations.

Other small-scale commercial forest activities under community forestry are also contributing through income generation in rural villages and support for community projects such as schools and health centers.

Village industries

Village industries are not given much attention by both rural communities and government agencies. Handicraft production is mainly practiced in rural villages, but not at a commercial level. Major tourism entrepreneurs have established several handicraft shops at main tourist centers or towns. There is also increasing sales of handicrafts by villagers outside main hotels in tourist destinations. This village industry creates opportunities for rural village people to earn income, and a strategy is to link village guesthouses with village handicrafts.

The provinces of East Sepik, West New Britain, Morobe, and Milne Bay are known for handicraft work. The markets for this industry are driven by tourism as local demand for handicraft is not well-recognized.

Other forms of village industries include small furniture-making using sawn timber from small-scale sawmills and NWFPs such as bamboo and rattan. These types of village industry activities are undertaken only on ad hoc basis where need arises. There is great potential in village industries but the potential is not being fully tapped partly because of lack of trained skilled people, financial support, steady markets, and transportation to bring the products to the markets.

Smallholder schemes

Smallholder schemes in commercial forestry do not exist, though there are opportunities for eco-tourism using village guesthouses and small-scale sawmill operations. Village guesthouses and small-scale sawmill operators can organize themselves into smallholder schemes to improve their profiles and strengthening their market positions. These organized schemes can easily attract government and international donor organizations' attention for funding support. Some village guesthouses get outside funding support but only through individual efforts. The government's 2011 budget allocation of US$ 2 million for rehabilitation of guesthouses is an indication of support for such schemes.

Levies collected for infrastructure development from forestry projects can be realigned to support such schemes. Financial support for smallholder schemes in the forestry sector is currently lacking. Smallholder schemes for commercial forestry activities in rural villages are options that can increase participation of forest owners and alleviate poverty.

Non-wood forest products

NWFPs are also not given much attention like village industries, though in the traditional context, these products are very useful to rural people. NWFPs like rattan and bamboo are used by people in rural areas on a daily basis for traditional construction purposes. However, converting these into marketable products for income-earning will require skills and marketing incentives.

One type of NWFP currently flooding the street markets of towns and cities in PNG are traditional medicines extracted from plants and herbs from the forests. Although there are ongoing debates and public advertisements and notices by the public health department discouraging the sale of these medicines, demands for these traditional medicines are increasing.

There is a great potential in NWFPs for village industries, particularly for medicinal plants and herbs for which the demand is currently high. However, there is an urgent need for government to regulate the products through proper processing standards and markets.

Bio-energy

Bio-energy in terms of firewood and palm leaves for lighting purposes is a source of survival for rural communities. In the last two decades, firewood has become an important item in local markets and is a source of income for villages and urban settlement dwellers. Urban settlement communities also rely heavily on firewood for cooking purposes and sell the surplus in local

markets to earn extra income. Firewood is a major source of income for urban settlement communities and helps alleviate poverty in these communities.

Ramu Agri-Industries Limited (a sugar company) recently ventured into large plantations of afforestated grassland areas using *Eucalyptus* species for wood as an alternative energy source for its boiler system. Under its afforestation program, people from surrounding rural communities were employed as laborers in the plantations. Communities were also engaged to sell wood to the company through community forestry. The company provided seedlings free of charge to communities to encourage the afforestation program for fuel energy.

Production Forestry

GoPNG views industrial forestry as the major means to develop infrastructure and generate revenues in rural areas, as majority of the forests are located in rural areas, some of which are very remote. However, the Barnett Inquiry in 1987 revealed widespread corruption and abuses in industrial forestry that deprived customary forest owners of their rights and benefits. Consequently, the situation did not contribute much to the plight of the rural communities in terms of cash incomes, health, education and other services.

Since the Barnett Inquiry and the major policy reforms in the 1990s, various reports (ODI 2006; Filer 2000; Filer and Sekhran 1998) have cited poor implementation of the reform measures to reverse the situations discovered by the Barnett Inquiry. ODI (2006) generally concluded that the most recent piece of legislation, the 1991 Forestry Act, re-asserted the State's monopoly over timber sales, yet conflicts continue to characterize the forest sector, suggesting that an equitable balance has yet to be found and secured under the law. The evolution of the legal framework is still caught between the State's desire to control timber harvesting and the landowners' desire to be involved in the sale of customary-owned assets.

Forest projects provide very tangible benefits in terms of rural service provision in many areas, filling a gap caused by the non-provision of such services by the State. Governance failure has been a noticeable characteristic of the PNG forest sector for the last 20 years. More recently, a succession of Independent Forestry Reviews commissioned by the government continued to question the way timber licenses are issued and subsequently operated (ODI 2006). The 2003-04 review found that logging has little long-term beneficial impact on landowners, although they bear the environmental costs. For many observers, the reforms initiated in the early to mid-1990s are incomplete. The situation thus continuously denies customary forest owners their rights and benefits from the development of their forest resources.

Industrial forestry in PNG is categorized into large-scale industry and small-scale industry. Large-scale industry involves log exports and sawmilling while small-scale industry involves portable sawmilling at community level. Large-scale industries are mainly foreign-dominated and contribute around 9% of the total GDP, employing between 5-7% of the total formal employment. Small-scale industry, on the other hand, is mostly community-based but records regarding their activities are not readily available. This is an important sector that government currently does not pay much attention to.

Large forest industry companies are affiliated with PNG Forest Industries Association (PNGFIA), an incorporated association of companies in all levels of operation in the timber industry. Under the Forestry Act 1991, PNGFIA is a legally recognized body representing the interest of the industry and has a place in the PNG Forestry Board. The PNGFIA has a current membership of 45 companies and is intent on maintaining active representation of its members' concerns in view of the many public issues related to forestry industry in the country.

PNG's large industrial forestry is focused on the harvesting of the natural forest areas for round log exports. Raw logs provide most of the export volume and value, although sawn timber and veneer have become increasingly important in the last three years. Privately-owned companies control all commercial timber production from natural forest areas. The role of the State is limited to monitoring and control, and it does not play an active role in forest management.

Government continues to be the primary beneficiary of the forest industry, receiving US$ 30 million in cash revenues annually. These receipts go directly into consolidated revenue. Government pays for the PNG National Forest Service, the Department of Environment and Conservation, and independent log export monitoring. However, an examination of budget papers suggests that government provision of infrastructure and social services to the communities in logging projects is limited.

The forestry industry plays the major role in terms of the economic activity associated with the production of wood products. Its operations are part of a value chain that includes other participants who rely upon the activities of the industry for at least part of their income, such as transport service providers and other local businesses that supply products and services to the industry and directly benefit from the activities of the industry.

There are a number of economic impacts associated with the forestry industry. These benefits accrue across the country from the lowest levels of economic activity within villages that support forestry operations, to coastal shippers that transport the forestry products to the market, and finally to Government which receives significant taxation revenues from the sector.

The forestry industry is one of the few industries that can and does operate in remote rural areas. As such, the industry creates the few opportunities for rural communities to enter the formal workforce and access the benefits. The benefits from formal employment are also supplemented from royalties paid for access to the natural resources on their land.

Forest companies also create basic infrastructure such as roads and housing unlike in mining, petroleum, and agricultural industries, where no targeted tax credit system exists to encourage the provision of such infrastructure.

In the absence of government support, the presence of the forestry industry in rural areas is usually seen as a proxy for government with communities becoming entirely dependent on the operation to act as the government body and the business entity to provide services to the community.

The concept of royalties and formal employment improving rural areas and communities' standard of living is sound. Unfortunately a combination of local corruption within landowner organizations, poor education, and lack of government presence both in terms of meaningful development and appropriate institutional involvement do not enable the realization of the full value of this concept (Price Water House Report for FIA, 2006).

Large-scale plantation establishment

Most of the government-established plantations are in a state of neglect due to lack of funding and landowner disputes. Plantations established by timber companies, though in a healthy state, are hampered by landowner disputes and competition from other land uses. Landowner disputes are common issues because of lack of commitment in honoring land lease agreements. The lease agreements are generally for 99 years and landowners claim that the government often fails to pay annual lease payments, including those sub-leased to timber companies.

Large-scale plantations provide employment to rural people. However, there is strong evidence that most employees have been employed from outside the communities, depriving the landowners their rights and employment benefits. This is one of the major contributing factors to landowner disputes. Although large-scale forest plantations create opportunities for employment and other benefits, the landowners are often denied these opportunities, creating major social issues such as law and order and increasing poverty.

Large-scale plantation establishments in PNG are generally undertaken at state and large private sector levels. Plantation activity is currently insignificant with only 62,000 ha under production, in which 55% are state-owned and 45% are privately-owned. The common species in the private sector plantations is *Eucalyptus spp,* and in state-owned plantations, *Araucaria spp.* The species choices are mainly determined by the geographic conditions: Araucaria species are mainly high-altitude

dominant species while *Eucalyptus* species thrive in high and low altitudes.

The potential for plantation forestry is significant, particularly in large areas of deforested grasslands. Plantation log exports account for approximately 10% of industry production. There is limited plantation production and only a limited number of export-oriented processing facilities. Very few finished wood products are manufactured in PNG.

PNG's recent National Reforestation Strategies 2010 (PNGFIA 2010b) are geared more towards forest plantation development to provide homogenous and specialist wood supplies for domestic and international markets at competitive prices. The strategies also intend to help develop and apply appropriate silvicultural practices to rehabilitate and improve natural growth and yields for the next cutting cycle.

The security of customary-owned land for long-term investment is considered a major challenge for the success of these reforestation strategies. In addressing this issue, these strategies are developed in a way as to look at a number of options to secure land for plantations in consultation with the landowners and all relevant stakeholders. The participation of landowners will be a key element in ensuring the successful implementation.

However, the finance for development and management of plantations must be guaranteed under the forest revenue system. Both private sector and government need to invest in plantation development and the revenues raised from the harvest of natural forests should support the resource replacement plan.

Employment in forest products processing and manufacturing

The forest industry creates few opportunities for rural communities to enter the formal workforce and improving their standard of living using money earned as wages. The forestry sector directly employs about 7,000 people, with half working in logging operations and the other half employed in other activities such as veneer processing, timber processing, carpentry, supporting workshop/engineering services.

One of the major constraints identified by PNGFIA (2010a) impeding progress in achieving domestic processing in PNG is landowner demands and disruptions. Without much involvement of landowners in forestry development, industries are closing down due to landowner disputes and disruptions. Forest developers are not fully providing the basic services tied under timber permit conditions to their areas of operation causing landowner disruptions. These claims by PNGFIA imply poor implementation of regulations and monitoring systems by government agencies, in particular PNGFIA. The PNGFIA is bound by legislation to ensure that all agreements adhere to logging and forest management standards, and that these standards form part of any forest management agreement, timber permit, and license. Consequently, non-implementation of provisions has led to landowner-company disputes and disruptions in operations.

Payments for Environmental Services (PES) and Carbon Payments

Payment for environmental services has been a topic of discussions among NGOs in PNG but has never been put into practice due to the lack of policy directives. There is also a lack of incentives for land and forest owners to manage their resources in exchange for compensation for the environmental services. Furthermore, in a country like PNG, which is geographically rugged and where majority of the population live in remote areas, PES does not appear to address developmental needs, such as infrastructure development such as roads and bridges.

Recent discussions about reduced emissions from deforestation and forest degradation (REDD plus) with sustainable forest management and biodiversity conservation and carbon trading appeared to be an option where PES can be adopted. The NGOs in PNG developed a carbon payment system based on the PES principle. However, this has not been discussed in detail and it is hoped that as a country framework on REDD plus and policy initiatives progress, PES will be tackled in more detail in relation to the specific contexts of forests in the country.

Carbon payments

PNG does not have a policy on climate change and REDD plus and thus there is no policy mechanism in place for carbon payments. Through the Office of Climate Change and Compatible Development, the government is still working on its measuring, reporting and verification (MRV) system. It is believed that an effective MRV system will help to direct policy development and the carbon method of payment.

In line with the carbon payment is the PNGFIA policy framework for action that emphasizes the sharing of revenues generated from carbon trading. The forestry sector in PNG through PNGFIA initially developed the Forestry and Climate Change Policy Framework for Action in 2009. The framework emphasized the need for the incumbent government to establish a transparent and well-coordinated financial mechanism that will keep custody of the funds and appropriately disburse to recipients. The framework tries to ensure that fund beneficiaries, such as landowners, are initially identified and recognized under the existing landowner mechanisms to receive their compensation in a timely manner.

Eco-tourism

Eco-tourism is an emerging industry in PNG and it is interesting to note that under the long-term strategic plan of PNG Vision 2050, eco-tourism is one of the main revenue-generating activities, apart from forestry, agriculture, and fisheries, recognizing the depletion of mineral resources, petroleum, and gas. The National Development Bank created a Tourism Credit Facility that made available about US$ two million to assist local tourist guesthouse operators.

Although the overall economic benefit from eco-tourism is not as high as mass tourism, local communities get a greater proportion of the money spent by eco-tourists compared with resort tourists. PNG could be marketed worldwide as an eco-tourism destination offering the best eco-tourism experiences in the world such as village trekking, bird watching, and encounters with traditional cultures, attracting "high-yield[5]" eco-tourists. PNG is a frontier country with a less-developed tourism industry (Hayes 2011), and eco-tourism has great potential in poverty alleviation in the rural areas.

The Case Studies

The two case study sites in the Central Province in the Southern Region were chosen because both involved national and community interest projects and were easily accessible by road. The third case study site was chosen due to an opportunity to visit Chimbu Province in the Highlands Region. It is a community forestry project through people initiatives, and provides another scenario of forestry contribution to poverty alleviation in the highland region of the country.

Case Study 1: Varagadi FMA (Timber Permit-3-37)

Varagadi FMA area constitutes two different forest plantations with the Brown River plantation covering an area of 6,500 ha and Kuriva plantation covering an area of 8,782 ha. Both sites were originally natural forest areas but were converted into large State-owned forest plantation estates. Access to the natural forests is difficult and the traditional landowners walk some distance further inland to reach the forest areas. Most villages moved out of the natural forest areas to live along the main Hiritano Highway to Gulf Province. These movements were viewed as part of the "social advancement" of communities as a result of forest development.

The lands were customary-owned but leased to the State under a 99-year lease agreement. The Brown River land however was transferred back to the original landowners following a successful Court case in 1994 by the customary landowners. The customary landowners argued that the land was never under a proper lease agreement at the time of the colonial administration and that annual rents were not paid regularly. Only the timber rights remained with the State through PNGFIA. Kuriva customary

[5] Cultural tourists interested in "primitive cultures".

landowners also expressed similar sentiments on the lack of rental payments by the State. The State lease agreements with customary landowners are generally done through the Lands Departments, which is then responsible for the rental payments.

Nature of the project

The Brown River and Kuriva Plantations are about 20 km apart and located approximately 20 and 40 km away, respectively, from Port Moresby, the country's capital city. The project falls under both old and new policy measures as the plantations were established under the old policy measures while the harvesting and marketing are under the new policy measures of FMA.

Gae Y. Gowae

The company built this school building at Brown River teak project area

In this project, PNGFIA represented the State of PNG and entered into an Agreement with a developer to undertake project development and management activities. The developer was granted Timber Permit-3-37 for 35 years commencing on 29th May 1997 and expiring on 28th May 2032. After that, the developer was replaced by a new one, though still using the same TP (3-37). Current operations are at the Brown River Plantation but the developer has moved some equipment to the Kuriva Plantation to start harvesting the trees. Technically, these are two different resources and environmental conditions, therefore the terms and conditions should vary. The developer should not be moving to Kuriva and operate under the same permit conditions for the other plantation.

The terms and conditions of the TP are incorporated in the Agreement. Through the TP, the State (through PNGFIA) granted the exclusive rights and obligations of the developer to develop and manage the Brown River Plantation in accordance with sound forestry principles, good forestry practices, and the principle of sustainable yield. Subject to these principles, the developer is required to develop and manage the forest resource in accordance with set schedules for harvesting, replanting, and processing of timber.

Under the TP Agreement, the developer was to establish an average of 170 ha of teak plantation forest

annually and harvest and process an average of 45,000 m3 annually. The financial benefits of the project under the Permit Agreement include the following payments to PNGFIA:

- Timber royalty at US$ 12.50 per m3 of logs
- A 10% premium from the sale of forest produce from the area, minus the royalty, if any;
- An advance on the premium of US$ 36,000 upon the execution of the TP;
- Levies of 3% on the price received by the Developer for the sale of forest produce from the first crop on that portion of the area known as the Varagadi FMA, and 1.5% on the price for the sale of other crops from the area.

In addition, the developer must establish a Plantation Development Fund with a reputable bank in the country with an amount of US$ 77,500 to be utilized by the developer solely to pay for growing costs.

Under this Agreement, the State (through PNGFIA) pays 95% of the timber royalties to the traditional landowners, retaining 5% as withheld tax. This 95% is from the 10% of the market price of US$ 12.50 per m3. The developer also undertakes certain operational agreements to develop and manage the forests, comply with Codes of Directions and the Act, and undertake downstream processing for locally-processed timber.

Community benefits and contribution to poverty alleviation

There are two ILGs involved in this project: the Edevu ILG, representing the Mekeo people; and the Hohora, representing the Koiari people. There were no specific forms of benefits for the communities affected by the project. The only direct form of benefit is payment of timber royalties.

A sample of timber royalty payments showed that a total of US$ 683,317 was paid to the two groups between 2007 and 2010, in which US$ 406,960 and US$ 278,357 were respectively paid. Estimated amounts of US$ 100,000 and US$ 70,000 were collected annually, respectively.

The other form of direct monetary benefit to communities is through employment. However, during the interview with community representatives, a youth leader categorically denied any form of employment by the developer. A spin-off benefit is the sale of garden produce at the village market sheds along the road to plantation workers, who are generally outsiders. Otherwise there are no other evident spin-off business activities that use royalty monies to trigger other small-scale development activities. There are a few semi-permanent houses built in the villages indicating the use of the money received from the timber royalties.

The project agreement does not cover community services like education, health, and infrastructure development. Plantation ownership rests with the State, who is then tasked to provide such services for the landowners.

The impact of the project on poverty alleviation in the communities was obvious but not as effective as expected, both due to the landowners' own poor financial management and the State's inefficiency in its responsibilities to ensure compliance with timber permit conditions. Although there is no evidence of poverty in the communities affected by the project, there is also no strong evidence of improved living standards, in contrast to those communities outside the project area. Given the amount of money received as timber royalties, the expectation is improved living standards of the communities affected, compared with those outside the project area.

The State (through PNGFIA) also failed to ensure effective compliance of certain conditions of the project by the contractor. Employment opportunities for the youth in the communities should be enforced. Also, small spin-off businesses including community subcontracting in nursery and plantation work should be given to community groups.

Case Study 2: North Vanapa TRP (Timber Permit-3-32)

North Vanapa TRP covers a total area of 78,422 ha of natural forests with a total estimated standing timber volume of 300,000 m3 and comes under the old policy measures of resource acquisition and management. The TRP system was replaced with the FMA following the enactment of the 1991 Forestry Act, and amended, in 1992. However, TPs issued under the TRP system prior to the 1991 Forestry Act remain valid until the expiry date. Following the expiry date, the new permit would be issued under the FMA system. Two major tribes, the Koiari and the Doura in the Kairuku District of Central Province, live in the project area and comprise the three clans from five villages.

Gae Y. Gowae

Since the logging project started in the 1980s, logging operations were fraught with problems involving the private contractors that were changed four times. As abandoned logging equipment and logs are left to waste, landowners lose out on the benefits.

Nature of the project

North Vanapa TRP area was acquired in 1982 for a period of 30 years (1982-2011). However, the actual development of the resource took place eight years after, in 1990, when the timber permit (TP-3-32) was issued to the Landowner Company. Under this management arrangement, the Landowner Company was formed and issued the TP as permit holder. The company then entered into a logging and marketing agreement (LMA) with a contractor (foreign company) to undertake all the development activities, including marketing and the TP conditions. The Landowner Company monitors the compliance of LMA conditions by the contractor, while PNGFIA monitors the compliance of TP conditions. The Landowner Company officials are ILG representatives. The project has both national and community interests operating under industrial and corporate entities with the objectives of meeting the national interest and goals of social-economic growth while bringing in vital social services and infrastructure development into the affected community areas.

Under the project agreement and the terms and conditions of the TP, the permit holder (through the developer/contractor) was required to harvest an average rate of 70,000 m3 of timber annually, export an average of 50,000 m3 of logs annually, and process about 20,000 m3 of logs in average annually. Based on these average production targets, the permit holder, within seven days from each log shipment, was required to pay an amount of US$ 0.40 per m3 of logs harvested to the then Department of Forests (now PNGFIA) as reforestation levy. Similarly, the permit holder was required to pay an amount of US$ 0.80 per m3 of logs exported into an Agricultural Trust Fund which should be managed by the permit holder for agriculture Projects in the permit area.

Also, the permit holder was required to construct, upgrade, and maintain all roads and bridges the project requires for the life of the project. The permit holder was required to construct at least 10 km of road per year within the project area to facilitate its operations.

The project generally improved the living standards of the communities affected, though not all permit conditions were met satisfactorily. There are evident infrastructure developments, such as the school administration building. During the meeting with the landowners, some of their leaders expressed dissatisfaction over the performance of the landowner company officials. They cited the lack of annual general meetings, financial reports, and implementation of community benefits.

Community benefits and contribution to poverty alleviation

The main direct benefit to the communities affected by the project is timber royalties. Timber royalties were paid at a rate of US$ 4 per m3 of the log harvested. A sample of timber royalty payments between 2007 and 2010 showed a total amount of US$ 173,836 paid, at an average of US$ 43,459 annually.

There were no breakdowns of the amounts paid to each clan shown in the reports. However it can be deduced from this sample payment of timber royalties that forest owners were paid substantial amounts of money for timber royalties, by rural community standards, and had an impact on the living standards. But the question of sustainability remains, as there is limited financial management capacity within the communities, clans, families, and individuals.

The other indirect benefits to communities include project levies and infrastructure development. The project levies are the reforestation and agriculture levies. The reforestation levy was paid at a rate of US$ 0.40 per m3 of logs harvested, estimated to be about US$ 15,600 paid in total over the same period. The agriculture levy was charged at US$ 0.80 per m3 of logs exported, but there were no available corresponding log export volumes to estimate the total amount paid. These levies are paid into trust accounts controlled by the State, through PNGFIA, and the Provincial Government. Forest owners are eligible to apply for the use of such funds.

Infrastructure development includes construction and upgrading of the community hall, church, communication facility, sporting facility, water reticulation system, classrooms and teachers' houses, health center and health workers' houses, and a generator to provide electricity. Not all these infrastructure development requirements were met satisfactorily.

Government built the classrooms and the teacher's house financed by the infrastructure levies collected. Forestry projects in PNG's rural areas focus government attention on the communities affected because of the revenues generated through forestry levies for government through provinces. Government development budgets then should prioritize the service provision for these communities affected by forestry projects.

Income generation and infrastructure development taking place in the project area strongly suggest levels of poverty alleviation as a result of the project. Without the project, there are no other options for major development and income generation. The only income option is selling garden produce to travelers at nearby markets along the main highway or at the main markets in the city. Infrastructure development is below expectations as per the TP conditions.

Case Study 3: Oneketo Community Forestry

Oneketo Community Forestry is a community initiative project to afforest grassland areas. The project is located at the border of Eastern Highlands and Simbu Provinces, between Watabung and Chuave. The project covers an area of 2,700 ha planted with 1,000 trees. The project was initiated by the community of Oneketo upon realizing that there is already scarcity of wood for firewood, fencing, and building.

Nature of the project

The area is classified as non-forested, with very low stocking rate and other vegetation types on dry land. With the increasing population and the increased demand for wood, the community decided to undertake planting of trees on the grassland areas. An NGO, Partners with Melanesia (PwM), provided technical assistance in nursery training and nursery establishment. The community set up a proper

Gae Y. Gowae

A nursery bed is established for seedling production to reforest logged-over mountainsides and ensure future sources of wood for cooking, constructing houses and other purposes.

nursery site, including a shed for tools and a small office, where records of seedling production, tools used, and areas of planting are kept. A visit to the project site was made possible through PwM during an official launching of a community forest conservation program in Chimbu Province.

Project benefits and contribution to poverty alleviation

There is great demand for wood in the highlands region where there are large grassland areas. Planting of trees in these grassland areas is now becoming an important individual, family and community activity in the region. A number of local NGO groups and community based organizations in the region realize the need to afforest the large grassland areas. Community representatives said they are doing this for the benefit of their children and future generations and claimed that these large grassland areas cannot remain idle as demand for wood increases with increasing population.

The other benefit of tree planting activities in the highlands region is soil protection. The community realized that with the increasing population, the scarce forests were cleared without replanting, resulting in high occurrences of landslides and soil erosion. Communities are encouraged to plant trees for purposes of both reforestation and afforestation.

Community forestry in the case of Oneketo is for local wood consumption and environmental protection. Since wood is becoming scarce in the area and there is soil erosion and environmental degradation of the large grassland areas, people of Oneketo showed great interest in undertaking such activity at their own initiative. People in this area are used to agricultural practices, specifically, growing coffee. The afforestation of grassland areas will provide additional income through sale of local timber.

There is already widespread interest in the area and the region for afforestation. The National Forest Service in the region is undertaking a major afforestation program and is supplying seedlings to the interested communities. NFS plans to supply 300,000 seedlings throughout the region annually to support the program. Communities are very much interested in afforesting grassland areas and this activity is raising the profile of communities in the region.

Case Study Analysis

The case studies presented two different scenarios: forestry projects initiated for both national and community development interests and a community-initiated project for subsistence. The main concern identified in the national-initiated projects is that the terms and conditions of the timber permits were not fully met, depriving the landowners their rights and maximum benefits from the development of the resources. The other concern is that timber royalties were not properly managed

and no follow-up was done to sustain the income-generation activities. The ability of customary owners to manage and re-invest money earned from forestry into other spin-off activities to sustain their incomes is of great concern.

The third case study demonstrates an increasing trend of community forestry in the highlands regions. There are already concerns of scarcity of wood and timber in rural areas as a result of increasing population. Rural villages are now planting trees in small patches of land to supplement already depleted limited forest resources, a new trend in family and individual forestry in the country. The harvested timber is sold locally as there is great demand. Also, planting of trees prevents soil erosion and supports subsistence farming. The PNGFIA highlands regional and provincial offices are working with local community authorities to assist and in this regard, community forestry has a huge potential for poverty alleviation in the highlands region.

Outlook of Forestry Contribution to Poverty Alleviation

The forestry sector has great potential for contributing to poverty alleviation in rural areas. However, there are strong indications that not all the concerns raised in the Barnett Inquiry that led to the development of new legislation were resolved. Timber permit conditions were not fully complied with and implemented. Various levies collected from the sector were not used to support and sustain follow-up developments and to create sources of incomes in rural areas. The same goes with timber royalties collected by forest owners.

Policy Initiatives

Government policy initiatives towards poverty reduction in the rural areas will only be realized if the forestry sector develops specific focus and strategies on rural poverty reduction. Forestry sector goals for rural development are broad and depend on the compliance with timber permit conditions by developers. While there are sound policy initiatives and frameworks for rural development, effective implementation is lacking.

To achieve the government's national strategies for poverty reduction in rural areas, the forestry sector and public and private sectors need to develop their own specific strategies to translate these national strategies (PNGDSP 2010-2030 and MTDP 2011-2015) into specific sector actions targeting rural poverty reduction with specific budget inputs, expected measurable outputs, with performance indicators and means of verification. Only then can forestry's contribution to poverty alleviation be effectively and fully realized. At this point, the national strategies for poverty alleviation in the forestry sector are just statements, and can only be implemented through specific forestry sector actions.

Forest Resource Management

Poverty alleviation in the rural areas is a long-term objective that can be achieved if appropriate short-term and medium-term plans and strategies are put in place. Most of the forest resources (67%) with potential commercial values are acquired and controlled by the government through PNGFIA. Around 33% of the forests identified as commercial forest areas remain intact, including the 13% acquired by government but have yet to be issued timber permits. An overview of PNG's timber resources (PNGFA 2010a) indicates that most provinces have almost depleted their resources while others have overcut their available timber resources. The highlands provinces have little natural forest remaining and due to population pressure, the resources will be harvested mainly for local use and fuelwood. Sustainable forest management needs to be effectively practiced and must be pursued beyond statements.

Forest resource management also includes management of other forest types on which the rural population depends for their livelihoods. Currently, the emphasis is only on commercial forests. There are other forest types that do not only provide food sources for subsistence living but also other products that can generate income. For example, mangrove forests supply durable construction

materials and also habitats for mud crabs, important sources of protein for local consumption and can be harvested and sold.

Managing forest resources effectively can lead to achieving the long-term goal of poverty reduction in rural areas. Effective management of forest resources requires stakeholder involvement, including forest resource owners. The PNGFIA, under its new development guidelines, recognizes the importance of community forestry in its reforestation program and re-emphasizes the involvement of landowners and resource owners, but implementation is poor. Effective resource management (plantation inclusive) on a sustainable basis should be the basis of the forestry sector's contribution to poverty alleviation in the rural areas.

Recommendations

The forestry sector has great potential for improving living standards and reducing poverty. However, government has to create an enabling environment to make this happen. This will require policy reviews targeting the interests and welfare of forest owners and communities affected, not just the national interest. The government will have to expand its focus on the overall objective of forestry development in the country of securing national interest to incorporate the more specific interests of forest resource owners. The PNGFIA should be given financial autonomy over the revenues generated to improve and increase their functions to support forestry activities at the forest owners' level.

Rural communities and forest owners will have to change their attitudes and mindsets to ensure improvements in their living standards. The management of incomes generated from forestry activities should include the reinvestment in small-scale business spin-offs following logging. Forests should be managed for collective benefits and not just for timber. Cultural values of leadership and wealth distribution among clan members need to be sustained.

The following recommendations are possible ways forward for forestry contribution to poverty alleviation in PNG's rural areas:

Review the Concept of National Interest in Natural Resources Development

There is a need for a major policy shift in the forestry sector towards poverty alleviation in rural areas. The primary focus in the forestry sector is in securing the national interest through revenue generation for national budget purposes while resource owners and rural communities are of secondary interest. Funds intended to assist resource owners and rural communities do not reach them as what must be ensured first are government budget targets financed from the forestry sector.

The GoPNG through PNGFIA needs to shift its focus from general forest development projects to more specific poverty alleviation projects. The notion of national interest needs to be critically looked at because national interest must also include the interests of communities affected by each forestry project. The national interest concept is based on the fact that not all provinces in the country have equal amount of resources to generate necessary revenues to meet the social-economic obligations and services of all people. However, this study indicated that provinces with small forest areas are better off in terms of social indicators than those provinces with large forest areas.

Forestry Sector's Poverty Alleviation Strategy

It is imperative that all natural resource sectors should have their own strategies for poverty alleviation in rural areas. Poverty alleviation strategies should be integral components of planning and prerequisites to government approval of natural resource development in the country. It should not just be a follow-up activity by the social sectors. In fact, the poverty situation of an area where there are natural resources like gold, copper, and timber, is always used as the basis to get government and resource owners' approvals for the resource to be developed.

Forestry being a renewable resource sector should have a strategy for poverty alleviation in rural areas. The strategic direction for the PNG Vision 2050 is to develop its renewable resources, including forestry, to enable its economic growth by 2050. It must be broad-based, ensuring that household incomes will be much higher and improve the overall HDI. The PNGFIA's policy envisions financial autonomy that can be attained through integrating the vision's strategic direction with poverty alleviation.

The various levies collected from forestry projects should be incorporated into this strategy to give more impetus to the forestry sector contribution to poverty alleviation in rural areas. It seems that huge amounts of money accumulated through trust accounts of these levies were not effectively used to address the plight of forest owners and rural communities, and were instead diverted.

Review of Financial Benefits by Forest Owners from Forest Resource Development

Forest resources in PNG are customary-owned but customary owners get a mere 3 to 5% of the total monetary value of the resources through timber royalties while the State gets up to 10% of the total value, and the remainder portion goes to the developer. The arguments are that resource owners get more benefits beside timber royalties in terms of infrastructure developments and other services brought into their area by the project. But in reality, infrastructure developments and other services rendered through the project are part of government's responsibilities, and thus accrue to government's total benefits and not necessarily a direct share of the forest owners.

If government is serious about its poverty reduction strategy as incorporated in its Vision 2050, then one effective strategy is to increase the forest owners' share of financial benefits from the forestry project development to improve household incomes. Timber royalty currently averages US$ 4 per m3, a slow increase from the rate 30 years ago of US$ 1.40. The basis for calculating timber royalties should be reviewed regularly, taking into account the real market values of timber and other opportunity costs.

The various levies and the methods of payments need immediate review. These levies should be paid directly to forest owners, particularly the agriculture and reforestation levies. Additional levies should be charged on the use of forests and foregone opportunities as a result of logging. Levies that are used for infrastructure development and social facilities like education and health need critical review. Developers easily avoid their agreed commitments by paying these levies to government, which then finds excuses not to utilize the levies due to lack of capacity. Forest owners, meanwhile, lack the capability to access these funds, resulting in huge amounts of funds sitting in trust accounts and squandered elsewhere. Infrastructure and social levies should be paid directly to the appropriate agencies with stringent conditions to undertake the activities with measurable outputs and indicators within the timeframe.

Improving the Financial Management Capability of Forest Owners

Forest owners and landowner company officials should be given basic financial management and accountability procedures to manage the funds received from timber royalties and timber premiums for landowner companies. Forest owners and company officials should be educated on the purposes of the different levies collected and the methods to access these funds, including writing proposals to access these funds. This will require strong institutional linkages between PNGFIA and other appropriate agencies, including the district offices, local level governments, and ward councilors.

Poverty alleviation will have to come from an internal commitment by individuals, families and the communities at large, and it has to start with money management. Forest owners have to be given opportunities to understand the value of money.

Revival of PNGFIA's Extension Services and Financial Autonomy

There is an urgent need for PNGFIA to revive its extension services abandoned years ago as part of past policy reforms in the sector. Senior forestry officers within PNGFIA who were once involved in the

extension services works expressed their strong desires that this program be revived as this can provide more assistance to forest owners.

To give impetus to forestry extension services in the country, there is also a need to give PNGFIA financial autonomy status. Financial autonomy for PNGFA has been an agenda but has never progressed beyond discussion. The scope of work in the public forestry sector is enormous given the geographical factors of the country and the current annual operational budgets for PNGFIA are insufficient for additional activities. Therefore it is important that PNGFIA be given financial autonomy so that revenues generated from forest resources are put back into good use to assist forest owners and rural communities.

References

Amos, G. and G. Gowae (2008). *PNG country presentation – Challenges and expectations in linking sustainable forest management and climate change*. ITTO International Experts Meeting on Addressing Climate Change through Sustainable Management of Tropical Forests, 30 April – 2nd May 2008, Yokohama, Japan.

Asian Development Bank (2011). Papua New Guinea to grow 8.5%. In *ADB Report*. Port Moresby, PNG. Retrieved from www.adb.org/Document/News/Pacific/pac-201102.asp

Australian Aid (2009). www.ausaid.gov.au/country/png/png_intro.cfm

Barnett, T (1990). *The Barnett Report. A summary of the Report of the Commission of Inquiry into Aspects of the Timber Industry in Papua New Guinea*. The Asia-Pacific Action Group, Hobart Tasmania, Australia.

Bourke, R.M and T. Harwood (2009). *Food and agriculture in Papua New Guinea*. R. Michael Bourke and Tracy Harwood (Eds.) Australia: Australian National University Press.

Filer, C. (2010). *The new land grab in Papua New Guinea*. Paper presented at the International Conference on Global Land Grabbing. Land Deals Politics Initiative (LDPI), Future Agricultures Consortium, Institute of Development Studies. Great Britain, U.K.: University of Sussex.

Filer, C. with N. Sekhran (1998). *Loggers, donors and resource owners*. Policy that works for forest and people No 2. Papua New Guinea Country Study. James Mayers (Ed.). IIED, UK and NRI, PNG.

Food and Agriculture Organization (2009). *Papua New Guinea forestry outlook study*. Working Paper No. APFSOS IIWP/2009/19.

Food and Agriculture Organization (2010). *Global forest resource assessment*. Papua New Guinea country report. FRA2010/161.

Genia, J. (1991). *Foreword. National Forest Policy*. Hohola, PNG: Ministry of Forest.

Gowae, G & Hasagama, M. (2003). *Training needs analysis for timber marketing handbook*. Timber marketing component, PNG eco-forestry programme. Lae, PNG.

Hayes, A. (2010). *Eco-tourism the way forward for PNG*. Islands Business, Suva, Fiji.

ITS Global (2006). *The economic importance of the forestry industry to Papua New Guinea*. Report for Rimbunan Hijau (PNG) Group.

Medium Term Development Plan (MTDP) 2011-2015 (2010). Waigani, NCD. PNG: Department of National Planning and Monitoring.

Medium Term Development Strategies (MTDS) 2005-2010 (2005). Port Moresby, PNG: Department of National Planning and Monitoring.

Melnick, D., McNeely,J., Navaro, Y.K., Schmidt-Traub, G. & Sears, R.R. (2005). *Environment and human well-being: a practical strategy.* Earth Scan, London, UK: UN Millennium Project. Task Force on Environmental Sustainability.

Overseas Development Studies (ODI) (2006). *Papua New Guinea forest studies. Part one*. London, UK.

PNG Development Strategic Plan (PNGDSP) 2010-2030 (2009). Waigani, NCD. PNG: Department of National Planning and Monitoring.

PNG Forest Authority (PNGFA) (2007-2010). PNG Forest Authority-Timber Royalty Payments Reports. Hohola, Port Moresby. PNG.

PNG Forest Authority (PNGFA) (2008). *PNG Forest Authority 2008 annual Report*. Hohola, Port Moresby. PNG.

PNG Forest Authority (PNGFA) (2009). *PNG Forest Authority 2009 annual report*. Hohola, Port Moresby, PNG.

PNG Forest Authority (PNGFA) (2009). *National forestry development guidelines*. Ministry of Forestry. Port Moresby, PNG. 36p.

PNG Forest Authority (PNGFA) (2010a). *Strategies for downstream processing of forest products in PNG*. Hohola, Port Moresby. PNG.

PNG Forest Authority (PNGFA) (2010b). *Strategies for deforestation in PNG (Draft)*. Hohola, Port Moresby, PNG.

PNG Vision 2050 (2009) *Papua New Guinea vision 2050*. Waigani, Port Moresby, PNG: National Strategic Plan Taskforce.

Review Team (RT) (2004). *Towards sustainable timber production – A review of existing projects.* Final report prepared for the Government of Papua New Guinea and its Inter-Agency Forestry Review Committee.

Saunders, J.C. (1993). *Forest resources of Papua New Guinea*. Explanatory Notes. PNGRIS Publication No. 2.

Shearman, P., Bryan, J., Ash, J., Hunnam, P., Mackey, B. & Lokes, B. (2008). *The state of the forests Papua New Guinea – Mapping the extent and condition of forest cover and measuring the drivers of forest change of the period 1972-2002.* Port Moresby, PNG: University of Papua New Guinea.

IX

Assessment of the Contribution of Forestry to Poverty Alleviation in the Philippines

Antonio P. Carandang*

Introduction

The forestry sector is the centerpiece of the country's natural resource base and ecosystems. Although the sector's productivity is declining, its contribution to the economy in terms of gross value added, export revenues, employment and full-time job creation, and the provision of biomass fuels, are still significant. Its continued development and that of the environmental sector is a pre-requisite to a sustained growth in agriculture and other industries. However, the sector continues to reel from many threats to forest resources due to the tremendous pressure from an increasing population in search of land to till and forest resources to use resulting in the loss of vital watershed functions and biodiversity in areas affected by human activities. Despite the constraints besetting the sector, forestry in the Philippines still has considerable potentials for the development of the country—economically and ecologically. One is the potential of putting all forest areas under appropriate forest management systems that seek to obtain optimum economic and environmental benefits for forest communities, other stakeholders, and society in general (Revised Master Plan for Forestry Development 2003).

Historically, the forest is an important sector of the economy. Data of the National Statistical Coordination Board (NSCB) showed that the sector contributed 2.4% to the gross national product (GNP) in 1980. This contribution steadily declined to 0.07% in 2006. However, the total contribution of forests to the economy of the country is still largely underestimated. Forest helps cushion the impacts of poverty as it absorbs much of the poor people by providing venues for both formal and informal settlements as well as livelihood sources for most of them.

The Forest Sector Situation

Forestry statistics

Historical records show that in 1575, the country then had an estimated forest area of around 27.5 million ha, around 91.67% of the total land area of around 30 million ha. As shown in Table IX.1, through the years, the country's forest cover has been inversely proportional with the total population. The estimated population of the Philippines in 1575 was only around 160,000. In the early 1920s, the estimated population was around 10.9 million with a total forest area of about 63%. In 2005, the total population was almost 88 million while the total forest area was reduced to only around 24% (7.2 million ha).

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Table IX.1. Philippine forest cover and estimated population

Year	Forest cover (million ha)*	% of total area	Population**
1575	27.5	91.67	160,000
1863	20.9	69.67	4,452,544
1920	18.9	63.00	10,855,833
1934	17.8	59.33	14,646,495
1970	10.9	36.33	36,684,486
1980	7.4	24.67	48.098.460
1990	6.7	22.33	60,703,206
2005	7.2	24.00	87,857,470

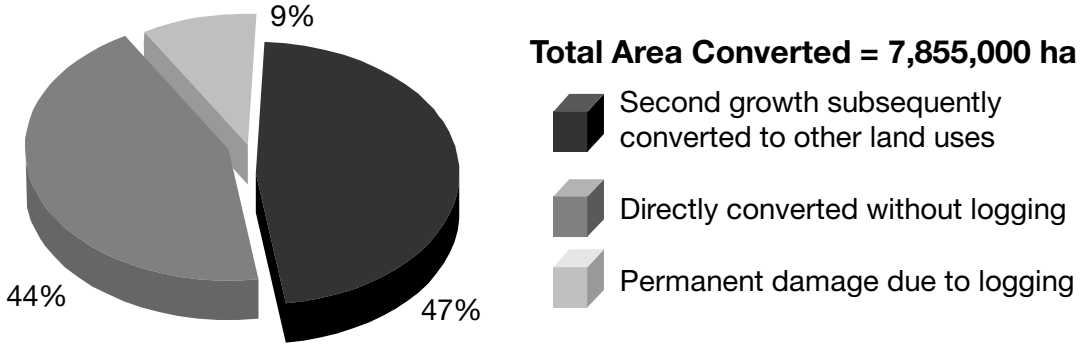
*Note: * RMPFD 2003, 2005 Forest cover data based on PFS 2006.*
*** NSCB 2010. 1575 data estimated from different sources.*

Following the colonization of the country by the United States in 1898, the American Congress enacted the first Forest Act in 1904 (Chandrasekhran 2003) that was to form the basis of forestry laws until 1975. The Bureau of Forestry was established during this period, and the mechanization of logging was introduced. The tenure system where private entities leased forests and operated forest businesses started with a systematic assessment and recording of forest resources. In 1934, a national forestry map was drawn when the country had around 17.8 ha of forests (Bureau of Forestry 1934) and the population was around 15 million people.

Estimates of deforestation rate over the years vary. Between 1948 and 1957, a loss of around 221,300 ha of forests per year was recorded at a rate of 1.56% annual loss (Kummer and Turner 1992). The National Economic Council estimated the forest loss between 1957 and 1969 at 226,200 ha per year or a 1.91% annual rate. As also reported by Kummer and Turner, later estimates from the Forest Management Bureau (FMB) of the Department of Environment and Natural Resources (DENR) showed a 2.14% decrease in forest cover between 1969 and 1976. Other estimates by the Forestry Development Center (FDC) between 1980 and 1987 showed a loss of 157,000 ha annually at 2.17%. In a World Bank study, Carandang (2008) estimated that the country lost around 7.9 million ha of forests between 1935 and 2003 (Figure IX.1). One of the major reasons cited is the conversion of logged over areas into other land uses.

In 1996, Philippine forest statistics showed the lowest forest cover at 5.6 million ha. In 2003, the official forestry statistics gave a higher estimate of around 7.2 million ha of forests. Forest cover in the country increased with the new international definition of forest adopted from the Food and Agriculture Organization (FAO). This increase is also attributed to natural regeneration and plantings, in both public and private lands and the addition of the category of other wooded lands, indicating that trees are growing on lands previously under pasture, grasslands, and agriculture, either by natural regeneration or planting. Ninety-one percent (91%) of this forest is in public forestlands while 9% is in alienable or disposable (A&D) lands.

Figure IX.1. Forest conversion (1935-2003)



Basic forest policies

Current forest policies in the Philippines trace their roots to the Forest Act of 7 May 1904. It was the primary basis of all forestry policies and operations until May 19, 1975, when Presidential Decree (PD) No. 705 known as the Revised Forestry Code of the Philippines was issued, formally organizing the Bureau of Forest Development (BFD) as the main regulatory body in forest management and utilization. The basic orientation of this policy is industrial forestry with significant emphasis on corporate approach to forest utilization and wood processing. This law also provided that areas 18% and above in slope are to be classified as forest lands that affected indigenous peoples and upland communities on their rights on lands and forests. On 10 June 1987, Executive Order (EO) No. 192 known as the Reorganization Act of the DENR created, among others, the FMB which integrated and absorbed the powers and functions of the BFD and the Wood Industry Development Authority, except those line functions and powers which were transferred to the regional field offices.

In the 1980s to 1990s, forest management shifted to people-oriented approaches promoting community-based forest management (CBFM) that made the term "paradigm shift" very popular. In July 1995, EO 263 was issued adopting CBFM as the national strategy to ensure the sustainable development of the country's forestland resources. The CBFM program seeks to engage local people in forest management with the ultimate purpose of alleviating poverty in target upland areas. A landmark legislation was passed in 1997, Republic Act (RA) 8371 or the Indigenous Peoples Rights Act (IPRA), recognizing, protecting and promoting the rights of indigenous cultural communities/indigenous peoples and creating the National Commission on Indigenous Peoples (NCIP). This afforded reforms on land tenure and ownership on ancestral domains, providing titles to ancestral lands and ancestral domains in forestlands.

Forest management in the Philippines

The Department of Environment and Natural Resources is the primary government agency that is in charge of managing natural resources in the country. It has the mandate to assign forest areas to other entities for management and utilization purposes. Table IX.2 shows the different tenurial instruments issued by the government to qualified entities, the biggest chunk of which is the certificate of ancestral domains title (CADT) and other ancestral land tenures comprising around 4.1 million ha. The corporate sector holds around 1.5 million ha through timber license agreements (TLAs) and integrated forest management agreements (IFMAs). A substantial portion of forest areas was subsumed under National Integrated Protected Area System (NIPAS) areas that include national parks and other protected areas covering around 4 million ha. Considered under state tenure, extraction of resources in these areas is more restricted, which has profound impacts on the livelihood of communities living in or near protected areas.

Table IX.2. Forest tenurial instruments

Tenurial Instruments	Number	Area (in ha)
Community-Based Forest Management Agreements (CBFMA)	1,781	1,622,129
Timber License Agreement	15	691,019
Integrated Forest Management Agreement (IFMA)/Industrial Tree Plantation Lease Agreement (ITPLA)	153	770,719
Socialized Industrial Forest Management Agreements (SIFMA)	1,803	34,743
Private Forest Development Agreements	91	4,992
Forest Land Grazing Management Agreements (FLGMA)	395	111,005
Tree Farm Leases (TFL)	127	15,651
Agroforestry Farm Leases (AFL)	71	84,343
Certificate of Ancestral Domains Title (CADT), CALC/CALT/CADC		4,086,271
State Tenure (NIPAS Areas)*		4,000,000
TOTAL	**4,436**	**11,420,872**
Total Forest Areas		15,855,000
Open Access Areas		4,434,128

Philippine Forestry Statistics, 2006
*Note: * Areas under State tenure estimated by Guiang, 2008.*

Livelihood and poverty context in the forests

It has been observed that in areas where forests are still substantial and forest resources abound, poverty incidence tends to be higher. Family income in these areas usually falls below the poverty thresholds as forests can only provide subsistence livelihoods, especially in isolated areas. However, there are unaccounted incomes received by upland households for free like fuelwood, vegetables from their gardens, water from springs, land rentals and a host of other goods and services that constitute a large part of household consumption that are usually underestimated in their household income surveys

There are different livelihood activities in the forests that the people are engaged in. Many forest dwellers do kaingin (swidden) and plant agricultural crops in areas they occupy. They gather and utilize forest products for household consumption. There is not much issue about this as this is allowed especially for the indigenous peoples but, legally, the gathering of any forest product without authorization from the government is a punishable act (PD 705). Some also have ventured in illegal commercial forest products extraction for sale. The common products that are gathered and sold commercially whether legally or illegally include timber, rattan, bamboo, resins, honey, fuelwood, and charcoal. Many upland community members also process some raw materials into handicrafts, novelty and decorative items and semi-finished products to get higher value.

Deforestation and poverty

Deforestation is the process of the removal of natural forest vegetation and eventual conversion of originally forested areas into non-forest uses. One of the major drivers of deforestation is forest conversion to upland agriculture. Forests have been cut down to clear lands for growing agricultural crops. In 1996, FAO estimated that 60-70% of tropical forest conversion was due to permanent or short-fallow agriculture (Tenorio 1999 as cited by Bugayong and Peralta 2006). The study by Fernandez et. al. on the status of cancelled and expired TLAs found that in 27 out of 32 cancelled or expired TLAs surveyed, these areas were destroyed in varying degrees 5 to 10 years after cancellation or expiration. Apparently, the displaced workers and adjacent community members moved in to the “open access” forest areas and occupied them for farming.

Logging is also a primary driver of deforestation in an indirect way. In Balangue’s study (1991) 15% of dipterocarp forests in the country was permanently lost due to peripheral logging activities, particularly, allocation of forest areas for road building, logging camps, settlements of workers and cultivation of some parts of the forests for the production of food for these workers and their dependents. Moreover, logging also contributed much to subsequent destruction of second growth forests as it provided access to forests and brought along plenty of people in their operations. When logging stopped, many of the workers and their relatives opened up and converted forest lands into agricultural and agroforestry farms.

Mining for mineral resources entails clearing of forests (mostly culled forests where soil is lateritic) and thus adds to the problems of deforestation. Coal mining, for example, entails stripping of the topsoil to recover the minerals beneath. This happened in the Bagacay mines in Samar where large tracts of forest areas have been left deforested until now, long after the mining operators left the area. This caused suffering to communities downstream as they lost some of their livelihood sources that are dependent on the river.

In some grazing practices, forests are cut down and burned to create land for grazing cattle. Once burning is repeatedly done, the sturdiest grass (Imperata sp) invades the area, which regressively becomes the climax vegetation.

The impact of deforestation is now felt adversely in many areas. Coupled with erratic rainfall patterns in some areas where in a few hours the volume of rainfall exceeds normal levels, mountain slips, landslides, flash floods, and massive soil erosion are now common occurrences in many upland areas. These calamities continue to occur resulting in untold miseries and sufferings to people, further aggravating the massive poverty in the countryside and perpetuating the never-ending cycle of poverty and environmental degradation.

Population in Relation to Forests

The Philippine uplands are characterized by a steady expanding population coming from both the natural growth of local population and in-migration from the lowlands. The upland population in the country has phenomenally increased from 5.8 million in 1950 to almost 17.8 million by 1990 (Serrano et. al. 2001). With an estimated current upland population of 24 million, the average annual growth rate is over 3% per year. On the other hand, cultivated areas in the uplands accounted for less than 10% of the country's total area in 1960 (582,000 ha), compared to over 30% in 1987 (>3,090,000 ha). In the 1980s, close to 60% of the increase in upland farming occurred in logged-over areas with slopes between 18-30%, degraded grasslands, and shrub lands, which were unsustainable for cultivation (World Bank 1989 as cited by Serrano, et. al. 2001).

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Juanito Saday and his family lead a hard life, living off on the coconut and some vegetables they grow on the farm that they established on a logged over area.

As also noted earlier in this report, in regions with high forest cover have low population densities and likewise, in areas where forests are still substantial, poverty incidence is higher. The provinces that have intact forests like Quirino, Palawan, Eastern Samar, Western Samar, and Agusan del Sur are less populated with only around 50 people per sq km. On the other hand, provinces with a high population density like those in Central Luzon, Southern Luzon, and Central Visayas regions have less or insignificant forest cover.

With respect to forest per capita in the ASEAN Region in 2005, the Philippines has the lowest ratio at 0.09 ha of forest per person (FAO-GFRA 2005) while Lao PDR has the highest ratio at 2.73 ha per person. The average for the ASEAN region is 0.36 ha per capita. A reported increase in forest cover in the Philippines in 2010 (FAO-GFRA 2010) did not improve the per capita forest in the country that slightly dipped to 0.08 due to a further increase in the population growth.

Upland populations comprise indigenous peoples and lowland migrants, with intermarriages among them over the years. These migrants have introduced more intensive cultivation and cropping systems in the upland areas that increased production. In the Philippines, indigenous peoples consist of some 100 distinct tribal groups, numbering around 14-17 million people (UNDP 2010). They invoke ancestral rights to the forestlands and coastal areas they have occupied or managed for generations under IPRA. Many have traditionally practiced long-rotation swidden agriculture, locally called kaingin, with fallowing.

Poverty Situation

The poverty threshold, or poverty line, is the minimum level of income deemed necessary to achieve an adequate standard of living in a given locality. It is the level of income that a household must obtain annually so that it can adequately provide the basic needs of its members in terms of food, clothing,

and basic services like health and education. Poverty is also multidimensional and is appreciated geographically through the Human Development Index (HDI) which summarizes a composite index of life expectancy, adult literacy rate, combined primary, secondary, and tertiary gross enrolment ratio and GDP per capita, among others. The country improved its HDI rating from 0.735 in 1995 to 0.753 in 2002, or an increase of 2.4% (MTPDP 2004-2010). Among the top five provinces with high HDI in 2000 are Bulacan (0.76), Bataan (0.746), Cavite (0.735), Rizal (0.733), and Batanes (0.717) while Sulu (0.351), Tawi-tawi (0.396), Basilan (0.425), Ifugao (0.461), and Maguindanao (0.461) are the five provinces with the least HDI.

According to Virola (2009), a Filipino needed Philippine peso (PhP) 974 (US$ 21) in 2009 to meet monthly food needs or PhP 1,403 (US$ 32) per month to stay out of poverty. Thus, a family of five needed PhP 7,017 (US$ 160) monthly or PhP 84,200 (US$ 1,914) to stay out of the poverty line (exchange rate of US$1 = PhP44). Around a fifth (20.9%) of the families in the Philippines lived below this poverty threshold level in 2009, translating to around 3.9 million families.

There is not much of a difference in the country's poverty incidence in 2003, 2006, and 2009 at 20%, 21.1%, and 20.9%, respectively. However, these recent estimates are lower than the 1991 statistics where the percentage poverty incidence among the families was at a high of 28.3%. Subsistence incidence also improved slightly, from 11.7% in 2006 to 10.8% in 2009, or one Filipino per 100 was lifted out of food poverty for the period (Virola 2011). Among the regions with high poverty incidence among families (with 30% and higher) in 2009 are as follows: Region V (36%), Region VII (30.2%), Region VIII (33.2%), Region IX (36.6%), Region X (32.8%, Caraga (39.8%), and ARMM (38.1%). Caraga and ARMM consistently posted the highest poverty incidence among families in 2006 and 2009.

Regions with still high forest areas have a low population density and high poverty incidence. Region IV-B (Mimaropa) for example has the highest per capita forest cover (PCFC) in the country at 0.48 per ha per person but its poverty incidence is also high at 26.7% (Table IX.3). Caraga region (in northeastern Mindanao) has the highest poverty incidence at 39.8% but it has the second highest PCFC at 0.23%. On the other hand, Region IV-A (Calabarzon) has the second lowest poverty incidence and lowest PCFC (0.02%) outside of NCR (National Capital Region). Another interesting region is Eastern Samar that has the fourth highest PCFC, but ranks fifth in poverty incidence.

The common denominators among areas with high population and low PCFC but consequently, low poverty incidences, are urbanization, industrialization, and more employment opportunities. Nevertheless, these regions depend much on the resources and production from rural areas, particularly agriculture, fisheries, and forestry. In regions with high poverty incidence, forests constitute a significant resource that can contribute to reducing poverty if they can be harnessed effectively. The prevailing conditions in these areas like economic isolation, low or no industrialization, low levels of education, poor integration with commercial markets, and producing primary goods with little value-added are factors that reinforce poverty.

Table IX.3. Regional summary of population, forests and poverty incidence

Region	Total land area (sq km)	2007 Population	Forest area 2003 (ha)	Population density (Population/sq km)	Forest per capita (ha)	Poverty incidence among families (%)
Philippines	308,993.59	88,574,614	7,159,280	287	0.08	20.9
NCR - National Capital Region (Metro Manila)	633.11	11,553,427	2,820	18,249	0.00	2.6
CAR - Cordillera Administrative Region	19,422.03	1,520,743	672,360	78	0.44	17.1
Region I (Ilocos Region)	13,012.06	4,545,906	189,800	349	0.04	17.8
Region II (Cagayan Valley)	28,228.83	3,051,487	1,149,860	108	0.38	14.5
Region III (Central Luzon)	22,014.63	9,720,982	589,500	442	0.06	12.0

Region IV-A (Calabarzon)	16,873.31	11,743,110	289,660	696	0.02	10.3
Region IV-B (Mimaropa)	29,620.87	2,559,791	1,193,830	86	0.47	27.6
Region V (Bicol)	18,155.82	5,109,798	156,490	281	0.03	36.0
Region VI (Western Visayas)	20,794.18	6,843,643	256,640	329	0.04	23.8
Region VII (Central Visayas)	15,885.97	6,398,628	74,840	403	0.01	30.2
Region VIII (Eastern Visayas)	23,251.10	3,912,936	519,860	168	0.13	33.2
Region IX (Zamboanga Peninsula)	17,046.64	3,230,094	182,190	189	0.06	36.6
Region X (Northern Mindanao)	20,496.02	3,952,437	337,490	193	0.09	32.8
Region XI (Davao Region)	20,357.42	4,156,653	421,030	204	0.10	25.6
Region XII (Soccsksargen)	20,713.09	3,829,081	349,250	185	0.09	28.1
Region XIII (Caraga)	21,478.35	2,293,480	523,310	107	0.23	39.8
ARMM - Autonomous Region in Muslim Mindanao	21,065.30	4,120,795	250,350	196	0.06	38.1

Sources: NSO 2010, NSCB 2010, NAMRIA 2005.

Poverty Reduction and Forestry in National Policy

National Poverty Reduction Strategy

Under the 2011-2016 Medium-term Philippine Development Plan (MTPDP) (NEDA 2011), the government aims to reduce poverty incidence in the Philippines by 10% annually until the president's term ends in 2016. The key targets are poverty reduction (from 33.1% in 1991 to 16.6% in 2015), and employment creation (one million jobs annually) and annual average labor force growth of 2.75%. This goal is accompanied by the government's aim to promote inclusive growth by increasing gross domestic product (GDP) growth to around 7-8% every year, while increasing per capita income to US$ 3,000 by 2016 and US$ 5,000 in two decades. The National Economic Development Authority (NEDA) presented the summary of the Plan's 10 chapters focusing on the following five crosscutting key strategies: (a) boosting competitiveness to generate employment; (b) improving access to financing; (c) investing massively in physical infrastructure; (d) promoting transparent and responsive governance; and (e) developing human resources through improved social services.

In the past, the government implemented various poverty reduction programs. The Social Reform and Poverty Alleviation Act (RA 8425) was passed in 1997 primarily to reduce poverty by redistributing economic resources and creating institutions to implement the Social Reform Agenda. This law established the National Anti-Poverty Commission to serve as a coordinating and advisory body. Its responsibilities are to support and coordinate the SRA into the development plans at the national, regional, and local levels, to strengthen currently effective initiatives and avoid duplication of efforts by different agencies.

Under the previous MTPDP 2004-2010, the government implemented major policy and institutional reforms and key programs aimed at protecting and empowering the poor and the vulnerable groups. To empower the poor, it implemented a program called the Kapit-Bisig Laban sa Kahirapan. The objectives of this strategy that are related to poverty alleviation in the uplands are improving access to social

services and quality of human development and acceleration of ancestral domain reforms. Significant achievements were made in the area of 'convergent' and integrated delivery of social services. The sustained commitment of local government units (LGUs), cooperation and assistance of national government agencies and infusion of external assistance made the achievements more meaningful.

In 2008, the Arroyo administration started to implement the Conditional Cash Transfer (CCT) nationwide as part of the government's poverty alleviation program, after piloting this in four provinces in 2007. This program is perceived as an effective tool for poverty alleviation as it was highly successful in Latin American countries, and is increasingly perceived as a magic bullet for poverty reduction. In 2009, the CCT was implemented in 277 municipalities: 36.5% in Luzon, 22.4% in Visayas, and 41.1% in Mindanao (Virola 2011). The CCT was also considered by the current Aquino administration as a key to poverty alleviation as it earmarked PhP 23 billion in 2011 while the CCT budget for 2012 was increased to PhP 39 billion (Business World Online 14 August 2011). In a joint report of the World Bank (WB) and Australian Agency for International Development, the CCT program of the government was estimated to raise the annual income of indigent families by 12.6%, thus reducing poverty incidence by 6.2% (The Philippine Star 2011).

Forestry policies

Section 2 of the 1987 Philippine Constitution reiterates the State's ownership of "all lands of the public domain and all other natural resources following the Regalian Doctrine." The State, as the mandated owner, has full control and supervision over the exploitation of such resources and allows active participation of other entities through joint venture, co-production and production sharing.

Until now, PD 705 (with amendments) remains as the basis of forest policy in the Philippines. The Code adopted the multiple use of forest lands and encouragement and rationalization of processing plants, as basic policies. The policy implementation strategy as propounded are based on: management of productive forests; reforestation; stabilization of upland communities; and protection of critical watersheds. The code does not carry the economic provisions espoused by the 1987 Constitution and is now deemed obsolete. Nevertheless, the policy on providing multiple uses of forest lands where agroforestry inside social forestry areas was allowed provided great opportunities for upland communities to stabilize on forest zones without the usual constant threat of eviction. Among the other major policies that can have positive or negative impacts on forests and poverty in the uplands are as follows:

RA 7586 – NIPAS Act

Effectively, the NIPAS Act limited exploitative activities in protected areas, most of which were previously forest lands. Under Section 20 of the Act, many traditional utilization activities like hunting, collection of products or mere possession of any plants or animals or products derived therefrom, without a permit from the Protected Area Management Board (PAMB), are prohibited. Under Section 13, however, ancestral lands and customary rights and interest arising from occupancy of indigenous peoples in protected areas are accorded due recognition. With respect to other migrant communities that depend on the resources within a protected area, a community-based program is also allowed for them to continue their possession and use of the land under the close supervision of the DENR through the protected area community-based resource management agreement (PCBRMA). One of the poverty alleviation contributions of the protected areas under the NIPAS Act is the opportunity of applying payment for environmental services that could provide sustainable sources of income to upland communities.

RA 7942 – Mining Act

Many mining areas are located within forest lands and therefore affect upland communities including indigenous peoples. Local communities have no direct income share from mining activities except for the royalty payments to indigenous peoples by the mining firms. Nevertheless, the government share in the Mineral Production Sharing Agreement (Sec. 80 of Mining Act) that includes the excise tax on

mineral products is supposed to be plowed back to social services. Under Section 229 of the Local Government Code (RA 7160), the LGU with jurisdiction over the resources receives 40% share from gross revenues collected in the LGU jurisdiction that then can be directly shared with local people through social welfare and services in the LGU. There are however issues of equity with respect to indigenous peoples' share from the gross income of the mining companies and how benefits are shared among the members.

RA 7381 – IPRA

IPRA is a landmark legislation in 1997 that recognizes, protects and promotes the rights of indigenous cultural communities/indigenous peoples. Under Section 2.2, the State has the inherent duty to protect the rights of indigenous cultural communities /indigenous peoples to their ancestral domains to ensure their economic, social and cultural well being. IPRA recognizes the applicability of customary laws governing property rights or relations in determining the ownership and extent of ancestral domains. With this law, the indigenous peoples are assured of protection from the government with respect to managing their lands for their economic, environmental and cultural well-being.

RA 9729 – Climate Change Act (CCA) – 2009

The Climate Change Act is intended to mainstream climate change into government policy formulation and to establish the framework strategy and program on climate change. LGUs are expressly authorized to appropriate and use a portion from its internal revenue allotment (IRA) to implement local climate change adaptation plans. Participation of upland communities in the crafting and implementation of local climate change action plans and in any planning and implementation activities related to reduced emissions from deforestation and forest degradation (REDD plus) strategies is necessary. Based on the implementing orders of CCA (EO 881), the DENR acts as the operational implementor of REDD plus strategies. This is relevant to forest communities as the DENR will manage and utilize climate change funds obtained from UN and other international organizations, which can be an opportunity for the department to operationalize poverty reduction strategies as espoused in the Revised Master Plan for Forestry Development (RMPFD) of 2003 and the MTPDP 2011-2016.

The community based forest management program (CBFM)

Of the different government programs targeting poverty alleviation in forest areas, CBFM has the most profound impact. In 1995, the CBFM strategy was adopted by the government through EO 263. The program promotes the active and productive partnership between the government and forest communities in developing, rehabilitating, and managing vast tracts of forest areas. It is anchored on the thesis that if government seriously addressed the poverty problems in the upland communities, then these same communities will themselves protect and manage the forests. This is captured in the CBFM slogan, "People first, sustainable forestry will follow".

In 2004, EO 318 on "Promoting Sustainable Forest Management in the Philippines" was issued by President Arroyo. Embodied in this order is the holistic, sustainable, and integrated development of forestry resources and the adoption of CBFM as the primary strategy in all forest conservation and development and related activities, including joint ventures, production sharing and co-production.

Through CBFM, the government effectively shifted from corporate forest management to community forest management that allowed the holders to sustainably harvest timber from the forests. However, the series of national cancellations of resource use permits by three DENR Secretaries not only adversely affected the operation of and benefits from the enterprise but also ran counter to the principles of SmartWood Certification initiated by the government (Pulhin and Ramirez 2004). As pointed out by a people's organization (PO) leader, "Each suspension was followed by a downgrade of AAC (annual allowable cut) against the approved volume by the DENR, which affects our production output. This, in turn, limits our capacity to implement forest development targets and generate livelihood projects. In short, less volume means less benefit to the environment and the people."

CBFM is still recognized as a major program of the DENR. It is the approach being pushed for in the proposed Sustainable Forest Management (SFM) bills in both houses of Congress. It is also one of the major vehicles that would carry the implementation of the National Greening Program (NGP) through EO 26. NGP is also a poverty alleviation program in forestry as it is envisioned to promote employment in the uplands and as a means of addressing wood shortage in the future by providing the industry volumes of quality timber materials for its sustained operations.

Prior to NGP, President Aquino issued in February 2011 EO 23 declaring a "Moratorium on the Cutting and Harvesting of Timber in the Natural and Residual Forests and Creating the Anti-Illegal Logging Task Force" in response to the series of flooding that happened in the country in 2010. The DENR was prohibited from issuing logging contracts/agreements in all natural and residual forests, such as IFMA, SIFMA, CBFM agreements and other agreements/contracts with logging components in natural and residual forests. The DENR is likewise prohibited from issuing/renewing tree cutting permits in all natural and residual forests nationwide, except for clearing of road right-of-way by the Department of Public Works and Highways, site preparation for tree plantations, silvicultural treatment and similar activities. Nevertheless, the policy allows tree cutting associated with cultural practices pursuant to the IPRA subject to strict compliance with existing guidelines of the DENR.

EO 23 has profound effects in many forestry operations including existing CBFMAs. This has effectively put a stop to many community based timber enterprises. Many jobs were lost because of this policy as a number of wood processing plants were ordered to close due to some stringent requirements for operations such as five-year assurance of wood supply and more stringent permitting requirements.

Other Poverty Reduction Programs

Community Livelihood Assistance and Special Project (CLASP)

Among the pro-poor programs of the DENR, CLASP is intended for organizations engaged in environment-friendly business ventures. It began in November 2001, with DENR Special Order No. 2001-660 creating the Technical Working Committee charged to develop and implement the department's contribution to the national program on poverty alleviation.

CLASP is the response of the DENR to the President's call for poverty reduction and wealth creation in the Philippines. CLASP aimed to help alleviate poverty and improve the quality of life in resource-dependent communities in various areas in the Philippines through appropriate and environmentally sound technologies, information, and other resources that will lead to sustainable economic, social, and ecological benefits for these communities.

Many upland livelihood systems (such as bamboo propagation and plantation development, goat production under forest plantation, production of charcoal briquettes, and rattan seedling production) that are being practiced by communities are eligible to obtain support from this project. These livelihood projects started under CLASP continue to provide income to the beneficiaries. As to the actual economic impact of the program, a thorough evaluation is yet to be conducted. Based on a DENR program assessment report (2005), the sustainability of CLASP projects is assessed to be anchored on the PO's capacity to operate the livelihood beyond the initial CLASP funding. Here, it is important for the organization to have a well-established structure, commitment and capacity for implementing and maintaining a livelihood enterprise. Not all CLASP projects were structured to ensure sustainability.

Nevertheless, there are some documented cases of CLASP success like the bamboo plantation and development program in the city of San Fernando. The project is remarkably gaining success based on the results of periodic evaluation and monitoring of the project (Cardona, personal communication, 2011). At present, the 20-hectare bamboo plantation is fully established and is expected to provide the bamboo raw materials needed by the POs. Another success story is exemplified by the Nagkihiusang Kristohanong Mag-Uuma sa Maputi-Multi-Purpose Cooperative (NAKRISMA-MPC) in San Isidro, Davao Oriental. It was supported through CLASP in managing natural stands of romblon (Pandanus

sp) and developing new plantations. The Department of Trade and Industry and the DENR assisted the PO members in the production, processing, and marketing of romblon and other products (e.g. bags, mats, nito plates, bayong, pouch bags, bag pack, food cover, fruit trays and wall decor). They were able to link the PO with a variety of market outlets such as local pasalubong (gift) centers, direct buyers, and trade fairs within the province.

Upland Development Program (UDP)

UDP was a reforestation and agroforestry program launched by the DENR in 2009 to create emergency employment and "green collar jobs" primarily to alleviate poverty in the uplands. Under the UDP, DENR intended to hire some 52,425 upland farmers "to plant forest and fruit tree seedlings, including high-value cash crops in 49,318 ha of upland areas and around 2,000 ha of mangrove areas" (GMA News, 2009 February 2). As the program was primarily intended to create immediate additional income and mitigate hunger within a very short time window for implementation and so many beneficiaries, it was bound to create confusion and impinge on the absorptive capacity of DENR field offices to move funds as fast as it could to comply with targets without sacrificing quality. With over 32,300 contracts awarded in the first year, the program created a monitoring nightmare. As it happened, the sustainability of development created by such kind of program is always short-lived. The program is now integrated in the current NGP of the DENR.

Past and Current Contribution of Forestry to Poverty Alleviation

Traditional Forestry/Subsistence Use of Forests

Forests contribute to the livelihood of around 24 million people based on a 2003 study of the University of the Philippines-Population Institute (Garcia 2005). Accordingly, Central Visayas topped all other regions in the country with the highest number of upland occupants at three million people occupying an area of 535,919 ha of land. Western Visayas followed with 2.5 million spread over 613,529 ha. Southern Tagalog, Southern Mindanao, and the Cordillera Administrative Region tied at number three, followed by the regions of Caraga, Bicol, Cagayan Valley, Eastern Visayas, Central Luzon, Northern Mindanao, Autonomous Region in Muslim Mindanao, Western Mindanao, and Central Mindanao. Ilocos Region has the lowest number of upland occupants at 300,000 people occupying 473,097 ha of land.

Around 80% of upland people live below the poverty threshold (Dugan 2000). A great percentage of this population consists of indigenous peoples and/or beneficiaries of the CBFM program who undeniably depend on the forests for their livelihood. Most of the indigenous peoples live in provinces where there are still forests. These are areas with recognized ancestral domains. In 2009, 138 certificate of ancestral domain titles were already approved by the NCIP. Most of the approved CADTs are in the Cordillera region, mostly for Kankana-ey and Ibaloi tribes covering around 265,798 ha, the biggest CADT area so far. The next region with the most number of approved CADTs is CARAGA with 18, mostly for Manobo and Mamanwa tribes covering an area of 71,260 ha. On the other hand, there are 222 approved Certificates of Ancestral Land Titles (CALT) covering an area of around 11,843 ha (NCIP 2009).

It may also be noted that many ancestral land areas are under ongoing applications. As noted earlier, ancestral domains are areas with still intact forests but with high poverty incidence among families. However, this land tenure or "land asset" reform which is equivalent to private land ownership is envisioned to provide great opportunity for the indigenous peoples to develop economically due to the vast resources that they alone have the right to dispose.

Among the traditional livelihood practices among the indigenous peoples and other forest dwellers are farming, non-wood forest products (NWFPs) gathering, fuelwood collection, and charcoal making.

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In many parts of the country, collectors can find only smaller-sized rattan in the forests owing to the lack of regulation on rattan harvesting over the years.

These provide livelihood sources to many forest dwellers but also in areas where access to urban centers is affordable. Illegal logging is also a subsistence livelihood activity to many upland people. A great part of the income from this activity goes to wealthy financiers. In the Cordillera region, wood carvings and other handicraft from wood and NWFPs are common livelihood sources. However, sustainability of raw materials for these trades is becoming a problem as resource renewal cannot cope with the rate of their extraction.

Allocation of Tenure Over Forest Resources (Community Forestry, Individual and Family Forestry)

CBFM is the main Philippine strategy for managing forest lands and resources. Under this program, communities are organized and provided tenure over portions of the forest lands on which they are dependent for livelihood. However, the government is unable to provide adequate financial assistance to POs to develop their areas except when the area is part of a foreign-assisted project. Even in cases where the projects were supported by foreign funds, the POs usually become inactive when the support ceases. But despite tenure reforms in the country's uplands espoused by CBFM, analysis shows that the anticipated impact on economic empowerment of CBFM beneficiaries was not realized on the ground (Pulhin et. al. 2008). This resulted from the combined effects of overly bureaucratic procedures and unstable policies especially on activities that are supposedly providing economic empowerment like timber utilization. Under CBFMA, the DENR allows investors to partner with the POs in the development of their areas. However, seldom do such investments take place. The CBFM areas therefore remain undeveloped and contribute few financial benefits to the community.

CBFM is still the national strategy to develop forest land resources. According to the CBFM Strategic Plan (2008-2017), the gains of CBFM can be attributed to the following: government policies recognizing communities and individuals as partners in development, communities and POs willing and able to become CBFM forest lands managers, availability of appropriate technology (e.g., agroforestry), and effective channels for technology transfer (e.g., farmer-to-farmer training and cross site visits).

The CBFM projects in the Philippines were supported by several multilateral funding institutions and international banks such as the Japan Bank for International Cooperation (JBIC), the Asian Development Bank (ADB), the World Bank (WB), the International Tropical Timber Organization (ITTO), and other international NGOs. JBIC, for example, supported 24 big watershed CBFM projects and 12 mangrove development subprojects under the Forestry Sector Project II (FSP II, a US$ 120 million Sectoral Loan package) between 1996-2003 while, under the same loan umbrella, ADB funded other CBFM sites through an equivalent package of US$ 120 million.

While CBFM funds abounded during those times, only remnants of the POs supported are still active. Invariably, many CBFM POs became inactive a few years after termination of funding support. Currently, only few CBFM projects are able to get support from international funding, e.g., the GIZ (German Development Service)-supported CBFM sites in Southern Leyte, and those supported by DENR through the Global Environmental Facility (GEF) funding in Ligawasan Marsh and Bago Watershed. In recent years, there was no substantial increase in the operational budget for CBFM activities. From 2002 to 2005, the average annual national budget directly associated with forestry was only 0.22% of the Philippine budget (only 0.01% for CBFM). Within DENR, the average forestry budget for the same period was about 32.23% and the CBFM budget was only 1.31% (CBFM Strategic Plan 2008-2016).

In an ITTO supported project in Nueva Vizcaya, Acosta (2000) noted that the experience shows that local people tended to maintain their efforts in community-based forestry projects when four necessary conditions were satisfied: (i) secure land tenure; (ii) capacity-building through training; (iii) ready access to capital for forestry enterprises; (iv) good access to markets for their products. It is also critical that government support must be sustained. The continued presence of DENR personnel in CBFM project sites encourages the POs to strive more in actively continuing their support and interest in their activities. This happened in the case of SAUG watershed subproject (Region 11) and Maasin Watershed Subprojects (Region 6), both of which were JBIC funded projects. Continuing extension services and the provision of infrastructure and other welfare services are vital for communities to sustain their role as resource managers.

Table IX.4. Community-based forest management agreement (Area in hectare)

Region	No of CBFMAs issued	Tenured area	Beneficiaries	
			No of households	No. of people's organizations
Philippines	1,790	1,633,891	322,248	1,790
CAR	87	56,625	13,762	87
1	127	40,272	15,514	127
2	103	269,879	92,391	103
3	131	79,517	12,502	131
4-A	47	18,401	3,098	47
4-B	78	92,615	10,229	78
5	83	47,926	12,328	83
6	105	40,715	17,142	105
7	208	57,609	16,056	208
8	132	116,739	14,405	132
9	131	79,207	12,886	131
10	298	213,770	34,021	298
11	94	207,264	26,114	94
12	53	95,739	10,607	53
13	113	217,613	31,193	113

Source: Forest Management Bureau 2009.

Small-scale Commercial Forestry

Non-wood Forest Products (NWFPs)

Production of NWFPs has always been a major use of Philippine forests. Several NWFPs that have important commercial values abound in the forests, such as rattan, bamboo, resin and nipa shingles. These products play a major role in the survival of many upland communities. However, production of these products is declining, except for nipa shingles that has a stable production through time.

Forest-based communities, particularly indigenous peoples, are the primary collectors of NWFPs in the country. They are the formal managers in places where the right to manage the resources is granted (e.g. in CADTs, CBFMAs). DENR policy requires communities that apply for rights to harvest regulated NWFPs to conduct a NWFP resource inventory (at 5% sampling intensity) for Annual Allowable Cut calculation and issuance of resource use permit. The prescribed intensity of sampling entails costs that are unaffordable to forest communities, especially indigenous peoples, causing problems in their legal utilization of resources that are theirs in the first place. Further requirements include a reassessment (i.e. a re-inventory) every five years to monitor trends in NWFP resource abundance and population structure.

In a position paper submitted to DENR, the NTFP-Exchange Program stated that such monitoring, in theory, can generate data for rigorous hypothesis testing and can provide important scientific evidence. However, since the frequency of data collection is low, such exercise rarely provides any input to management (NTFP-EP 2010). Another problem with the resource inventory requirement is the limitations of inventory as a tool for monitoring the sustainability of many NWFP resources, especially those that are harvested non-destructively. For these resources, the more important issue is surely to determine the harvesting practices that will cause the least damage to the resource, and then ensuring that these practices are used and sustained. In September 2007, a policy forum on NWFP drew up different issues related to gathering, marketing, and sustaining NWFP resources, to wit: bureaucratic nature of getting permits, stringent and costly requirements, and irrelevant and outdated laws (e.g. DAO 04-1989, RA 7161), among others.

Bio-energy/Biofuels

The crisis in fossil oil fuel triggered many countries to think of alternative fuel that are renewable. Through Republic Act No. 9367 (Biofuels Act), forest lands were eyed as a source of biofuels. The DENR provided 375,000 ha of forest lands to PhilForest, a subsidiary of the Natural Resources Corporation of DENR, for the planting of jatropha for the production of biodiesel. Due to the unimpressive yield of earlier planted jatropha, interest in biofuel production from this plant waned or shifted to other crops. For over three years, the forest lands provided for this purpose were not fully utilized. Nevertheless, the forest lands are also being considered for the establishment of other biofuel producing plants like oil palm, cassava, and coconut.

Ecotourism

Ecotourism is now fast becoming an industry in the Philippines. Many proponents of ecotourism in forest lands capitalize on the beauty of forests to sell their services. Among the features/attractions of these ecotourism areas include forest trails, canopy walk, ziplines, environment learning centers, tree planting activities, and botanical theme parks. In Mount Kitanglad Natural Park, local indigenous peoples are hired as guides by local and foreign tourists who want to enjoy the natural beauty of the mountain. This provides an additional source of income to the villagers as well as inculcating respect for indigenous cultures. In Agusan Marsh, local people find business in catering to the needs of the tourists. In other words, ecotourism has a vast potential in providing local income through the many opportunities it offers to local communities.

Small-holder tree farms/private land tree plantations

Smallholder tree farming in upland areas are mostly under the tenure of Certificate of Stewardship Contract (CSC) which was popularized in the 1980s. This was seen as an economic empowerment program where farmers were encouraged to engage in the tree farming business. With the advent of CBFM, many CSC holders opted to join POs, retaining their individual property rights over the original CSC area. On the other hand, tree farming in private lands is popular in Mindanao, particularly in the Agusan del Sur area. Falcata, gmelina, and rubber are the most popular tree crops planted. Tree farming provides plenty of livelihood opportunities for local people, from seedling production to planting, maintenance, harvesting, and marketing activities that entail hiring of local labor. Even the communities dependent on traditional forestry benefit from employment in these tree farms as part time labor during peak labor seasons of maintenance and harvesting.

Industrial Forestry

The wood-based industry was once a pillar of the national economy contributing around 5% to the country's gross national product (GNP) in the 1970s through forest charges, export earnings, and generation of employment. Table IX.5 shows the country's GNP and gross value added (GVA) in forestry as well as the share of forestry to the GNP at constant prices. The GVA and percentage share of forestry in the GNP declined since the 1970s. The percentage share of forestry in GNP dropped from 2.11% in 1981-1985 to 0.83% in 1990, and further dropped to only 0.06 % in 2001-2005 at current prices. This decreasing importance of forestry as an economic sector in the economy as reflected in the GVA share is somehow due to the continued strong growth in other economic sectors and the shrinking recorded production in the sector, especially in the logging sector. From a total round log production of around 11 million cu m in the mid-1970s, total production shrunk to 1.4 million cu m in 2009 (FMB 2010).

Table IX.5. Gross national product (GNP) and gross value added (GVA)

Year	GNP	GVA in forestry	% share to GNP
2006	6,570,310	4,342	0.07
2001-2005	4,768,244	2,820	0.06
1996-2000	2,842,264	3,412	0.13
1991-1995	1,566,769	5,278	0.36
1986-1990	802,559	10,790	1.41
1981-1985	419,318	8,862	2.11
1979-1980	241,282	5,931	2.45

in forestry, 1979-2006 (at 2006 constant prices, in million pesos)
Coordination Board 2007.ical (in million pesos)oss Value Added hectare)ated s Source: National Statistical Coordination Board 2007.

In corporate forestry, there had been a steady decline on these types of tenure in terms of number and area as shown in Table IX.6. From 8.04 million ha covered in 1980, it went down to 1.02 million ha in 2009. The gradual decrease in the number of TLAs is the result of a provision in the 1987 Philippine Constitution that allowed only three modes of natural resources utilization, namely: joint venture, co-production, and production sharing with the government. The TLA is outside of these modes, hence, all expiring TLAs were not renewed and no new agreements were issued since 1987. There are only four remaining TLAs in 2009 and at present, no TLA is operating in secondary growth forests because of EO 23 that effectively prohibited logging in second growth natural forests.

EO 23 also has profound implications on the employment situation in the uplands, as IFMA areas are also affected. In the case study discussed in succeeding sections, there is a clamor from forest-based dependent communities to lift or modify this EO so as not to deny these communities of sustainable benefits from the harvesting privilege in "production residual forests." It is assumed that with IFMA holders strictly following the selective harvesting system, sustainability of resources management and utilization can be ensured, hence, employment from all IFMA holders' forest operations, together with the dependent downstream industries, can be secured.

Tree plantations from IFMA and small holder tree farms are the main source of timber in the country. In 2009, total recorded harvest in the country was 801,520 cu m, and 694,236 cu m (87%) of which came from forest plantations (FMB 2009). According to PWPA (2011), the private sector employs around 650,000 direct workers in the wood processing and furniture factories. The bulk of this employment is provided by industrial tree plantations.

The Socialized Integrated Forest Management Agreement (SIFMA) is a privilege granted to individuals for development and management of small forest areas of 10 ha up to 500 ha of forest lands into plantations. It provides for equitable access of qualified individuals to engage in forest production from their own private capital. But with the high costs of forest development, only a few moneyed individuals can avail of this SIFMA privilege. In 2009, there were about 1,813 SIFMA instruments issued covering an area of 36,079 ha (FMB 2010). The SIFMA program is worth revisiting in lieu of the national concern on poverty reduction.

Table IX.6. Timber license agreement (TLA), integrated forest management agreement/ industrial tree plantation lease agreement (IFMA/ITPLA), tree farm lease and agroforestry farm lease, 1980 – 2009 (000 ha)

Year	Philippines		TLA/ Wood Permits		IFMA/ ITPLA		Tree farm		Agroforestry farm	
	No	Area	No	Area	No	Area	No	Area	No	Area
2009	294	1,194	4	253	154	867	94	10	42	64
2005	418	1,644	18	825	178	713	142	17	80	89
2000	439	1,568	20	910	184	548	155	19	80	91
1995	501	2,253	41	1,600	248	538	128	18	84	97
1990	373	4,189	97	3,762	81	304	101	13	94	110
1985	476	7,001	165	6,594	81	291	129	17	101	99
1980	376	8,037	261	7,939	12	88	101	9	2	1

Source: FMB 2010.

Payments for Environmental Services, Carbon Payments

The recognition of both direct values (supplying timber and non-wood products, and recreation/ tourism opportunities) and indirect values (providing hydrological services, carbon sequestration and biodiversity) of forest ecosystems show the potential of PES and how communities can benefit from these services without extracting products from the forests. PES seeks to evolve and institutionalize a package of a compensation mechanism for the developers and protectors of forests (the sellers) that provide environmental services for the users (the buyers) of such environmental services. The PES markets that are in various stages of development so far can be categorized into the following:

a. compliance market like carbon forestry, water quality, and biodiversity offsets, among others, whose drivers include emission cap, international protocols, trade agreements, and government regulations;

b. voluntary markets like voluntary carbon forestry, voluntary watershed management payments, and voluntary biodiversity offsets, among others, whose drivers include corporate responsibility, private sector initiatives, and voluntary PES agreements between or among concerned watershed stakeholders; and

c. government-mediated PES projects like that in China, Mexico, and Danube whose drivers include internationally funded projects and government initiated PES.

In a study of Bennagen et. al (2006) that explored the potential of implementing PES in the Peñablanca Protected Landscape, the results revealed some important strengths and weaknesses along several implementation aspects. The economics study revealed that there is demand for watershed protection services by the different water users within the protected area of Peñablanca while the institutional

aspects show that while there are several legal bases that would support the establishment of PES in the Peñablanca Protected Landscape, the lack of proper institutional impetus prevents the initiative to take off. Moreover, the property rights of the majority of upland dwellers in the area are not well defined which may pose a problem. This is further complicated by the continuing influx of people into the upland areas and the absence of peoples' organizations. Likewise, there is potential for carbon sequestration projects in the two sites considering the presence of large degraded areas within that need rehabilitation.

Among the lessons on the poverty-and-environment nexus, the study showed that the poor upland dwellers residing within the Peñablanca Protected Landscape are much aware of the negative consequences of forest degradation caused by illegal logging and by their own unsustainable farming and forest use practices. Since the upland dwellers have no alternative but to exploit forest resources as farming is their main source of livelihood, exploring the non-traditional livelihood schemes like PES that can potentially compensate upland forest communities for the provision of watershed protection services, is worth initiating.

Balangue (2008), in his study on "Equitable Payment for Watershed Services (EPWS)" in Mt. Isarog National Park, defined PES as a market-based mechanism where beneficiaries (buyers) of watershed services are willing to pay for watershed service providers (sellers) for the restoration of degraded and sustainable management of watersheds to produce such services. Thus, evolving a formal market system agreed upon by both buyers and sellers to trade environmental services is a necessary condition for PES to take place. In such a study, equitability is defined as payment according to capacity and willingness to pay for such services based on quantity of watershed services consumed or demanded. In his conclusion, Balangue surmised that the EPWS has high potential for generating income and investments for farmers in the uplands. He also projected that the total value of watershed services increases as more services are included. It was established that research is important in establishing the right watershed management interventions, watershed service values, and willingness of sellers to provide services and the buyers' willingness to pay for such services. The capacity of buyers to pay for the services and availability of capable intermediaries to assist in the successful implementation of EPWS on the ground are also important considerations.

Public Sector Forestry (Forest Officials, Forest Rangers)

The biggest public sector employer in forestry is the DENR. Of the estimated 23,000 personnel in the DENR, is estimated that around 6,500 personnel are employed in the forestry service. The Forest Management Bureau has around 200 personnel. The potential of these bureaucratic organizations is great with respect to facilitation programs that are intended to alleviate poverty in the uplands. As mentioned earlier in preceding sections, the DENR has implemented various poverty alleviation programs, some of which have shown potential success like CLASP and some CBFM projects.

National Case Studies

To support the discussions on this paper with some actual experiences in the field, four case studies were selected in the CARAGA Region. This region was primarily selected due to the intricate relationships among forests, people, and poverty (detailed discussions on the cases are provided in Annex A). The following are the cases considered in this study:

a. Private land with a subcase on rubber tree farming and traditional community forestry: the case of Talacogon, Agusan del Sur
b. Corporate Forestry (also in Talacogon)
c. Corporate Forestry (SUDECOR, Cantilan, Surigao del Sur)
d. Agusan Marsh (for PES Initiative)

CARAGA region in the Philippines is a region blessed with fertile land and favorable climate for growing trees. Its potential for tree farming is recognized by the government. It is a major source of timber for Mindanao and the rest of the country, recognizing the region as its "timber corridor." In 2004, there were an estimated 46,000 ha of tree farms in private lands in the region involving 31,000 tree farmers and supplying 60% of the country's plantation timber (Mitchao 2004). Nevertheless, CARAGA Region consistently posted the highest poverty incidence among families in 2006 and 2009 (Virola 2011). However, this was jokingly disputed by a Regional Technical Director of DENR in the region, saying in jest that many people in CARAGA are rich: the many businessmen in the region including the many tree farmers who are earning good income from this trade. Because of the importance of forestry activities in the region and the high poverty incidence of the families, three towns in CARAGA were chosen for these case studies.

Among the major insights gathered in case studies are as follows:

Private land Tree Plantations with Subcase on Rubber Tree Farming and Traditional Community Forestry: Talacogon, Agusan del Sur

Talacogon is basically rural. Tree farming in private lands is a lucrative business among the local people with falcata (*Paraserianthes falcataria*) as the primary tree crop. Accordingly, tree farmers

Antonio Carandang

A tree farmer's net income from a falcata plantation is what remains of the proceeds from the sale of harvested logs, less all the costs incurred from the establishment of the plantation to the harvesting and marketing of the logs. Costs commonly incurred during harvesting and marketing include labor hired for tree felling, hauling of logs from the plantation to the roadside and loading onto a truck, truck rental for transporting logs to buyers, and "standard operating procedure" (SOP) payments at a series of checkpoints along the way.

earn a gross income per ha that ranges from PhP 100,000 to PhP 500,000 per rotation of seven to eight years. Tree farming employs a lot of people. Even the communities dependent on traditional forestry benefits from employment in these tree farms as part-time labor services during the peak labor season of maintenance and harvesting. Among the problems encountered by tree farmers include unfair prices received for their products, poor roads, strict requirements on wood processors that force them to sell to processors in the city (Butuan) and to incur higher transportation costs in the process.

In some private land tree farms, rubber is also planted as an alternative crop. This is sometimes mixed with falcata or planted beside falcata trees. Income from rubber plantation is seasonal and usually very small during rainy days. Nevertheless, rubber is viewed as a good crop because of the stable income the whole year round, compared with falcata, and has the potential of providing continuous employment opportunities to local people, at least two full time jobs per ha per year. Moreover, there is high demand for rubber. Traders from Davao City buy every available volume of rubber in the area. However, good rubber seedlings are hard to come by. Thus, the farmers appeal to the government to help them by ensuring that quality rubber seedlings are available and for access to affordable rubber production technologies

For community members who are dependent on traditional forestry, the sources of livelihood are varied. Many are employed in harvesting of planted trees. They also do farming and a variety of other forestry activities (e.g., rattan gathering, charcoal making, etc.) to supplement farm incomes. Most of the problems usually encountered relate to transportation, government policies, usual bad weather conditions and low prices received from the middlemen. With respect to policy, the community members lament the frequent changes in policy, especially on timber harvesting, that affect their operations. Due to stringent requirements of EO 23, more than half of the wood processing plants in the area have been effectively shut down, leaving tree farmers without ready markets, hence, also effectively reducing the employment they provide to the local people. This has put more pressure on the forests because of increased unsustainable extraction of NWFPs like rattan and fuelwood.

Corporate Forestry (Talacogon)

The corporate entity visited is the Provident Tree Farms, Inc. (PTFI), an IFMA holder with tree plantations in the area and vicinity. The company provides employment to communities and helps the government in many aspects of forestry operations, like building schools. The presence of PTFI has positive impacts on the local economy and on the delivery of basic services like education, health, and cultural well-being of the communities and indigenous peoples. Continued employment of people in this company helps abate illegal logging and kaingin. However, the concern of local authorities is about how private initiatives on forest development can be sustained in the light of perceived unstable policies of the government with respect to timber harvesting.

Corporate Forestry (SUDECOR, Cantilan, Surigao del Sur)

Surigao Development Corporation (SUDECOR) is one of the last remaining TLAs in the country. It is listed in the FAO directory of exemplary forest management case in the Asia-Pacific region. It is located in Surigao del Sur harvesting wood within the 75,671 ha of forest concession covering seven municipalities of the province. It operates a veneer and plywood manufacturing plant in Cantilan, Surigao del Sur. SUDECOR began its operations in 1959 through a TLA. The company has managed its concession area effectively and sustainably. It has continuously employed over a thousand workers and contributed to the revenue generation efforts of national and local governments and development assistance to communities, local institutions, and organizations.

The livelihood of communities within and adjacent to the SUDECOR TLA is 40% forest-based and 60% agricultural farming\ business sector. The company's operations contribute positively to communities, primarily in terms of employment opportunities to indigenous peoples, assistance of the company to the DENR in its overall forest protection activities. When the DENR conducts operations involving confiscation of illegal products like logs and semi-processed logs, the company usually provides a vehicle, diesel/oil/crude and manpower to successfully complete the confiscation operations. The company is a big source of revenue for the municipality of Cantilan, contributing to the overall social welfare of the municipality under the 25% share of barangay in the tax collected. It also provides and maintains the road network that the company and communities use.

Many other services like building and maintenance of school buildings, barangay offices, nurseries (DENR) and other government buildings (day care, health center, cultural gym, etc.), medical assistance including medicines for the community, student scholarships, and donations of houses to the indigenous peoples, are provided by the company, among others.

The company's logging operations are within the ancestral domain claim of the Manobo tribes. Peace and order condition is unstable with the presence of insurgents in the area. There are conflicts with the Manobos in term of their rights over the land and some members barricade some roads when the Datu's requested vehicle for hauling of their harvested logs is not granted. The company employees lament the effects of EO 23 restricting the movement of machines and equipment, suspending operations, displacing workers, and forcing children to stop schooling. The corporate community in SUDECOR strongly appeals for the lifting of moratorium on logging (EO 23) or amend it to accommodate a

reduction in the log supply contract to three years instead of five years, as the approval of their IFMA as the company's TLA is already expiring.

The Manobos have their issues about the company, some of which are delay in payment of their salaries, non-remittance to the Social Security System, bulldozing by the company of their burial grounds, harvesting by the company of falcata trees owned by the community within their kaingin/ ISF area, the non-fulfillment by the company of its promise to relocate and construction of their houses affected by TLA operations, along with many other unfulfilled promises. There are sentiments among the Manobos against the continued operation of SUDECOR in their ancestral domain area.

Agusan Marsh (PES Initiative)

According to the staff of the Protected Area and Wildlife Sanctuary of DENR-CARAGA, Agusan Marsh is a protected site that covers an area of 40,954 ha and was given Ramsar site status in 1999. It is a vast complex of freshwater marshes and watercourses with four big lakes and numerous small shallow lakes and ponds in the upper basin of the Agusan River and its tributaries. Some parts of the marsh are used for traditional fish ponds and rice paddies. The site acts as storage for rain water and reduces the immediate downstream flow of floodwater into Butuan City. The Marsh is an important habitat for water birds such wild ducks, herons, and egrets. It is also the refuge of the rare Oriental Darter (Anhinga melanogaster) and Purple Swamp Hen (Porphyrio porphyrio) and the threatened Philippine Hawk Eagle, Spotted Imperial Pigeon and Rufous-lored Kingfisher, among others.

Miranda (2011, personal communication) points out that the major livelihood of households around the big lakes is fishing where 80% is involved. Around 50% are engaged in farming while around 15-20% are partially dependent on forest products. Among the common forest products used are bamboo, lanipao (Terminalia sp) and bangkal (Rubiaceae sp).

Pedro Walpole

Charcoal making is a short-term source of cash; however, unsustainable charcoal production will deplete their wood sources.

Some indigenous people and local communities in Agusan Marsh are engaged in ecotourism by providing accommodation, food and guided tours for groups of tourists, selling of souvenir items, and renting out of vests, binoculars, and fees for camping and birding. The POs in the area also have established a tourist center on one of the lakes. The ecotourism provides sustainable income and revenue for the communities. Incidentally, Agusan Marsh was established as a Wildlife Sanctuary in 1996 through Presidential Proclamation 913 and is now slowly transforming into a PES site initially by virtue of PAMB resolution No. 1 in 1995 when they started charging user fees. They started charging entrance fees with the following rates: US$ 2 each for foreigners, PhP 25 for local tourists, and PhP 10 for students. With these rates, the Marsh was able to generate a meager average income of only PhP 2,500 per year.

In 2010, it was able to generate around PhP 6,000, a fairly good increase from the

previous averages but still not enough to capture the value of the resource as well as help in the upkeep of the resources. By virtue of a draft PAMB resolution, the fees were increased to the following: PhP 300 each for foreigners, PhP 100 for local tourists/Filipinos, and Ph 30 for Filipino students. Other user fees are now also being institutionalized as follows: filming fee at PhP 3000 per day for documentary films, PhP 5,000 per day for commercial films, and camping fees at PhP 50 per person.

It may be noted, however, that income derived by the local communities from providing services to tourists are not yet included in the recorded income of the marsh. There are still no estimates of the POs' income with respect to the services they provide to the visitors as well as on crafting strategies on how to improve the income generating activities of the POs. Local DENR authorities, however, see the potential of the Marsh in generating income for poverty alleviation in the area as well as serving as a source of sustainable income for the government. However, there are still no economic studies conducted in the area that provide a clear basis for estimating/charging the proper amount of fees that should be collected in the area (Miranda, personal communication, 2011). It was noted that the PAMB needs to conduct some economic valuation studies to determine the appropriate amount of fees to be collected and to craft mechanisms for sustainable funding of the management and protection activities of the marsh.

Outlook for Forestry and Poverty Alleviation

In a study by FMB on Philippines Forestry Outlook Study (2009), the following are some of the key conclusions related to poverty as follows:

a. There is a need for Congress to pass the Sustainable Forest Management Act in order to institute stable forestry policies and improved governance in the sector. This Act is supposed to provide a stable platform of good governance that would require cooperation as well as emancipation of upland communities.
b. More forest lands will be used in the growing of raw materials for biofuels. Other investments like this would certainly generate employment that will ease pressure on remaining forest resources
c. The population growth rate will continue in the next decade and it will also continue to be one of the major reasons for the destruction of forests. This outlook is of course is uneasy to accept for many pro-poor sectors as the presence of people in the uplands can be evolved to a more beneficial one than many thought otherwise.

In the same outlook, there will be an improvement in the forest cover mainly from forest plantations. More forest lands will be devolved to LGUs and communities that will improve management and protection. Furniture and handicrafts will continue to be foreign exchange earners. NWFPs especially herbal, body care products, and food supplements will increase in export value.

Under this study, however, the question remains about what forestry can still do in alleviating poverty that it has not provided in the past. Big industrial forestry is waning and will not likely contribute much to poverty alleviation. Collection of NWFPs by upland people and indigenous peoples only reinforces the subsistence economy of these people. The real winners under most setups of NWFP utilization are the financiers, processors, and traders. These are roles in the value chain that are beyond the grasp of upland and indigenous communities. PES and carbon market seem to offer potential opportunities, but are still a long way off. Tree farming and high value forest plantations seem to offer the best prospects of generating real livelihoods for people from forestry (Brown, 2011, comments). It is important, however, for the government to address many constraints in this respect (e.g., policy, social, environmental, etc.).

Another outlook worth seriously considering is enterprise development in rural areas along the idea of rural industrialization. Rural industrialization is observed to be successful in other developing countries, as in the small to medium bamboo processing mills in Vietnam. India is known for creating

viable spheres of production for small industry with credit linked to self-employment programs and affordable technology development and distribution. Specialized credit institutions and marketing networks in the field of agriculture and private-land forestry are provided by the government. In the Republic of Korea, rural industrialization policy is considered as an important income policy for small farmers and businessmen and an instrument to disperse economic activity and control concentration. The gradual and steady increase in rural income in turn, has helped the country in providing markets for the development of large and complex industries. These lessons and other successful poverty eradication policies can be put into good use by the Philippine government in curbing poverty problems in the uplands as well as the lowlands.

It is important to consider how forests can help people and how people can help forests under conditions of long lasting stewardship. Both the capability to manage forests as well as the capability of forests to absorb human activities must be well-studied. There is always a limit on what the forests can provide. Any plan on forest management/development must consider the eventual saturation of its carrying capacity, hence, the need for some radical population management strategies that must be enshrined in the national forestry programs.

Conclusions

The magnitude of continuous and widespread forest destruction is now being felt adversely in many areas. Aggravated by erratic rainfall pattern, landslides, and flash floods are now common occurrences many upland areas. These calamities aggravate massive poverty of people in the uplands because of their inherent vulnerability to these calamities. It was already established that environmental degradation and poverty in the uplands are intricately related, both of which perpetuate each other in a vicious cycle. Widespread poverty and inadequate livelihood opportunities in the uplands/forest communities have continued to worsen for the last 20 years. These arise due to increasing numbers of people competing for limited and shrinking natural resources. More than 24 million Filipinos are living in upland communities, more than half of whom are fully dependent on the forest for their livelihood. As they posed problems for the forests, they also provide opportunities for solving these same problems.

It is observed that in areas where forests are still substantial and forest resources abound, poverty incidence is higher. Family income in these areas usually falls below the poverty thresholds as forests can only provide subsistence/backstop livelihoods, especially in isolated areas. Many families have lived there for generations, traditionally practicing long-rotation swidden agriculture called kaingin. But because of rapid upland population growth and the diminishing area available for cultivation, fallowing which is sustainable as practiced before, is rarely being observed now. Recent migrants have introduced more intensive cultivation and cropping systems that significantly improved production over the short term. However, natural population growth and additional in-migration among the migrants have exerted so much pressure on the forest resources rendering them unsustainable.

Aside from farming, extraction of forest products in the forests substantially contributes to the subsistence of many people. However, the points of view of people dependent on the forests are poles apart from those who want the forests preserved in view of environmental protection. The seemingly indecisiveness of the government in providing a conducive and stable policy environment supportive of sustainable forest management (that is logically pro-poor) continuously provides impetus for unrest and forces the people to pursue more destructive activities in the forests.

Poverty reduction is always a key concern of every government in the country. There is some headway on this respect as the country continued to experience decrease in poverty incidence among families, from 28.3% in 1991 to 20.9% in 2009. However, this improvement in the poverty situation was not felt in the uplands. Still, the regions with high forest cover with high upland populations are still the poorest regions as shown by data on poverty incidence among families. Under the 2011-2016 MTPDP, the government aims to reduce poverty incidence in the Philippines by 10% annually until the President's term ends in 2016.

In a holistic perspective, poverty in the uplands is intricately connected with poverty in the lowlands. Its reduction in both requires an integrative solution. One of the conditions that can provide a solution to poverty is rural industrialization that will provide equitable rural growth. However, there are many obstacles to rural growth that are also prevalent in many upland areas that must be hurdled. There are institutional, behavioral, and structural weaknesses relating to the existing entrepreneurial environment in the Philippines that contributes to poverty as follows:

- Weak policies and programs related to securing integrity and continuing productivity of natural resources
- Leakage/wastage of resources, due to poor managerial skills
- Lack of information on viable products, markets and low cost technologies
- Lack of confidence among the rural entrepreneurs and perceived inferiority of goods and services produced in rural areas (e.g., furniture and handicrafts)
- Rural and upland areas not very well connected by road networks and dependent on middlemen
- Lack of unity and support for each other

Many government projects that provide financial assistance and dole-outs to the poor sectors of society have invariably failed. Charity approaches to poverty alleviation that are not sustainably converted into viable self-employment and small business enterprises through small investments, skills and entrepreneurship, are bound to fail as countless experiences show.

Recommendations to Improve the Contribution of Forestry to Poverty Alleviation

The study attempted to cover as much area of poverty as possible and recommends some key measures to improve the contribution of forestry to poverty alleviation in the country as follows:

1. Adopt policies that economically empower upland communities

The Revised Master Plan for Forestry Development (2003) reported that the forestry sector's potential to alleviate poverty is bright and requires the setting of the right policy environment for the sector to move forward to sustainability and economic development. Once and for all, stable forestry policies are needed to propel investments in the sector, both big and small, and to avoid unnecessarily disrupting forest production and raw materials processing and marketing operations. The government must give the necessary support to utilization activities, especially those that promote value-adding, subject to careful assessment of their sustainability, instead of sweeping prohibitions on the pretext of protecting the people from catastrophes.

2. Rural industrialization in forestry

Recognizing that small rural entrepreneurs are part of the significant backbone of the local economy, enterprise development towards rural industrialization in rural areas must be supported. A vibrant local economy lifts up many families out of poverty. In industrializing rural economy, the government must provide conducive space in terms of policy and institutional support for development and growth of small entrepreneurs in rural areas. This is a strategic move towards alleviating poverty so that instead of many family members looking for jobs, they can be the ones providing it. Assistance to forest development entrepreneurs in adopting new technologies, and securing and mobilizing capital for continuing or starting viable enterprises in the sector is a good start for industrializing rural forestry. In support of this, the government must help develop and provide affordable technologies designed to improve quality and reduction of costs by small entrepreneurs. Careful analysis of all potential markets for products and services must be done to evaluate their absorptive capacity from rural industries to avoid redundancy in products and services.

3. Ensure sustainability of raw material sources that are vital to rural enterprises

Securing raw material sources of forestry enterprises is not only the job of these entrepreneurs but also a major government concern. Hence, forest development must focus on conserving current raw material bases as well establishing new plantations for raw material sustainability.

4. Promote other income sources that are not necessarily extractive

Other sustainable forest activities that provides income and are not necessarily extractive must also be equally enhanced and supported. Ecotourism potentials that would include recreation, bird-watching, etc. and PES like water and biodiversity, must also be explored following a careful examination of the potentials of a forest area and forest communities in the context of participative development planning and watershed approach.

5. Population management and education

The problems of population and education go hand in hand. There is a need to institute an effective population management program not only in the uplands but for other sectors as well in tandem with improving access of the poor to education. The continued high incidence of poverty in the uplands is a result of a growing number of people sharing an almost fixed or even declining amount of resources and products. When a family is poor, the basic right of the children to proper education is always compromised.

6. Provision of basic services as a stop gap measure

It is the inherent duty of the government to provide basic services especially to those who cannot afford them. However, this must only be a stop gap measure as this may become a perverse policy and may actually reinforce poverty in the long term.

As an overall strategy, rural poverty alleviation policy in the Philippines should include the following elements:

- a continuing strong focus on sustainable economic growth in rural areas driven by openness and competitiveness, and accompanied by peace and order stability
- improvement of access by the upland poor to the means of production by focusing on upland tenure reform that would encourage responsible collective management of resources
- ensuring that essential investments are made in rural infrastructure and forest development that are necessary in bringing about increased productivity and, consequently, incomes
- increased investment in human capital through the improvement of the quantity and quality of primary education in rural areas and the uplands and strengthening of primary health services
- presence of supportive and benefitting institutions that is sincere in sustaining development in the uplands (e.g., financial institutions, banks, private business, etc.).

References

Acosta, R. (2000). *Smallholders and communities in plantation development: Lessons from two ITTO-supported. Proceedings of the International Conference on Timber Plantation Development*. FAO Documents Repository.

Balangue, T. (2008). *Reducing upland poverty, mitigating climate change impacts, increasing biofuel sources, and providing sustainable supply of raw water through implementation of community-based equitable payment for watershed services.* Paper presented at the ADSS, SEARCA, Los Baños, Laguna.

_____. 1991. *Dipterocarp forest accounting.* Technical Report No. 1. Natural Resources Accounting Project. DENR-USAID.

Benaning, M. (2010, June 2). Anti-poverty program boosts Mindanao reforestation efforts. *Manila Bulletin*.

Bennagen, M.E., Indab, A. , Amponin, A., Cruz, R., Folledo, R. van Beukering, P.J.H., Brander, L. , Hess, S. , van Soesbergen, A, van der Leeuw, K. and de Jong, J. (2006). *Designing payments for watershed protection services of Philippine upland dwellers*. Retrieved from http://www.premonline.nl/archive/5/doc/PWS%20Philippines%20final%20report.pdf

Bugayong, L. A. & Peralta, E. O. (2006). *Analysis of the control process and legality of the logging moratorium and ban in the Philippines*. Terminal Report. FDC-UPLB, CFNR, College, Laguna.

Calderon, M.M., Dizon, J.T., Sajise, A.J.U., Bantayan, N.C., Andrada R.T., & Salvador, M.G. (2009). *Towards the development of a sustainable financing mechanism for the conservation of the Ifugao rice terraces*. Refereed Research Report, Economy and Environment Program for Southeast Asia,

Calderon, M.M., Dizon, J.T., Cereno, R.P., Barile, J.R., Bais, A.L.S., & Fernando, E.S., (2006). Water users and the management of the Mt. Isarog Natural Park: A contingent valuation study. *Journal of Environmental Science and Management* 9(1):30-43.

Calderon, M.M., Camacho, L.D., Carandang, M.G.L., Rebugio, L., Dizon, J.T., & Tolentino, N.L. (2006). Willingness to pay for improved watershed management: Evidence from Metro Manila, Philippines. *Forest Science and Technology*. 2 (1): 42-50.

Calica, A. (2011, August 21). CCT report reaffirms report to improve lives. *The Philippine Star.*

Camacho, S. et. al. (2007). *Analysis of employment generated from small holder upland development projects in selected CBFM sites.*

Carandang, A. & Carandang, M. (2009). Activity and cost standards for forest development and rehabilitation in the Philippines. *Journal of Environmental Science and Management*. UPLB.

Carandang, A.P. (2008). *The forestry sector: Costs of environmental damage and net benefits of priority interventions: A contribution to the Philippines country environmental analysis*. World Bank Report.

Carandang, M.G, Calderon, M.M., Carandang, A.P., & Iglesia, N.T. (2001). *Assessment of status and prospects: Private land tree plantations in the Philippines.* Swedish International Development Agency (SIDA) and UPLB College of Forestry and Natural Resources.

Castro, L.V. (2006). *Poverty statistics for the basic sectors*. Presented at the Users' Forum on the 2006 Poverty Statistics for the Basic Sectors and 2006 Child Development Index. 25 June 2009, Dusit Thani Hotel. Retrieved from http://www.nscb.gov.ph

CCT Budget Scored (2011, August 14). *Business World Online.*

Department of Environment and Natural Resources (DENR). (2003). *Revised master plan for forestry development*. Department of Environment and Natural Resources.

_____, 2005. *CLASP program assessment report of the DENR.*

Dolom, P., Villanueva, M., & Bugayong, L. (2007). *Contribution of the forest-based industries to sustainable development*. Forestry Development Center Policy Paper.

Dugan, P. (2000). *Addressing tropical deforestation: The Philippine situation*.

Executive Order No. 23. 2011. Declaring a moratorium on the cutting and harvesting of timber in the natural and residual forests and creating the Anti-Illegal Logging Task Force.

Forest Management Bureau. (2009). *Philippines forestry outlook study.* Food and Agriculture Organization.

_____. (2009). *Philippine forestry statistics.*

Garcia, B. Jr. (2005, December 1). Philippines: Control upland population to rehabilitate forests – DENR. *Minda News*.

Chomitz, K.M. (1999). *Environment-poverty connections in tropical deforestation*. Discussion notes prepared for Summer Workshop, July 7 1999. Development Research Group. World Bank.

GMA News Online, (2009, February 19). *DENR to hire more than a hundred thousand 'green' workers*.

Kummer & Turner. (1994). The human causes of deforestation in Southeast Asia. *BioScience*, Vol. 44, No. 5.

Mitchao, G. (2004). *Small private land tree farming in Caraga*. Regional Policy Meeting on Community Forest Management Policies, Implementation and Adaptation on December 7-10, 2004 at Waterfront Hotel, Lanang, Davao City.

National Commission on Indigenous Peoples (NCIP). (2010). *Approved CADTs and CALTs by region*. 2009. NCIP.

National Economic Development Authority (NEDA). (2004). *Responding to basic needs of the poor (Chapter 12 of the Medium Term Philippine Development Plan (MTPDP – 2004-2010)*. National Economic Development Authority.

National Statistical Coordination Board (NSCB). (2007). *Philippine statistical yearbook*. National Statistical Coordination Board.

Presidential Decree 705. (1975) – Revised forestry code of the Philippines.

Pulhin, J.M., Dizon, J.T., & Cruz, R.V.O. (2008). *Tenure reform: Its impacts on Philippine forest lands*. Retrieved from http://iasc2008.glos.ac.uk/conference

Pulhin, J.M., Dizon, J.T., Cruz, R.V.O., Gevana, D.T. & Dahal, G.R. (2008). *Tenure reform on Philippine forest lands: Assessment of socio-economic and environmental impacts*. Laguna, Philippines: College of Forestry and Natural Resources, University of the Philippines Los Baños.

Pulhin, J. & Ramirez, M.A. (2005). *Behind the fragile enterprise: Community-based timber utilization in Southern Philippines.*

Philippine Wood Producers Association (PWPA) (2001). *Position paper on Senate Bill 141: Sustainable Forest Management Act*.

Republic Act No. 8425. (1997) *An act institutionalizing the social reform and poverty alleviation program, creating for the purpose the National Anti-Poverty Commission, defining its powers and functions, and for other purposes.*

Serrano, R., Daño, A., & Pulhin, J. (2001). *Landscape-wide analysis of the environmental and socioeconomic impacts of upland farming in Manupali Watershed, Philippines*. Retrieved from www.asb.cgiar.org

UNDP. (2010). *Indigenous peoples in the Philippines (Fast Facts Lagom)*. United Nations Development Program.

Virola, R. (2011). *2009 Philippine official poverty statistics*. National Statistical Coordination Board 08 February 2011.

Walpole, P. (2009). *Figuring the forest figures understanding forest cover data in the Philippines and where we might be proceeding*. Environmental Science for Social Change. Retrieved from http://download.essc.org.ph/forest/ESSC

X

Assessment of the Contribution of Forestry to Poverty Alleviation in Thailand

Orapan Nabangchang*

Introduction

Thailand's Forestry Sector: An Overview

Throughout the 1970s, forest cover in Thailand declined as agricultural land expanded. Between 1984 and 1993, the increase in agricultural acreage and the reduction of forest coverage was alarming. By the mid-1980s, associations were gradually made between the declining forest cover and environmental consequences, such as higher frequency of flash flooding, long periods of droughts, dried-up streams, and disappearing forest products that once constituted a significant source of non-marketable food supplies. The trade-offs from the continued expansion of extensive cultivation were becoming more apparent which expedited policy responses and launching of measures to protect the forest resources, compromising the needs of marginal farmers for land. Deforestation continued, however. Between 1993 and 1995, approximately 192,000 ha[1] of forest area was converted to agricultural land. This highlighted the ineffectiveness of control mechanisms and the urgency to find workable means for control and monitoring of resources.[2]

Towards the end of the 1990s, not only was there concern over less than satisfactory measures to protect the remaining 25% of the total area of Thailand, that still remained under forest cover, but there was also concern over the unsuitable agricultural practices resulting in land degradation. The supply of easily cultivable land was pushed to the limit and the potential threat to the environment conditioned adjustments in the institutional framework, which became no longer supportive of further conversion of forest areas for alternative land use.

Into the new millennium, there was a reversal of trends. According to the 2000 figures in Table X.1, forest area increased from 12,972,200 ha (25% of the country's land area) in 1998 to 17,011,078 ha (33%) in 2000. The increase of 8% in two years could have been due to the adjustments in map scales or, from a more positive interpretation, could be the result of efforts of preceding years to reforest. The latest figure available for 2006 indicated that the percentage of forest coverage was approximately 30% or 15,865,259 ha. Most of the remaining forests were concentrated in the Northern Region. Up until 1996, mangrove forests were also rapidly declining and one major cause was the expansion of shrimp farms along the coastline of the Gulf of Thailand as well as the Andaman. Statistics nevertheless showed some significant reversal of this trend from 2000 onwards and, in 2008, Thailand's mangrove forests were estimated to be around 255,000 ha.

* Economy and Environment Program for Southeast Asia (EEPSEA)

[1] Rai is a local unit of area measurement where 1 hectare is equal to 6.25 rai.

[2] Agricultural Statistics of Thailand, Crop Year 1996/97, Office of Agricultural Economics, Ministry of Agriculture and Cooperatives.

Table X.1. Forest area by region, 1961-2006 (in million ha)

Year	North		North-East		East		Central		South		Whole Kingdom	
	(ha)	%	(ha)	%	(ha)	%	(ha)	%	(ha)	%	(ha)	%
1961	11.6	68.5	7.1	42.0	2.1	58.0	3.6	52.6	3.0	41.9	27.4	53.3
1973	11.3	67.0	5.1	30.0	1.5	41.2	2.4	35.6	1.8	26.1	22.2	43.2
1976	10.2	60.3	4.1	24.6	1.3	34.6	2.2	32.4	2.0	28.5	19.8	38.7
1978	9.5	56.0	3.1	18.5	1.1	30.2	2.0	30.3	1.8	24.9	17.5	34.2
1982	8.8	51.7	2.6	15.3	0.8	21.9	1.9	27.5	1.6	23.3	15.7	30.5
1985	8.4	49.6	2.6	15.2	0.8	21.9	1.8	26.2	1.5	21.9	15.1	39.4
1988	8.9	47.4	2.4	14.0	1.7	25.6	1.7	25.6	1.5	20.7	14.4	28.0
1989	8.0	47.3	2.4	14.0	1.7	25.6	1.7	25.6	1.5	20.7	14.3	28.0
1991	7.7	45.5	2.2	12.9	1.7	24.7	1.7	24.7	1.3	19.0	13.7	26.6
1993	7.5	44.4	2.1	12.7	1.6	24.3	1.6	24.3	1.3	18.1	13.4	26.0
1995	7.4	43.6	2.1	12.6	1.6	24.2	1.6	24.2	1.2	17.6	13.1	25.6
1998	7.3	43.1	2.1	12.4	1.6	23.8	1.6	23.8	1.2	17.2	13.0	25.3
2000	9.6	56.8	2.7	15.7	0.8	23.1	2.1	31.8	1.7	24.6	17.0	33.2
2004	9.2	54.3	2.8	16.6	0.8	22.6	2.1	31.5	1.8	25.4	1.7	32.7
2005	8.9	47.3	2.5	15.0	0.8	21.7	2.1	30.7	1.8	25.0	16.1	31.4
2006	8.8	52.1	2.5	14.5	0.8	21.6	2.1	30.5	1.7	24.5	15.9	30.9

Source: FAO 2009.

Forest areas in Thailand are classified into many categories. One category is natural forest reserves. In 2007, around 43% of national forest reserves are located in the Northern Region. Approximately 24% and 20% of the national forest reserves are located in the Northeast and Central Region, respectively. The remaining, around 12% of the forest reserve areas, are located in the Southern Region. Apart from national forest reserves, the remaining forest areas are classified into different types of protected areas. In 2006, protected areas cover approximately 9,426,460 ha (18.4% of Thailand's land area), 67% of which comprise national parks (5,278,220 ha) and wildlife sanctuaries (3,574,880 ha). The rest are forest parks, no-hunting areas, botanical gardens and arboretum.

What must be said is that there are different layers of classification. In 1992, forest areas were reclassified into three zones, namely Zone C for protection covering an area of 14.1 million ha, Zone E for economic uses (8.3 million ha) and Zone A for agricultural production (1.2million ha). Thus, some parts within the national parks, which by definition are forest ecosystems of ecological importance, can also have the elevated protected status if they are located in Zone C. By definition, Zone E is part of the National Forest Reserve earmarked for production of timber and timber forest products. It could cover areas under community forests, or forestry projects such as the Forest Village Project, degraded forest areas with potential for reforestation, areas where mining and quarrying concessions are granted, and areas that are suitable for agricultural production.

In addition, there are also the five watershed classifications. It should be noted that watershed classifications were made for the purpose of protection, preservation, and restoration of the watersheds. There are of course overlaps, for example, WSC 1A, by its ecological importance, will be located in forest type Zone C. According to the report of the *Ad Hoc Committee to Solve Land Problems and to Expedite the Issuance of Land Rights (Parliament)* in 2009, 797,848 people were occupying nearly 1.92 million ha of public land under various "protected" status categories. About 23% of the people settled in some 0.36 million ha of protected areas, while 56% are living in national forest reserves.

Social and economic development and changes in poverty situation

It was not until the 5th National Economic and Social Development Plan (1982-1986) that poverty alleviation was explicitly stated as a national policy. Under the broader frame of rural development, poverty alleviation was seen as matter of providing food, water, sanitation, and utility services. At

that time, providing local employment opportunities was seen as a key to lifting poor people out of poverty, hence a range of occupational trainings was offered and physical infrastructure investment projects was provided. An important dimension was added in the 6th National Plan Period (1987-1991) with the concept of "decentralization". This was thought to be the way to ensure that development process accords with the local needs. To ensure that people had access to basic needs, a national rural development survey (NRDS) was administered. Despite criticisms, this village level data proved to be a valuable tool in classifying villages into different levels of development and allowing allocation of resources to be more area and target group specific. Into the 7th National Plan, a Decentralization Committee was appointed represented by eight ministries with a specific mandate to address problems of poverty alleviation. The principal goals were the provision of basic needs and improved income distribution through providing access to land, credit, and other basic services.

With the philosophy of the 8th Plan being "people-centered", measures in this period were oriented towards building and strengthening the capacity of the 17 human resources in terms of educational provision, encouraging local-collective organizations, and providing financial assistance through the setting up of "funds" for local development. In the 9th Plan, a target was set that the ratio of those living under the poverty line should not exceed 12% by 2006. This was to be partly achieved by providing assistance in occupational promotion and income generation. The 9th Plan also emphasized the need to strengthen local communities and its organizations and saw this as instrumental to meaningful participation and cooperation with public agencies and other stakeholders. The target for the 10th Plan for poverty eradication was to reduce the number of people living below poverty line to not more than 4% of the total population. To achieve this, all local communities were encouraged to formulate their own community plans, which could be used as the basis for determining resource allocation from the local government unit upwards. The concept of a Self-Sufficient Economy was still embraced as the insurance against risks from external economies.

The commitment of policy-makers over the decades resulted in remarkable achievements in poverty reduction. A proportion of the population living under the poverty line dropped from 33.69% in 1990 to only 14.75 % in 1996 (Table X.2). During Thailand's major financial crisis in 1997, however, the percentage of people living under the poverty line rose to 17.46% in 1998 and to 20.98% in 2000. As the economy started to recover, poverty reduction performance improved. By 2002, the proportion was reduced to 14.93% and since that year, the proportion of the poor steadily decreased. In 2008, only 8.95% of the population was living under the poverty line.

Table X.2. Profile of poverty in Thailand

	Proportion of population below poverty line (%)*	Poverty incidence in the Northeast (%)*	Poverty gap ratio*	Poverty severity*	Share of poorest quintile in individual household expenditure (%)**
1990	33.69	46.09	8.05	2.82	6
1992	28.43	41.14	6.62	2.23	5.75
1994	18.98	28.07	3.92	1.22	6.05
1996	14.75	24.54	2.85	0.85	6.1
1998	17.46	30.67	3.35	0.99	6.49
2000	20.98	35.34	4.24	1.3	6.15
2002	14.93	23.06	2.75	0.81	6.32
2004	11.16	18.58	2.01	0.56	6.17
2006	9.55	16.77	1.81	0.53	6.15
2007	8.48	13.05	1.45	0.41	
2008	8.95	14.62	1.49	0.41	6.64

Source: MDG 2009.
*Note:*NESDB calculated based on expenditure; **NSO.*

With the country's remarkable gains in reducing poverty, Thailand was able to meet the target set in the 9th Economic Development Plan (2002-2006) to reduce a percentage of the population under the poverty line to 12% before the end of the 10th Plan (2007-2011). The country is also an early achiever of Millennium Development Goal (MDG) 1, halving the percentage of people living under the poverty line between 1990 and 2015 (NESDB 2010). However, it failed to achieve the highly ambitious target of reducing poverty to less than 4% by 2009.

The success in bringing down the proportion of the poor relative to the total population was not paralleled by the improvement in income distribution. In 2009, the income share of the poorest quintile was still less than 5% whereas the share of the highest income group was still as high as 54.39%. For 2009, the Gini coefficient for income was 0.48. The Gini coefficient estimated from SES data on consumption expenditures for 2009 was 0.4072 and deteriorated only slightly to 0.4094 in 2010.[3]

Using the Poverty Headcount Ratio, Jitsuchon and Richer revealed that the speed at which poverty was eradicated differed by region, illustrating changes in poverty headcount by region and province in 1988, 1994, and 2002. While there were significant changes both in the number of people living below the poverty line and distribution of poverty in the north, central and southern regions, the situation for the northeast, though improved, remained quite dire relative to other regions. In 2002, it was estimated that around 3.8 million or just over 60% of the population classified as "poor" lived in the northeastern region. The poorest provinces, namely Buriram, Srisaket and Surin were also the provinces with the largest number of poor people. The north is the region with the second largest share of the poor. The poorest provinces in the northern region in 2002 were Mae Hong Son, Tak, and Uthai Thani.

A spatial information overlay of areas where there is concentration of poverty, with maps showing the location of protected areas, particularly national parks, Forest Zone C and Watershed Class 1 A and 1 B would be interesting guidelines on the priorities in addressing poverty alleviation and forest conservation concerns.

Poverty and Forestry in National Policy

Forestry Policies within the National Economic and Social Development Plans

On forestry resources, the 5th Plan was the first that ever went beyond statements of principles to stating concrete measures. The Plan recommended that watershed classifications be undertaken (1982), that a National Forest Committee be appointed, and land classification be undertaken to clearly delineate degraded from pristine forest area. Targets were also set that 300,000 ha of economic forests were to be planted each year. To step up control, the Plan also recommended an increase in the number of staff and equipment. Significant developments emerged during the 6th Plan Period, especially the formal recognition of the role of local people and their organization in the management of forest resources. Laws, rules, and regulations seen to impede efficient management of forest resources were to be reviewed.

Apart from reiterating the need for forest reclassification, the Plan also supported the idea of private sector involvement in areas such as development of commercial forestry, planting fast-growing trees, and community forestry. The principle of people's participation in natural resources management was reiterated in the 7th Plan. An additional element stated was the potential to reduce conflicts over natural resources use by having clearly defined land-use plans. The plan also advocated that potential uses of financial and fiscal mechanisms be explored. An important policy statement was that the process for issuing the Community Forestry Bill should be expedited to open up legal channels for people and their organization's involvement for the management of forest resources. All these principles were carried over into the 8th Plan but with specifications over the need for adjustment both of roles and attitude of

[3] Thailand Development Research Institute. Calculated from SES Data tapes.

public agencies so that they become supportive towards people's participation in the management of natural resources. Several issues were repeated such as land-use planning and zoning. A clause was included that efforts should be vested in expediting the enactment of the Community Forestry Bill, the principle being that communities already settled in protected areas should have the right to utilize resources as well as become involved in restoration of degraded resources.

The keywords in the 9th Plan were participation of stakeholders, effective enforcement of control measures through involvement of local communities, developing and updating the natural resources database. Apart from reconfirming these key principles stated in the previous plans, an important addition was the proposal for the adoption of economic instruments to create incentives for resource users. The 10th Plan set a target that forest coverage should be at least 33% of the national area and that the area under protected areas should be at least 18%. Apart from inclusion of terminologies such as ecosystems balance, area-based approach which takes into consideration the carrying capacity of the ecosystem, all the principles were carried over, such as participation and reforestation.

Forestry Policy, Institutions and the Legal Framework

What must be said of the forestry policy was that efficiency was defined in terms of how the state could effectively protect forest area coverage. Given the limitations of enforcement measures oftentimes compounded by intended and unintended economic policies that had created incentives to convert natural forests for productive and commercial uses, the decline in forest coverage was inevitable. The pace at which land use changes took place was somewhat faster than the expansion of legal, institutional, and operational mechanisms of the State. These mechanisms not only lagged behind the process of land use change but also tended to be more *"reactive"* or responding to changes and problems that occurred, rather than *"proactive"* in anticipating or even directing the changes.

Responding to social needs and economic incentives, local communities cleared and utilized forest lands, generally regarded as open access areas, prior to the state's declaration of these areas as forest reserves. On this basis, several local communities disputed the legitimacy of State claims where national forest reserves of various categories overlapped with areas already claimed by local communities or individuals. The period when natural forestlands were cleared thus becomes a crucial determinant differentiating *de facto "occupier"* and *"encroacher"*. Given the population increase and demand for land and the open-access situation, the problem of overlaps between *de facto* claims of the people and de jure claims of the State were likely to expand and intensify.

One key problem of Thailand's administration was the excessive divisions and segmentation of responsibilities. The multi-dimensions of land resources such as the spatial, physical, social-cum-cultural, economic and legal dimensions conjured up a multitude of laws and regulations and corresponding bureaucratic institutional structures. Among other things, this created a lack of unified direction, incoherence, and compartmentalization of activities. The number of agencies involved with land administration proliferated, peaking at one time at 21 agencies, each with separate mandates, authorized by different laws, and adopting different procedures (Nabangchang 2008). The key agencies and the pieces of legislation they operate under are shown in Table X.3. Only two, however, had direct mandates over the management of forest resources, namely the Royal Forestry Department (RFD) and the Department of National Parks, Wildlife and Plant Conservation (DNP). The DNP came into existence as a result of public sector reform and as a public agency under the Ministry of Natural Resources and Environment to undertake conservation activities formerly managed by the RFD, whose responsibilities were to become more focused on the productive and utilization aspects of forestry resources.

Table X.3. Government agencies involved in land issues and related laws

Responsible Agencies	Laws
• Department of Lands	Land Code
• Department of Social Development and Welfare, Department of Cooperatives Promotion	Land for the Livelihood Act
• ALRO	Agricultural Land Reform Act 1975
• Department of Land Development	Land Development Act B.E. 2526
• Royal Irrigation Department	Agricultural Land Consolidation Act 1974
• Department of Town and Country Planning	Draft Bill on Urban Land Readjustment
• Department of Town and Country Planning	Town Planning Act 1975, Agricultural Land Reform Act 1975
• Agricultural Land Reform Office	Agricultural Land Reform Act 1975
• Royal Irrigation Department	Agricultural Land Consolidation Act 1974
• Department of Local Administration	Building Act 1979, Public Health Act 1992
• Department of Local Administration	
• Department of Pollution Control	Environmental Quality Promotion Act 1992
• Department of Town and Country Planning	Land Dredging and Landfill Act 2000
• Royal Forestry Department	National Forest Reserve Act 2507
• Agricultural Land Reform Office	Agricultural Land Reform Act 1975
• Department of Treasury	State Land Act 1975

What the brief overview of the forestry policy over the successive plan indicate is that up until the 6th Plan period, the dominant ideology was that protection and conservation were monopoly powers of the State and that the way to protect was to separate people from the forest. From the 6th Plan period onward, there was at least policy recognition that local communities may have a complementary role to play in the management of forest resources.

What should emerge from the information presented thus far is that there must be joint solutions to addressing problems of land management, deforestation, degradation, and poverty alleviation. Addressing any one issue in isolation simply does not make sense.

Major land policy landmarks have affected forest and poverty. In 1961, the policy at that time was to set targets to preserve a proportion of land as *"permanent forest"*. Within this permanent forest, some areas were to be declared as national forest reserves. However, both permanent forests and designated national forest reserves were encroached. On 22 June 1982, the Cabinet passed a Resolution that some 4.8 million ha known to be occupied and utilized in some manner were to be *"reclassified"* under the Land Reclassification Project, to be completed by 1992. All public agencies responsible for land allocation, apart from the Agricultural Land Reform Office (ALRO), were to complete all their tasks within five years.

Table X.4. Chronology of land-related poverty alleviation policies

Year	Measures
September 1, 1987	Approved Land Policy 1. Economic 2. Social 3. Conservation 4. Security 5. Hill tribes
May 4, 1993	State to degazette forest areas which have been occupied prior to the announcement as natural forest reserve. 1. If cleared and occupied prior to the official announcement, the DOL can issue land titles according to the stipulations of the Land Code 1954. 2. If cleared after, the only channel that claimants would obtain land rights was through the process of land reform

April 1997	Cabinet approved the proposal of the Ministry of Agriculture and Cooperatives (MOAC) to classify land into categories. Should the areas classified as "permanent forests" be challenged, a Working Group was to be appointed to review the facts and submit findings to the Cabinet. For protected forests, according to cabinet decisions, a Working Group was to be appointed to verify the situations and submit findings to the Sub-Committee for Prevention and Control Illegal Exploitation of Forestry Resources which operate at the Provincial Level. Based on those findings, the Regional Forestry Office was to conduct cadastral survey, demarcate the boundaries and revise the maps which were then submitted to the MOAC and the Cabinet. For Protected Area (declared by the Law), the decision was 1. to conduct a survey of the number of people inside the protected area and the areas occupied, 2. determine the appropriate area for settlement and for production, 3. cross examine the period of settlement, and 4. grant rights according to the National Forest Reserve Act.
June 30, 1998	Cabinet approved the proposals of the National Forestry Policy Committee that: 1. To expedite the verification national forest reserve areas to return to the RFD but this time recognizing that local communities should be involved in the management of forestry resources 2. For villagers who were found to be inside Protected Areas, the decision was up to the RFD to (i) proceed with declaring the area as Protected Area and (ii) if villagers were living inside PA prior to the official declaration, there were two options: a. If the site is not located in highly sensitive areas, then the settlers would be allowed to remain but b. within clearly defined boundaries and also under conditions that there was to be no further expansion of the land holdings. c. If the site is considered to be ecologically sensitive, RFD was to relocate the inhabitants to other suitable sites. If the settlement occurred after the official declaration, then RFD was to resettle the villagers. If resettlement cannot be immediately undertaken, then temporary settlement was to be allowed but under strict control with legal measures undertaken if there was further encroachment. By this Cabinet Resolution, the RFD was also to follow the guidelines of the Land and Forestry Management Plan at the Area Level which consist of 4 components: forest protection, forest control, natural resources rehabilitation, and monitoring and evaluation and database.

Land allocation to the landless and poor constitutes one of the seven priority areas under the Policy on Poverty Alleviation. Lack of ownership and access to land resources is generally cited as among the main causes of poverty. Concentration of land ownership represents one facet of the land market, which determines both efficiency and equity considerations in land resources utilization. The rationalization had been that if landlessness and near-landlessness were the roots of the poverty problem, the solution would be to redistribute and allocate land to those in need. Among the first steps by the government of that period was to make public announcements that those without land, those with insufficient land, and those who have encroached and occupied land, should register their needs for land.

In February 2001, the government announced that poverty alleviation was to be one of its three key policies and set a target to eradicate all poverty by 2008. The Ministry of Interior was responsible for registering the "poor". A Center for Fighting Poverty was established. One of the programs within the Road Map 2004-2008 was Management of Natural Resources to Support the Economic Livelihood of the Poor. Rehabilitation of forestry resources was the first objective listed within this plan. Altogether, 8,258,275 people registered themselves as "poor", equivalent to 13.15% of the total population in that year.

Table X.5. Registration of the poor requesting land allocation

	Number of applicants	%
Landless	2,208,051	41.82
• Farmers	956,611	
○ poor	456,143	
○ not poor	500,468	
• Not engaged in farming at the time of registration	1,071,440	
○ poor	364,496	
○ not poor	706,944	
Insufficient land	1,639,079	33.80
• farmers	1,026,083	
○ poor	556,751	
○ not poor	469,332	
• Not engaged in farming at the time of registration	612,996	
○ poor	228,275	
○ not poor	384,721	
Insufficient land	1,181,926	24.38

Source: Srisawalak and Nabangchang 2006.

On the supply side, land came from various government agencies in principle. The RFD at that time indicated that 0.93 million ha within the National Forest Reserves could be readily relocated. The RFD also reported that an addition of 1.7 million rai classified as permanent forest may be available but that this would require negotiations for redistributing land that the existing occupiers were using in excess of the ceiling permitted, as well as concluding a number of land disputes. The Department of National Parks also indicated that their own supply was going to be 1.3 million rai of national forest reserve plus 10.5 million rai from "permanent forests". In the end, when all land agencies cleared their stock of land that could "in theory" be used for allocation, the total area came up to 28.89 million rai.

Table X.6. Potential stock of land supply for poverty alleviation objectives

	Unit: million rai
Reported supply that can be immediately reallocated	25.24
• National forest reserves	5.79
• State land (from Treasury Dept)	1
• ALRO	16.95
• Settlement Cooperatives	1.5
Supply subject to negotiation and resolved court cases	3.65
• Permanent forest	1.7
• ALRO	0.8
• Settlement Cooperatives	0.15
• Area used for public purposes	1

Source: Srisawalak and Nabangchang 2006.

Three things must be noted from the information above. One is that 67% of the land was from ALRO. It turned out that the major outcome of this policy was to endorse the rights of the existing claimants. It turned out that the major outcome of this policy was to endorse the rights of the existing claimants (Table X.7). The land supply that was not occupied that could be allocated to new beneficiaries was only 185,082 rai. If each household were to be allocated 10 rai, the total number of new beneficiaries would be less than 19,000 households which is much less than the number of those who came to register for land even if the target group was to be restricted to only the landless poor.

Table X.7. Results of land allocation under the poverty alleviation policy (in rai)

	Endorsement of rights	Unoccupied land available for reallocation
RFD	5,700,000	100,000
Treasury Department	174,547	56,469

ALRO	10,300,000	11,300
Dept. of Cooperatives Promotion	1,300,000	-
Dept. of Fisheries	235,050	2,313
Dept. of Social Welfare Development	150,000	15,000
Dept. of Lands	281,811	-
Total	**18,131,408**	**185,082**

Source: Srisawalak and Nabangchang 2006.

The second was that there was no accurate information on both the demand and supply sides of land to launch this policy. On the supply side, there were really no "public land" areas available for redistribution that were not already occupied or utilized. There was, however, the possibility of readjusting the current distribution among those who did own or had access to land through voluntary land sales or through the rental market. On the demand side, the adopted procedure for implementing the poverty eradication policy on the land issue was to make public announcements for *"the poor"* to come forward to register their needs for land. The number of applicants was far from being true reflections of demand and the lists would need to be heavily screened and verified.

Among the villagers themselves, there was not much optimism that they would indeed be given land. Moreover, many villagers recognize that land constraint was only part of the problem since, apart from the land supply constraint, there were also the questions of the water supply and start-up capital needed to make productive use of the land. The increasing reliance on-off farm income and non-farm income, which came out of the socio-economic surveys and confirmed during the meeting discussions in the provinces, were both supportive of this assertion.

The third and perhaps most directly related to the objective of this paper is that policy makers were looking primarily for *legal* solutions to solving unclear land rights. They also regarded land as a factor of production. Until recently, policies were never about forestry ***and*** poverty alleviation but the focus had been on lifting people out of poverty by de-gazetting forest land to reallocate as factors of production. This would become more evident in the next section.

Initiatives to Solving Land, Forest and Poverty Related Issues

National committee for solving the problem of encroachment of public land

The National Committee for Solving the Problem of Encroachment of Public Land was established in 1992 to verify claims that settlements and use of forest resources had been prior to the official declaration. Given the vast number of disputes over land claims, the National Committee for Solving the Problem of Encroachment of Public Land was set up to expedite the process of verification with the use of written records (if there were any) and with the help of aerial photographs. The existence of such a Committee provides a channel to settle disputed state claims over public land. This Committee still exists today and is still trying to cope with a backlog of old land disputes, as well as new cases where individuals and local communities challenge the legitimacy of State claim on land they believe to belong to them.

Reshaping boundaries of public areas

One of the reasons why the work of the National Committee for Solving the Problem of Encroachment of Public Land was increasing was the lack of clarity over the physical boundaries of forests. In 2005, the Cabinet at that time approved the proposal to "reshape" the boundaries of public land. Apart from the Ministry of Natural Resources and Environment, also involved in the Reshape project was the Department of Lands under the Ministry of Interior, the Department of Land Development and ALRO under MOAC. The outcome of the "Reshape" efforts would have far-reaching implications for the

poor. What reshaping meant in practice was that the boundaries of public land would be jointly agreed upon between the responsible agencies such as the national forest reserves, national parks, wildlife sanctuaries, etc, and the local communities. This would, in principle, be a consultative process using the boundaries (demarcations) as specified by the various laws and the actual on-ground conditions. Reshaping efforts turned out to be a lengthy endeavor. However, it was more due to institutional factors that the original reshape project came to be replaced by the new "Project to Expedite Problems of Encroachment and Destruction of Forest Resources of the Country" which was mandated to undertake the same tasks.

Land use conflicts and the judiciary process

The other dimension of land dispute was access to judiciary process. In *"Good Governance and Natural Resources Tenure in Southeast Asia"*, Nabangchang argued that beyond having the laws, good land governance depends on how the law is interpreted and enforced in a non-discriminatory manner and protection is provided to those with legally protected rights or claims. Oftentimes, laws are narrowly defined and executing agencies have the tendency to stick to the wordings used rather than the principle of the law. There are also many incidences where the law appears to be impartially enforced in favor of private businesses that are in an advantageous position to benefit from inside information and obtain the cooperation of responsible public agencies.

The effectiveness of the rule of law is also conditioned by how accessible the judiciary process is to the general public. To the general public, particularly to the poor and uneducated, the fragmentation of the administrative and legal systems described earlier and daunting even to practitioners and academics, must seem almost impossible to comprehend. The laws and the channels presented in the preceding section do not work for the people who need them. Government officials are more ready to strictly enforce the law on the local people and more prepared to be lenient for private businesses. The legal and judicial systems are complex and habitually abused by the politically powerful.

National reform federation

Towards the end of Abhisit Vejjajiva's government, a National Reform Federation (NRF) was established. The NRF, after consultation with various stakeholders, published the document "National Reform Federation: Main Document, B.E. 2011" recommending seven principles deemed necessary for national reform. Of the seven principles laid down by the NRF, two are related to forestry and land resources. One is "Reform for Equitable and Sustainable Allocation of Land Resources." The other is "Return of Justice over Land and Natural Resources to the People." The three principles advocated under the Reform for Equitable and Sustainable Allocation of Land Resources were:

- the rights of the people and the local community in determining the criteria for access to the forest, conservation, utilization and benefit-sharing of natural resources should be respected consistent with Section 66 of the 2007 Constitution;
- that land conflicts between the State and the people should be resolved. In detail, the NRF called for coordinated efforts in issuing Community Titles, improvement of the existing office of the Prime Minister Regulation 2010 and elevating this to the status of Community Title Royal Decree, and amendment of related laws such as the National Park Act 1961 to allow communities to settle and utilize land in specific cases, which are deemed necessary to ensure consistency with other laws that support the issuance of the Community Title; and
- the problem of land concentration should be addressed through a revision of the current system of land taxation, establishment of the Land Bank and amendment of the Agricultural Land Reform Act, B.E. 2524 to eliminate the existing disincentives for landowners to lease out land by specifying the minimum length of leasing.

To provide justice over land and natural resources to the people, the NRF made a general short-term recommendation for the reduction of penalties and for the DNP to reconsider its decision to sue villagers

for causing climate change. Where no Court Ruling was reached, the NRF proposed that the villagers be allowed to return to their land and work as volunteers to protect the natural resources in their localities until permanent solutions could be found. The request was also that no further measures should be pursued to expand Protected Areas, that no legal actions should be taken against villagers now living in Protected Areas but at the same time all investments in basic physical infrastructures in the disputed locations should be delayed.[4]

Past and Current Contribution of Forestry to Poverty Alleviation

Community Forestry

One aspect of access and utilization of forest resources that has a direct bearing on settlements in enclaves and other types of common pool resources was over the Community Forestry Bill. After being debated for more than two decades, and after review by parliament, the Bill was submitted to the Constitutional Court to determine whether or not the contents of the Bill were inconsistent with the Constitution 2007. When the Constitutional Court ruled against the Bill, all the years of debate came to a halt (that is, unless the government would re-submit another draft). Several controversial issues were debated, including (i) the treatment of settlement enclaves[5] in protected areas and (ii) the rights of communities to exclude the entry of other parties.

With regard to the first issue, it was argued that enclaves should be permitted as long as arrangements for joint protection of the protected areas and long-term implications can be worked out. It was also argued that, given the *"public goods"* nature of community forests, non-community members should, in principle, have access to community forests, but that the inputs of community members in looking after resources should justify their rights to collect some form of user charge from non-community members. In addition to the verification of location and boundaries of community forests, a general consensus had to be reached with respect to the rights and responsibilities of the so-called custodians and stakeholders of these community forests. Another controversial issue, which appeared to have divided public opinion into two extreme camps, was whether or not the concept of community forests should also apply in protected areas such as watersheds, forest reserves, national parks, and wildlife sanctuaries. Given the lack of consensus on the importance of protected areas and the present fragmented approach to resource management, the risks of not being able to control the boundaries of utilization were high. One could be forced to accept continued encroachment of forest resources for the wrong reasons and for the benefit of unintended target groups.

The community forests that are now registered however are located outside of Protected Areas. Based on information from the RFD (Community Forestry Division), Thailand now has 7,515 community forestry projects involving around 8,313 villages. Areas managed under community forests cover 489,462 ha. Half of the forest area managed as community forests is located in the northern region and around 33% is in the northern region of Thailand. More people are involved in community forests in the northeast however. Nearly half of the community forestry projects and half of the villagers are in the northeastern region.

[4] Court cases on land disputes are piling up. NRF records of the Department of Corrections show that there are 191 cases of land disputes that involve the poor. Somjit Kongthon (2010) from the Thailand Land Reform Network reported that 361 villagers are involved in 196 court cases (140 are civil court cases; and 56 are criminal cases). Perhaps among the most publicized is the lawsuit where the Department of National Park, Wildlife and Fauna filed a case against 34 villagers in Phetchabun, Chaiyaphum, and Trang with a charge of 150,000 Baht/rai for causing climate change from having cut rubber trees on their own land.

[5] Usually hill tribe community settlements.

Community title

The solutions to problems related to forestry, land, and poverty need to go hand in hand. Under Abhisit Vejjajiva's government, the policy is to solve problems of landlessness among the poor by using the mechanism of the Land Bank and expediting the process of issuing land rights in the form of Community Title Deeds to poor farmers and communities in public land (in principle, these being degraded forest areas). In principle, the issuing of Community Title Deeds is seen as a possible solution to addressing issue of land rights.

A Regulation of the Office of the Prime Minister was announced and published in the Royal Gazette, effective as of 12 June 2010. In this Regulation, "Community Title Deeds" by definition is a document that entitles local communities to jointly manage and utilize land within the "public domains" that would ensure security of settlement as well as usage of the land. Among the conditionalities for success would be clearly defined boundaries. Although local communities have the freedom to manage land and natural resources in ways that are compatible with the social-economic and environmental settings, these must be consistent with the broader land-use guidelines as well as some of the obligations that communities agreed to accept. Among these could be the agreement of communities to look after the natural resources and the environment. The local communities must also adhere to the conditions specified within the Regulation. Although the term Title Deed is used, members of local communities will only be granted the rights to use and not the legal entitlements similar to that of private property rights. Thus in principle, individual members are entitled to use land and resources only in so far as they are members of the community.

The term "local community" refers to a group of people who have come together to participate in the management of natural resources and have been in place not less than three years prior to 12 June 2010. To launch this policy, the government has established an Office of Community Title Deed based in the Office of the Prime Minister. Since the Regulation was announced, many local communities have applied for Community Title Deeds. The land where applications were made for Community Title Deeds ranges from public grazing land, land reform area, to even land where private property rights with land tenure certificates (such as NS-3) were issued. But of particular interest are the applications for Community Title Deeds and issued in land classified as National Forest Reserves, National Parks and Wildlife Sanctuaries. In practice, there is more than what is recorded since there are applications where it is unclear whether the particular land parcel is located in protected areas, state land, or other types of public land. Even so, the total area requested added up to 92,774 ha, involving around 100 villages and around 19,000 households.

While most of the applications are from the northern region, Table X.8 shows that 51 of the 65 applications from this region come from a single province, Nan. Also of interest are the applications from the northeastern region where two villages in Kalasin alone placed an application requesting the issuance of Community Title Deeds for a combined area of around 25,000 ha.

Table X.8: Applications for community title deeds in protected areas

Region	Province	Number of villages	Area		Population	
			Rai	Hectare	Household	Number of people
Northern	Changmai	5	11,937	1,910	1,625	6,068
	Phetchabun	3	5,161	826	463	1,896
	Changrai	1	3,337	534	54	260
	Maehongson	1	5,427	868	69	432
	Lampang	2	3,609	577	116	522
	Phayao	1	1,868	299	191	651
	Tak	1	23,314	3,730	87	457
	Nan	51	241,927	38,708	6,466	24,345
Total		**65**	**296,580**	**47,453**	**9,071**	**34,631**

North-Eastern	Chaiyaphume	1	1,775	284	103	541
	Ubonratchathai	4	5,170	827	183	833
	Nakornratchasima	1	14,000			
	Burirum	2	24,246	3,879	1,170	2,022
	Khon Kaen	2	45,667	7,307	1,679	6,446
	Kalasin	2	156,850	25,096	1,635	15,175
Total		**12**	**247,708**	**39,633**	**4,770**	**25,017**
Southern	Trang	7	18,160	2,906	694	2,831
	Suratthani	3	10,011	1,602	845	2,070
	Krabi	1	10	2	34	133
	Phuket	13	338	54	1,443	4,642
	Ranong	5	2,233	357	177	828
Total		**29**	**30,752**	**4,920**	**3,193**	**10,504**
Central	Karnchanaburi	1	4,800	768	2,125	6,085

What must be said of these requests is that whether or not they are approved depends on pre-determined criteria, on proof of management, and on agreement of the local communities to the conditions imposed. Without a continuity of policy and commitment from the decision makers, they could just end up being numbers. Nonetheless, there is room for optimism.

One advantage this has over the stalemate in the Community Forestry Bill is that the process was already launched and is not caught up in two decades of debate. The other is that since local communities are positively responding to this policy (which is not surprising since there is much to be gained), any successive government is not likely to risk popularity by not continuing the policy. One area that should be of particular concern is an overly active pursuit of the policy to gain political popularity at the expense of appropriate and careful screening of applications, and will not augur well for the natural resources base of the country.

Commercial Forestry and Industrial Forestry

Commercial forestry and industrial forestry are part of the economic sector with high potential for employment and income generation. Thailand is both an importer and exporter of wood and wood-based products. The increased consumption of paper is probably one of the main drivers of demand for import of wood pulp and other types of fiber. In 2010, the value of import of was approximately 16,490 million Baht. In the same year, the import value of paper and paper scraps combined was approximately 52,740 million Baht. Other main import products were processed wood (10,636 million Baht) and various types of plywood. For imported logs, the main supplier both in terms of quantity and value was Myanmar. Imports of processed wood on the other hand were mainly from Lao PDR followed by Malaysia.

On the export side, the top three most important export items in terms of value in 2010 were paper (42,235 million Baht), processed wood (18,145 million Baht) and wooden furniture (14,751 million Baht). By comparison, the value of log exports was much lower at only 16 million Baht. The value of teak wood exports alone was around 76% of the total exports, the rest coming from. The remaining wood exports were Para wood (rubberwood or wood from the Para rubber tree, *Heveabrasiliensis*), eucalyptus, and pinewood. Most of the exports of processed wood were Para wood. The export value of Para wood in 2010 was 17,154.5 million Baht equivalent to nearly 95% of the total value of exports of processed wood from Thailand.

In 2009, according to the RFD, there were 3,987 wood processing establishments. With the exception of a few that were producing wooden craft products, most of these establishments were machinery-based and capital-intensive. In addition, there were three paper pulp factories. Through the support of the Forest Industry Organization (FIO), a key public sector agency, the areas where trees were planted

for commercial uses up to 2009 were estimated to reach around 149,565 ha. According to the FIO, promotion of small-scale tree-planting is carried out through combining the concept of village forestry and support for agriculture.

While both the export and import statistics indicate that there is potential for commercial production of timber for employment and income generation, insufficient importance is attached to this sector. For smallholders, the key constraints are the high upfront investment and the long gestation period between planting and harvesting. Moreover, uncertainty over demand and price increases heighten risk perceptions and hence discourages investment. One other important constraint highlighted in the workshop organized for this project is the rigidity of interpretation of rules and regulations. Rules and regulations can be interpreted in ways that are supportive of the growth of small-scale commercial timber production. There can be excessive rigidity in following rules word-for-word and in a manner that kills incentives.

Unfortunately this may have been the case with the FIO's former initiatives to encourage small-scale trees-planting. In the earlier period, small farmers were encouraged to plant trees. There were two major constraints. To be eligible for the 3,000 Baht/rai support, farmers had to have land rights. They also should have other reliable sources of income to tide them over the period before trees can be harvested. There were also logistical constraints. For example, farmers had to plant a minimum number of trees per rai (the number of which, according to foresters, was too dense and not inductive to optimal plant growth). Farmers also had to report if and when they wanted to cut trees, or undertake any changes. With the rigidity of all these requirements, many farmers abandoned tree farming and opted for planting less valuable trees such as Para rubber or merely went back to planting annual crops.

Payment for Environmental Services

Payment for environmental services (PES) is a relatively new concept for Thailand. Unlike other countries in Southeast Asia, Thailand does not yet have any actual experience in launching PES. More recently, there have been initiatives to launch PES, and some organizations advocating this concept see PES as a potential instrument to address both the challenges of managing Thailand's natural resources as well as alleviating poverty.

Case Studies

In this section, case studies are presented which illustrate different facets of the link between forestry resources and poverty situation. Two of the case studies are about communities that are dependent on forestry resources but have different outlooks in terms of how they perceive public agencies namely the RFD and the DNP. They also differ in terms of how they view pressures and opportunities from external market forces. The third case study is an account of one of the few initiatives to launch the concept of PES in Thailand. This is the story of Khao Ang Ru Nai Wildlife Sanctuary located in the eastern region. Apart from the fact that the researcher was involved in the design of this PES Pilot Project and therefore has a more in-depth understanding of the issues at stake, the site is chosen because it illustrates another interesting dimension of the interrelationship between the state of the ecosystem and the livelihood of local people. In this particular case, local livelihoods are affected by the degradation of the ecosystem and through their efforts to help restore the natural resources in the wildlife sanctuary, villagers not only ensure direct benefits for themselves, but also provide external positive benefits. The last case study is a previous study. The summary of this study is included in this report because both the methodology used, i.e., cost-benefit analysis and the findings are of direct relevance to the focus of this present study – finding a solution to the existence of many settlements located within protected areas that combines the interests of protecting the environment and addressing the poverty situation. Some background information regarding the case study sites is presented in the table below.

Table X.9. Background information on case study sites

Case study site	District/ Province/Region	Type of forest issue of interest	Population	
			Number	% under poverty line
Mae Tha Pa Pao	Muang/Lamphun/North	Community forest registered with the RFD	634	30.8%
Ban Thung Yao	Muang/Lamphun/North	Community forest; local community do not want to register with the RFD	539	30.6%
Ban Na Than	SakhonNakhon/Northeast	No community forest but located near Phu Phan National Park; Community resettled because of dam construction	365	27.7%
Ban ChoengDoi	KutBak/SakhonNakhon /Northeast	Community has been granted access to part of the National Park to be used as Community Forest	188	29.3%
KhaoAng Rue Nai	Chachoengsao/East	Wildlife sanctuary where there is human elephant conflicts; settlements are located in National Forest Reserve		
Na E-San			661	21.5%
Na Yao			2059	28.3%
Klong Toey			341	22.6%
Na Gnam			1653	23.7%
Tha Tent			262	28.6%

Forests Managed by Local Communities in Lamphun Province

Mae Tha Pa Pao Village

Tha *Pa Pao* is located in Muang District, Lamphun Province some 60 km south of Chiang Mai. *Ban Ma Tha Pa Pao* has a total population of 245 households. Total land area is 2,483 ha comprising 280 ha of agricultural land and 2,080 ha of land used as community forest. Up until the late 1980s and early 1990s, the villagers earned their living from cutting trees to make charcoal and collecting non-wood forest products (NWFPs). By the late 1980s, with the uncontrolled exploitation of forest resources, the area began to suffer from flooding incidents followed by droughts. Many residents fled to neighboring villages after floods had destroyed their homes.

The initiatives for setting up a Community Forest came from Mr. Paiboon Jamhong, at the time the Sub-District Chief. Since 1982, Mr. Paiboon and his followers tried to convince villagers that it was in their interest to look after the forest so that they could continue to benefit from its timber and NWFPs. With the assistance of a local NGO, Mr. Viset, Mr. Jhahong, and a number of villagers travelled to *SilangLaeng*, where the committee members developed a firm agenda for achieving a balance between the economic needs and forest conservation. The villagers became aware that the two must go hand in hand, as all the members of the community were taught how to use the forest more responsibly. A consensus was reached that any further tree-cutting, especially in forest watersheds was strictly prohibited. From then on, villagers cooperated in activities such as replanting degraded areas, forest patrolling, making and maintaining forest fire lines, and building check dams. The abandoned charcoal kilns have been kept and are displayed as reminders of the past for educational purposes for villagers as well as for the influx of visitors.

Tha Pa Pao was officially registered as a community forest under the Royal Forestry Department (RFD) in 2009. The Chairman of the Community Forest, landowners and representative of the RFD jointly

demarcated the boundary. At present, *Tha Pa Pao* Community Forest acquired a nationwide reputation as a village with a successful framework for dealing with forest conservation. This framework tried to incorporate all areas of the community in decision-making, created a support system to engender economic stability, and maintained a positive sustainable approach to forest resources. In 1991, a system of forest fire patrol was set up, originally consisting of 70 volunteers. Insurances were bought for each volunteer.

Due to perceived risk reduction, the number of volunteers has been reduced to only 16 people. A patrol group of village volunteers guards the forest day and night. There is only one entrance to the forest from the road, which makes the task of patrolling easier. No outside vehicles are allowed in the village during the night. Should there be specific needs of community members to access the forest for any reason, a village meeting is called attended also by members of the Village Committee. There is no fixed rule on collection of NWFPs, only broad guidelines that if you find two NWFP (such as bamboo shoots, two mushrooms, etc.), only one is taken and the other one is left to grow. Each year, villagers work together to maintain the forest fire line and to build and restore check-dams. A three-pronged system of communication has been initiated with steps to connect the village committee, monks, and schoolteachers. By involving the Temple, highly respected monks are able to further spread the message on the importance of the forest to villagers, particularly to children. In addition to these expected social influences, there are also clearly written rules:

- Cutting a tree is subject to a fine of 500 baht per inch of the cut tree. It may take a local villager several months of work to raise the total fine for a cut tree.
- No encroachment is permitted on any land registered as out of bounds. This rule has proven hard to implement with the contentious status of land boundaries.
- Hunting is not allowed.
- Burning of forests is not allowed. However, some villagers continue to believe burning forest ground is required to allow wild mushrooms to grow.
- Outsiders are not allowed entry to the forest.

Up to now, no fines have been issued as a number of first-time offenders have received only verbal warnings.

Among the indicators of change are reduced incidences of floods and stable supply of water even during the dry season. The community forest is now a source of sustainable flow of NWFPs for 80% of the households in this village. NWFPs consist mainly of mushrooms, bamboos, fish, frogs, and toads. While in principle, collection should only be primarily for household consumption, many of these NWFPs, including herbs and other vegetation locally known to have medicinal properties, can be found in the nearby fresh market.

Villagers have received training on sustainable forest management at *Huey Hong Krai* with financial support from the Siam Cement group. Like many villages, *Tha Pa Pao* has set up a Savings Group, which now has some five million Baht. *Tha Pa Pao* also has a Community Forest Fund, which consists of money left over from sales of NWFPs. Started by half a dozen villagers, the fund now has over 400 members and in 2002 won the Green Globe Award, receiving US$ 16,666 as prize money. The Fund developed into an established financial welfare provider delivering various benefits for its members, who on average consign US$ 3 per month. It has enabled villagers to adopt self-accounting techniques, become more responsible with debt repayments, and encouraged a number of saving schemes. The village fund serves to compensate the revenue previously generated from cutting down trees.

The village has now become an eco-tourism hotspot with visitors coming from all over Thailand and other countries. Wildlife in the forest includes pheasants, deer, peacocks, and wild boar. There are five eco-guides offering three-hour, one-day, and overnight forest treks. Some projects have made *Tha Pa Pao* a routine stop-off in sustainable living tours of the region with a number of village homestays now offered to cater to this increased demand. There are 16 homestays but most of the visitors generally only

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Members of the village willingly share their knowledge about their forest and management practices

come on day visits. Beyond a healthy source of income, eco-tourism has allowed the village to revive its old traditional culture and take pride in its status as a leading proponent of self-sufficient living. Mr Jhahong believes the key to moving forward is to continue to protect the strong fund in place, learn to encourage saving and self-accounting, and by continuing to embrace the self-sufficiency philosophy laid out by His Majesty the King.

Ban Thung Yao Village

Ban Thung Yao is within *Sri-Bua-Ban* Sub-district, located some 12 kilometers from *Muang* District, Lamphun Province. The history of the village dates back as far as 1915 when the earlier settlers were said to have moved to the area in search of water and fertile land for cultivation. The village land now covers 904 ha, forming part of the Khun Tarn Mountain range. *Ban Thung Yao*'s Community Forest expands over an area of 400 ha. Similar to the previous village, there are locally accepted rules and regulations with respect to access and utilization. However, unlike Tha Pa Pao, this is a community forest that is not registered with the RFD.

When the earlier settlers arrived in *Ban Thung Yao*, the forests and water resources were abundant. Forest resources started to decline as the population increased, but the main reason was the granting of logging concessions to generate the supply of timber for the railway line construction. Over the years, the water supply diminished as the watersheds became degraded and as the demand for water rose for an increasing population and the expansion of commercial agriculture (rice and longan). The river ecosystem also deteriorated due to sedimentation and erosion of river embankments as villagers removed river rocks to supply the market for construction materials. Water supply became scarce, particularly during the dry season.

In 1968, the villagers decided to turn the deciduous dipterocarp forest that had shallow topsoil into a community forest, which would enable a year-round supply of wood, food, and herbs for the villagers. Mrs. Phakee Wannasak, advisor of the village committee, related, *"The forests have all gone. Although the forest concession came to an end, villagers went in and cut trees for making charcoal. All that was left was Pa Cham Nam* (the watershed forest)*."*

Based on Phakee's account, the Village Headman at the time called a meeting. Villagers were instructed that cutting trees for making charcoal was no longer allowed in an area of around 800 rai from the *Pa Cham Nam* (the watershed forest) to the school. Once restrictions were imposed, the villagers merely helped to oversee that no one entered the area. Without disturbance, the forest recovered, trees survived and grew, and the rain came. In 1974, there was news that the government planned to redistribute land in the *Pa Cham Nam* and that a new village was to be established. Villagers protested against this decision and informed the government that the 400 ha of land in the *Pa Cham Nam* area

was not degraded forest but that it had become a fertile forest because of the villagers' efforts. In making their stand, the villagers managed to claim their right over the forest. However, it was not to be a long-lasting victory.

During the 1980s and under the Chartchai government, there was widespread land speculation accompanied by increases in the number of land disputes. The state attempted to declare the surrounding forest around Thung Yao "Park Reserve" in 1989, but was met with huge resistance by the people despite the offer of a support fund of US$ 2,666 per year. The villagers' perception was that if the forest was turned into a park reserve, they would be denied access to much of the forest and would be required to comply with the rules and regulations of national government. It was this fear that losing the forest would mean losing their capacity to decide over their forest resources that motivated the women of Thung Yao into making a stand, as some of them recounted:

> *"That day the women of Ban Thung were gathered in the meeting, we shouted, 'We are not giving up the forest because if we give up the forest, we will no longer have any food. We are satisfied as we are. We don't want money from tourism. If this area becomes a Park Reserve where would we get our bamboo, mushrooms, and ants' eggs? Take your 80,000 Baht and go and develop somewhere else. This forest is ours and we will protect it ourselves.'"*

> *"If we had left it to the men leaders, they would have given up the forest when the officials asked. But we women will not give up. So we became the main leaders ourselves. If we had not done that, we would not have our source of food supply today because the land would have all been converted to a park reserve."*

The women of *Ban Thung Yao* knew that they needed concrete proof to show how important the forest resources are to their basic livelihood. To protect their forest, they needed to make outsiders understand its benefits, so they set out collecting data. *"With 5,000 Baht, we bought books and pencils and we recorded every kind of food that we collected from the forest."*

The women collected data for one year and found that there were more than 28 types of vegetables, 25 types of mushrooms, 13 kinds of fruits, and more than 20 herbs. More important, when converted into

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Mrs.Phakee Wannasak (left), the village head, and Mrs Rawiwan Kanchaisak (right) are among the women in the village who actively gave voice to their community's aspiration to retain their ownership of – and management rights (including customary rights) to – their forest.

monetary values, the total sum was as high as US$ 33,283.[6] According to Phakee, the actual sum could be higher because there were also people from outside who collected mushrooms and ants' eggs. After that, the women continued to collect data and found that the value of the food collected from the forest was almost the same. With such evidence, the women of *Ban Thung Yao* believed that the RFD would have no choice but to respect the decision not to be registered as a Community Forest under the RFD. For some women, *"The importance of this forest was not only that it is watershed, the forest is nature's bank and what is saved is the soil, the water, the forest, food, medicine. The forest is like the 'kitchen of the village'. If we preserve nature, it is like we preserve our own lives."*

Over the years, *Ban Thung Yao* demonstrated that their efforts to look after the forests and the benefits they reaped in terms of timber and NWFPs strengthened their resilience and cushioned the impacts of the external economy. Naturally, the pull of the external economy had its attractions, particularly for the younger generation who sought work particularly in the nearby Lamphun Industrial Estate. But lessons were learned when many workers were laid off during the 1997 economic crisis and returned to Thung Yao to work on the farm. From then on, according to Mrs Kanchaisak, villagers realized the risk in relying on cash-income sales of agricultural commodities because these fluctuated according to changes in market prices. They also realized that the increase in wage rates could never equal the increase in the cost of living and in prices of material goods.

Village leaders now believe that to build resilience, they need to strengthen and maintain tradition, the spiritual faith and customs passed down through many generations. They need to create values so that though they may be cash-poor, they are otherwise "rich in souls". There are no homestays in the village given the perception that cash income from eco-tourism may create conflict among villagers. Visitors are welcome to Thung Yao. Any cash income, however, goes to the central fund which is then shared or used by the whole village, not just the villagers who provided homestay accommodation for the visitors.

There is a set of rules over access to the Community Forest. Cutting down trees, for example, is only allowed if wood is needed for household repairs. For each household, this is allowed once a year and only with the permission of the Village Committee. The allowable cut is 15 trees per person. Once permission is granted, that particular household is no longer eligible to make another request for another 10 years. Any violation is subject to fines per inch of the diameter of the tree trunk. NWFPs can be collected for household consumption and some small amount for selling. Each year, there is a ritual to pay respect to the forest. Between December and March of each year, villagers jointly engage in forest fire protection. While rules may be sacred for the members of the community, *Thung Yao* is encountering more problems with intruders encroaching on their land.

Recently, a surge in demand for firewood as bio-fuel electricity meant that "outsiders" are increasingly cutting down trees in the area. Exacerbating the situation is the perception that the RFD has not taken action. The explanation offered is that the RFD is powerless to stop any intrusion and this only adds to the mistrust. The state's refusal to acknowledge the villagers' version of the Community Forest Bill further fuels the belief that the RFD does not recognize their heritage and tradition. Many communities share the same perception of the RFD. The department is seen to capitalize on the good gains achieved by villages, subsequently registering them on account of their success. Mrs Kanchaisak asserted, *"The trees are ours and we have been managing these resources long before the Forest Act came into being."*

While the aim of declaring areas as national parks and wildlife sanctuaries is to protect forest and biodiversity resources, in practice "protected areas" often overlap with forestlands used by local communities. The argument, however, is that the state continues to overlook the forests' significance

[6] Some of the NWFPs include (1) ants' eggs: 100 Baht/kg which can be collected from February to March, (2) frogs: 40-80 Baht/kg collected from February-April, (3) snakes: 100 Baht/kg collected from February-April, (4) Maeng Mun (beetle): 100 Baht/kg collected from February-March, (5) Vegetable 100-140 Baht/kg collected from February-March, (6) Banana leaf 1.5 Baht/leaf Baht/kg available all year around, (7) variety of mushrooms collected from August-October, (8) Bamboos collected between May-July.

to the livelihoods of rural people. *Ban Thung Yao* is engaged in a continuing struggle for formal acceptance of their right and entitlement to manage their community forest, independent of the control of the RFD. The position of the villagers is that they had been looking after the forest long before the State laid its claim. If *Ban Thung Yao* will accept the offer to register as a Community Forest under the RFD, it will be like betraying other communities who also look after the Community Forests but cannot be recognized because they are located in "protected areas". They have now become members of the Federation of the Community Forest of the Northern Region.

SakhonNakhon

The northeast region is where the highest incidences of poverty are registered in the whole of Thailand. The two villages visited, *Ban Na-Than* and *Ban ChoengDoi*, are both forest-dependent communities and have also experienced disputes with the state.

Ban Na Than

The *Ban Na Than* villagers are of *Thai So-oh* ethnicity,[7] a group that constitutes one of eight peoples in Sakhon Nakhon Province. In 1973, villagers were resettled because of the construction of the *Lam Nam Oon* Dam. Additional land was cleared to compensate for the people's loss. By 1982, the villagers settled in their current location. It was not long before another crisis affected them, when about 1,200 rai of land used by villagers for farming was declared part of the *Phu Phan* "National Park" in October 1982. Though the village settlement remained outside the protected zone, the ruling raised serious difficulties as the village struggled to eke out a living. Selected areas outside the national park were transferred to the ALRO, which allocated just half a rai to each household.

Ban Na Than's landholdings are very small and will continue to shrink and fragment as plots are sub-divided among their children. Ten households acquired the land reform documents allowing them to cultivate their lands through the ALRO. Acreage is otherwise under the jurisdiction of the Department of Treasury, as the lands are considered "State land". But since these were also "irrigated lands", the Royal Irrigation Department manages the deals. Currently, 11 households are landless. The villagers are concerned about the Department of Treasury's plan to lease one million rai of "state lands" by dividing these into parcels, which are then given to a winner chosen through lottery. The situation has left villagers left unaware as to who owns what and where. Since by definition the cultivated land lies within the national park, the villagers do not have any formal document to support their claims. As a consequence, the village cannot access any State assistance that requires land documents to qualify.

Without access to enough land for agricultural production, the villagers are forced to search for other means to survive. One important source of non-cash income particularly for those with limited farming land is NWFPs, such as bamboo, mushrooms, and vines from *Phu Phan* National Park which are used for household consumption as well as for bartering with rice. Collecting NWFPs from *Phu Phan* National Park is risky. If caught, all products are confiscated. To collect the NWFPs, villagers have to walk between two to three kilometers to get to the edge of the *Phu Phan* National Park and walk a further two km to enter the park. Because it is a national park, the *Ban Na Than* villagers feel they have no more right of access to the NWFPs in the park, even if they live a stone's throw away. They therefore tend to make the trip around 3:00 in the morning, because during the daytime they fear clashing with people from as far as Kalasin, Amphoe, and Sega in NongKhai.

Also important are the fish resources in the *Nam Oon* Dam. Similarly, if villagers are caught fishing during the four months of the no-fishing period declared by the Department of Fishery, officials not only confiscate the fish, but also destroy the fishing gear. Even with these control measures, all recognize the decline in abundance of natural resources, be it NWFPs or fish in the dam. This could be among the reasons for the increasing need to find sources of revenue outside the village. Around 40% were said to have migrated to find work in Bangkok and other provinces (some go as far as Phangnga in the South). Most of the villagers are old people and children left behind.

[7] Note that this is not an ethnic group like the hill tribes in Thailand.

Villagers are prone to gambling and other vices that cost money such as cigarettes, alcohol, and playing bingo. Their inability to establish initiatives to tackle their debt is a concern. The main credit source is the Bank of Agriculture and Cooperatives (BAAC). As villagers have no land documents, they are forced to use group collateral. The average debt ranges from 50,000 to100, 000 Baht. While other sources of funding, including the Village Fund and the Poverty Alleviation Fund, aim to minimize the risk, the accumulation of the village debt for some households can be as high as 10 million Baht.

Ban ChoengDoi

Ban ChoengDoi was established in 1957, when the village consisted of just 17 households. Now there are 68 households with 365 people. All the households grow rice and the average holding size for rice cultivation is around one hectare. About 60 households also grow cassava with a combined area of 19 ha. There are 25 households that earn extra income from vegetable production. Similar to most rural villages, income from off-farm work is considered an important supplement to household income. In *Ban ChoengDoi*, around 100 people earn income as construction workers. Weaving is also a supplementary source of income. The villagers originally migrated from Phannanikhom, Sukonikon province. *Ban ChoengDoi* is located in Na Mong sub district, *Kut Bak*, some 65 miles from the city. The people are of an ethnic group called *Phu Thai*, with their own language and culture.

An important landmark in the villages' turbulent history is the year 1964. During this period, the Communist Party of Thailand controlled the surrounding area. *Ban ChoengDoi*, like many other villages in the region, harbored dissidents and communist militia, supplying them food and shelter. In response, the government designated the whole region a "red zone". The natural resources and forests became sources of conflict. In 1972, the RFD proposed the area to be declared "national park" with some 66,900 ha to become state-controlled. By 1982, a further ground survey by the RFD reduced the area to 66,470 ha. Even with a decrease in the area, it still represented a massive loss to the village as technically all their production area was now within the "national park".

In 1985, the RFD assigned *Ban ChoengDoi* "forestry village" status that led to further land re-allocation. Landholdings were restricted to no more than 15 rai each. In 1991, after the national coup d'état, the revolutionary council announced a new forestry and land policy for the whole country. Within this was born a project called "land allocation for the poor within the national forest reserve and degraded area in the North East".

Ban ChoengDoi became one of the many northeastern beneficiaries of this ill-fated project. Villagers were told to resettle to a nearby village called *Ban Duean Ha*. Fighting back, the villages affected by the policy organized themselves into a network called the "*Phu Phan* forest network" to protest the implementation of the project. They also established Village Forest Network Communities, made up of 47 forest-based villages, to solve land problems in the surrounding forests. In 1992, stepping up their protests, they wrote a petition to the then Prime Minister, Anand Panyasachun, demanding the termination of the project. Under substantial pressure, and with a visibly failing policy, the government responded. In July 1992, "land allocation for the poor within the national forest reserve and degraded area in the North East" was terminated, and the villagers returned to *Ban ChoengDoi*.

However, the conflict between the state and its people continued. Lacking security of tenure, the villagers still felt threatened. In the following years, several NGOs visited the area to conduct research and to help build the capacity of the leaders as well as community members to manage their land and forest. They accompanied the village leaders on study tours, exchanging views and knowledge with people in other provinces and other regions. Their objective was ultimately to turn *Ban ChoengDoi* into a model for land and forest resource management in the northeast region.

The forest is now classified into seven distinct zones: (i) community forest, 18 ha (comprising the area of the temple in the forest, the cemetery, and community forestry); (ii) buffer zone, 80 ha; (ii) public grazing land, 2, 400 ha; (iii) spiritual forest, 4 ha; (iv) village temple, 2.56 ha; (v) school, 2.88 ha; and (vi) residential area, 12.8 ha. To manage the forest, six rules were drawn up.

A poster at the edge of the community forest enumerates the six rules set by the village members

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- No tree cutting is allowed in the community forest.
- Anybody who cuts trees with a diameter more than 20 cm will be fined 10,000 Baht.
- Anybody who cuts trees less than 20cm will be fined 5,000 Baht.
- Anybody who intentionally burns the forest will be fined 10,000 to 50,000 Baht.
- All the timber confiscated and fines paid will be used by the village community for the benefit of the village.

Anybody who refuses to pay the fine will be transferred to the authorities.

Apart from the rules which were enforced for nearly 20 years, the villagers were also involved in conservation activities such as establishing the forest fire line, replanting trees to increase the biodiversity of the community forest, and providing food for wild animals. They also take children to the temple to make them aware of the need to protect the forest.

One of the approaches to forest conservation was the concept of the "Yellow Forest", a policy intended to highlight the role of the temple in forest conservation introduced by Abisit Vejjachiva's government. In *Ban ChoengDoi*, Buddhist monks are invited to come and live in the forest temple. At present there are four monks at the temple who divide their religious activities with forest conservation. The monks also teach children how to meditate and how to learn from nature by replanting trees. This builds awareness in the children from an early age that nature is very important. Combining spiritual knowledge with forest conservation is an effective tool in contributing to addressing the problem of deforestation.

The villagers highlighted several issues as the main barriers to progress. One was the issue of continuing conflicts within the community because some people still cut trees for selling. There was also the issue of unclear boundaries of the national park, the acknowledged power of "local Mafias" threatening the villagers if they oppose cutting trees. Like the majority of rural villages, there is the problem of indebtedness. In this case, all the 68 households are in spiralling debt of at least 100,000 Baht per household.

One of the pressures, particularly seen from the eyes of the village elders, is the external pressure. All around *Ban ChoengDoi*, land was converted for commercial cash crop production. There is pressure from other villages, as far as 100 km away, interested to use the surrounding resources. The NWFP resources as shown in the chart below are relatively abundant. Outsiders harvest forest timber and NWFPs in large groups, often in a fleet of cars and trucks, collecting large volumes and leaving little to re-grow. Households who try to harvest and conserve the crops are becoming increasingly desperate.

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In line with the "Yellow Forest" approach of the government to integrate religion and forest conservation, the four monks currently staying at the temple in the village engage in forest conservation activities.

Logging activities and threat tactics by big business add to the desperation of the villagers, whose lives are threatened if they obstruct the logging activities of "influential" people.

The monetary value of NWFPs would be much higher than the table indicates if the study was conducted for a longer period.

Table X.10. NWFP harvest calendar and estimated income per year

	Jan	Feb	3	4	5	6	7	8	9	10	11	12	Estimated income per year
Collecting bamboo													(For consumption only because this is now limited)
Vegetables													30,000 Baht/year; 68 hh
Ants' eggs													approx 200 Baht/kg; 50,000 Baht/whole village
MaengKaeng (small)													600 Baht/kg; 50,000 Baht/kg
Mushrooms													68 hh at 2,000 Baht/hh=136,000 Baht/whole village
Toads[8]													70 Baht/kg; 150,000 Baht/whole village
Frogs													
Mussels													0.5 Baht/mussel; 10,000 Baht/year
Herbs													205 of hh collect
ชัน													10,000 Baht/whole village

"What are we preserving the forest for if people are going to come and take it all away?"

Villagers feel that they need to follow the self-sufficiency concept. Monocropping will be shelved in favor of more mixed farming while villagers abstain from material possessions that they do not need. They need to feed themselves first. Solving the land rights issue is key to development. Among the various problems, the land title is the most important; without this, villagers cannot plant tree crops, rubber, or eucalyptus. Indeed, the village cannot grow. The village leader made an important point towards the end of our short stay, saying:

[8] The rule is nobody is allowed to take toad's eggs.

"I have never regretted all the fights we have had with the State. What has been won has all been worth it, what has been lost, is better than nothing."

Ang Rue Nai Wildlife Sanctuary: A Payment for Ecosystems Pilot Case Study

The third case study is an account of a PES initiative, the pilot PES site in KhaoAng Rue Nai Wildlife Sanctuary (KARN-WS) in the eastern region of Thailand. The financial support for the design of this pilot project was from the Biodiversity Economy-Based Development Organization (BEDO).

The *KhaoAng Rue Nai* Wildlife Sanctuary is a lowland rainforest covering an area of 107,900 ha of lowland rainforests in five provinces in the east of Thailand, which are Chachoengsao, Chonburi, Rayong, Chanthaburi, and Sakaew provinces. The sanctuary is the watershed of Bang Pakong River and Prasae River, which are major sources of surface water supply for residential areas, industries, and agricultural production in the downstream area. KARN-WS is one of seven protected areas with a population of more than 100 elephants. Over the years, as the ecosystems were degraded, many of the key species in the area, such as fresh water crocodiles and tigers, became extinct. In the absence of natural predators, the population of elephants increased by 9.83% per annum, which is higher than the elephant population in other areas (Wanghongsa et. al. 2006). In 2007, the estimated elephant population in KARN-WS is 217 and the crude density is 0.2elephant per sq km. It was estimated that only 36.63% of the sanctuary is suitable as elephant habitat. Because of the shortage of food and water in the sanctuary, elephants often come out of the sanctuary, making KARN-WS one of the areas where the level of Human Elephant Conflict (HEC) is high. While some investments were made to restore sections of the degraded ecosystem, the efforts were piecemeal and fell short of the scope and scale of measures required. This was why the idea of PES was considered as a possible solution.

The perimeter of the sanctuary measures 460 km but the PES activities will only cover certain segments of this border, focusing on six villages where HEC is high. These are Na Yao, Na Isan, LumTha Sang, Tha Ten, Na Ngam, and KlongToey. The total number of households in these villages is 2,247. The main crops grown are cassava, rice and rubber. Almost all of the households are affected by elephant crop-raiding but only 32% of the households registered to request for compensation for crop damages. The paid compensation does not match the costs of the damages, which include not only the crops eaten or destroyed but also damages to property and loss of lives.

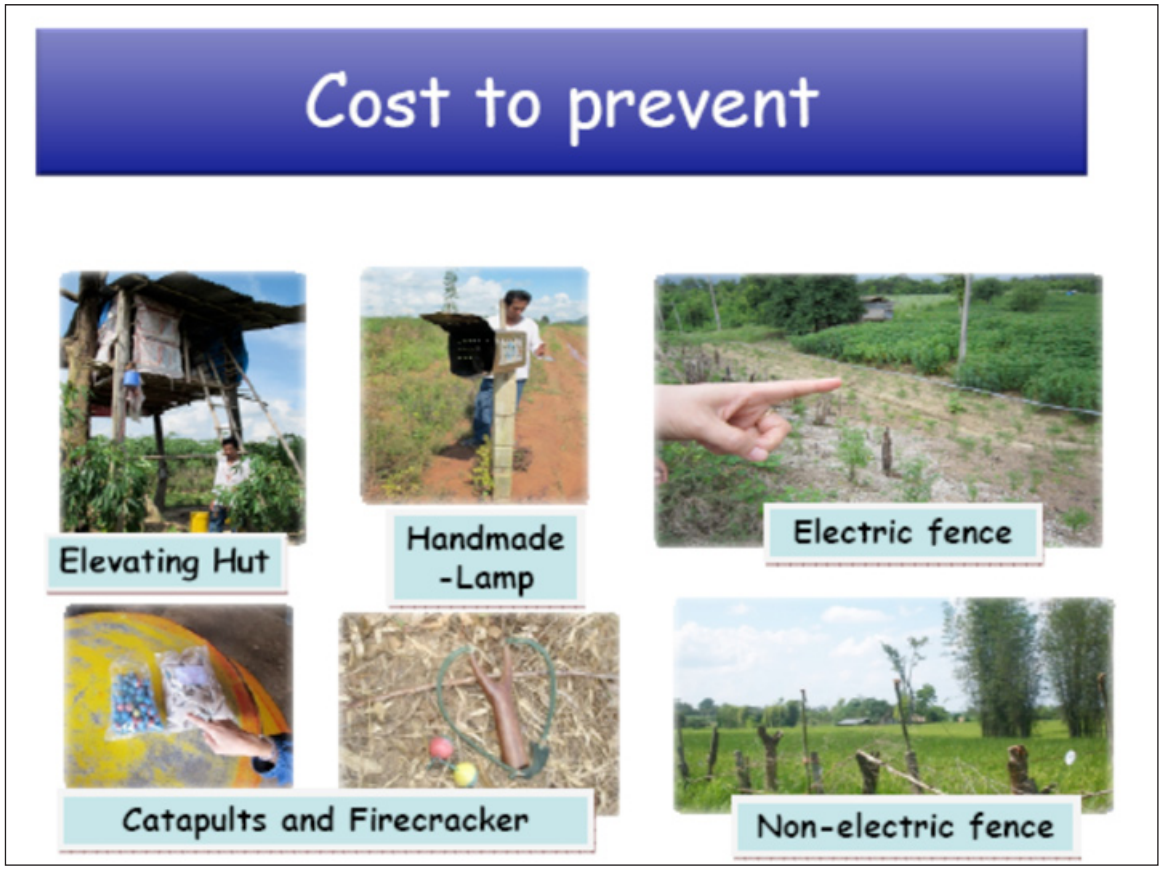
To protect their crops and their properties, villagers adopted several measures ranging from installing traps, using firecrackers to create noise, putting up fences (electric and non-electric), using lamps, to the construction of elevated huts as watch posts. Villagers spend on average 212 nights per year to keep watch over their fields.

The Proposed Measures

Although the situation in KARN-WS does not strictly comply with the typical PES setting with clearly defined upstream service-providers and downstream service-buyers, the sanctuary's ecosystem is clearly degraded and rehabilitation measures are needed to ensure sustainable flow of services (particularly water) to areas where there are already existing beneficiaries and thus potential buyers. In addition to the potential use and values that can be generated from ecotourism activities, there are also the intangible benefits such as the indirect use value from the rehabilitation of the ecosystem as well as the non-use value of wild elephants that has symbolic, historical, and cultural significance in the Thai society.

Through consultation with wildlife experts and staff of the KARN Wildlife Sanctuary, a number of activities were proposed:

1. Making water supply available within the sanctuary to reduce the need for elephants to exit the sanctuary to search for water
2. Increasing the grassland area within the sanctuary. A substantial part of the sanctuary faces problem of rapid expansion of invasive species. These would need to be weeded out to provide more open space and sunlight.



Strategies used by the villagers to protect their properties from intruding elephants

3. Creating mineral saltlicks
4. Planting food for elephants
5. Fencing part of the sanctuary
6. Undertaking reforestation and afforestation to be undertaken partly within the sanctuary where the forest is degraded and partly on the buffer strip, which is the 0.5 meters of land along some 230 km of the eastern part of the sanctuary boundary.
7. Ecotourism

From these activities, the expected benefits include the following:

- restoration of the watersheds,
- restoration of the habitats,
- possible supply of carbon credits for the voluntary credit markets,
- reduction of damage costs from human-elephant conflict,
- ensuring sustainable flow of payments for service providers as long as there is clear incremental benefits directly associated with the restoration and conservation activities that villagers are undertaking, and
- possible revenues from wildlife ecotourism in the long-term.

Without the PES mechanism, it seems unlikely that there can be policy intervention at a scale that will produce any tangible impact. Public resources would be too stretched and would only support piecemeal measures, and local inhabitants would only be able to prevent and protect their crops and their property within the limited means they have. On the other hand, by combining natural resources restoration and protection measures and the HEC issue under the PES framework, it may be possible to reach the dual objectives of natural resources management and poverty alleviation without having to make the trade-offs.

Apart from identifying the activities, information was obtained on the quantities required and the unit

costs. The service providers were identified and these are the six villages where HEC is high, namely Na Yao, Na Isan, Lum Tha Sang, Tha Ten, Na Ngam, and Klong Toey. For these households, the damage cost from crops and property damage and medical expenses related to elephant crop raiding incidences was equivalent about 14 to 34% of their average household income.

When asked whether or not they would be interested in participating in activities to restore the ecosystem within the sanctuary, more than 90% of the 200 villagers interviewed said that they would be willing to volunteer their labor even if there were no payment. In many respects, this response was to be expected. These villagers were already spending money to protect their crops and property. Any measure that would lead to reduction of crop raiding incidences would reduce their current expenses. Technically speaking therefore, the villagers are beneficiaries as well as service-providers. The latter capacity is justified as there are external positive benefits to users and the general public from the direct and indirect benefits of restored ecosystems services, as well as the non-use values of the biodiversity resources in the sanctuary where the elephant is the umbrella species.

In addition to participating in the above activities, the service-providers from the six villages will also be involved in monitoring and patrol activities. This is also an essential component of PES project which is to provide concrete evidence of the improvement of the ecosystems. Particularly for this pilot site, these include the reduction in the incidence of crop raiding, reduced damage costs to crops and property, and reduction of risks and fear. Villagers will be involved in data collection. With cameras installed at the locations of the water sources, the mineral licks, the food patches, and the use of GPS, it will be possible to collect data on the number, timing, and type of wildlife that benefit from the water, food, and mineral licks provided. As service-providers, villagers will undergo training so that they will be able to undertake these routine but very important tasks. Monitoring wildlife activities was done before in this sanctuary. The only difference will be that the villagers will be implementing this task instead of sanctuary staff.

Exploring Buyers of Ecosystems Services

Perhaps the most challenging part of launching the PES project, particularly for a site such as KARN-WS, is the identification of buyers. Apart from the service providers who also directly benefit from the measures that will be undertaken, the beneficiaries of the ecosystems service are essentially those who rely on water supply from the *Bangpakong* River and *Prasae* River. The single major user is the East Water Company, a private business group that has shown considerable interest as a contributor. At a meeting organized to discuss the objectives of the KARN-PES pilot project, East Water pointed out that there is a need to know the on-going development projects funded by both government agencies and businesses as part of their CSR investments within the 5-province corridor. Knowing what, where, and at what stage the projects are would be helpful in planning processes, in identifying overlaps of investments, and in channeling resources to where there are gaps.

But having a single buyer may not be sufficient to recover the initial investment nor the costs of recurring activities. It is essential to involve other potential contributors. During the initial period, there were high expectations that it would be possible to mobilize contributions from the private sector. Private sector companies spend considerable sums each year on public relations and corporate social responsibility (CSR). The optimism was that the KARN-WS PES pilot project already offers an opportunity where they could do “good” and earn CSR points. But private companies may place more weight on quick and tangible results. Clearly, there is a need for a formal institutional framework to create tangible incentives for the private sectors to be involved and to do this, it may be strategically better to approach private sector institutions such as the Federation of Thai Industries or the Thai Chamber of Commerce, rather than individual private companies. Valuable lessons can be extracted from the experiences of other countries’ initiatives to create markets for conservation of natural resources such as New South Wales (NSW) BioBanking Scheme launched in July 2008.

In principle, biobanking is a voluntary market-based scheme. Three main groups of stakeholders are involved: the landowners, developers, and conservationists. What is bought and sold are biodiversity

credits. The suppliers of credits are landowners who agree to set aside all or part of their land as a biobank site and manage this site for conservation. Credits can be purchased by developers, by conservationists, and even by individuals (either for philanthropic reasons or for speculative purposes). To date, the demand for most biodiversity credits come from developers who are required by law to offset the negative impact of their development. It is well acknowledged that the NSW BioBanking Scheme works because of strict law enforcement. The framework for the scheme was established under Part 7A of the Threatened Species Conservation Act 1995 and is supported by the Threatened Species Conservation (Biodiversity Banking) Regulation 2008, the BioBanking Assessment Methodology, and the Compliance Assurance Strategy. Thailand has parallel laws. The difference is that the law only focuses on the command and control side. There are limited attempts to create incentives for compliance and adequate penalties for non-compliance.

Turning back to KARN-WS, it would appear that there is a basis to generate the supply of environmental goods but to create demand on a scale that will give momentum for PES both for KARN-WS and for other potential PES sites in Thailand, requires a revamping of the legal tools which already exist to create effective demand for conservation services in the same way that the biobanking scheme was established for New South Wales.

The Outlook for Forestry and Poverty Alleviation

With the outcome of the recent general elections and the change in government, there seems to be uncertainty over the future of forestry and poverty alleviation policies. Nevertheless, there is at least the consolation that the macro-economic policy framework, in principle, is supported. Under the 11th National Plan, the goal of poverty alleviation is embedded in the vision of "a happy society with equity, fairness and resilience" and in broader statements such as adhering to the "guidance of the Sufficiency Economy Philosophy", "people-centered development", and "broad base participation approaches towards balanced, integrated, and holistic development". Promoting better income distribution is also reiterated as one of the missions during this plan period. Widening social disparity has led to conflicts in Thai society and is recognized, as well as the problem of persistence of poverty and indebtedness, particularly among farmers.

Income inequality and poverty issues are addressed under the strategy of promoting a just society. Four broader objectives are specified under this strategy:

1. to create opportunities for all to access funding, resources, and income earnings,
2. to increase income and social security,
3. to assist the poor, the underprivileged, foreign labor and labor force in the informal sector, and the ethnic groups to gain access to social services on equity basis,
4. to support all concerned development partners to participate in inequality alleviation and conflict resolution processes in an efficient manner and to jointly develop the country towards a society with quality.

The 11th Plan acknowledges that due to geographical changes and over-utilization, natural resources and the natural wealth of the country were depleted and that deterioration in the natural resources and environment is both a risk and weakness. The plan also recognizes that ultimately this will affect the performance of the economic sectors and well-being of the people. On natural resources and environment, the main objective is to nurture natural resources and environment to improve the quality of natural resources and environmental quality. Under the strategy of managing natural resources and environment towards sustainability, the focus is on conserving and restoring natural resources, improving management efficiency, and ensuring fairness in the access and use of natural resources.

Measures are listed for each of these strategies. Conserving and restoring natural resources is to be done by:

1. safeguarding and restoring the natural resource base and biodiversity;
2. developing databases and geographical information system (GIS) and knowledge management;
3. reforming the management system of land ownership and utilization to ensure efficiency, fairness, and security for poor farmers;
4. promoting efficient water management through close collaboration between local administration organizations and communities; and,
5. conserving, utilizing, and sharing the benefit of biodiversity.

What is seen as instrumental to conservation and restoration of natural resources is good governance in the natural resource management. This is to be achieved by:

1. empowering communities and advocating their rights to access and utilize natural resources;
2. facilitating and encouraging public participation, and establishing joint management mechanisms with all development partners;
3. amending relevant legislations and equitably enforcing laws and regulations to reduce conflicts and disparity among communities to access and use natural resources; and
4. ensuring that government investments are in line with policies of natural resource conservation and restoration.

The quantifiable target is that forest and mangrove forest areas should remain not less than 33.56 % and 0.5 % of the total area, respectively. Instrumental to this would be measures to (i) increase the abundance level of natural resources and biodiversity to maintain ecosystem balance and its efficient and equitable use, (iii) strengthen local communities in natural resource management for self-dependence, and (iv) ensure the fair access and use of natural resources and enhance capacities in responding to trade measures. What it wants to do are:

1. Conserve and restore the natural resource base and the environment
2. Preserve, protect, and restore land, water, and mineral resources, forest, coastal zones, and biodiversity
3. Improve the system of land resource management and re-distribute landownership for fairness and protection of poor farmers' security and their basis of living
4. Manage water resource based on the river basin system and encourage local authorities and communities to jointly develop, conserve, and use water sources
5. Promote conservation and utilization of biodiversity as well as sharing of equitable benefits by:
    a. Improving the efficiency, transparency, and equity of the natural resource and environment management system
    b. Strengthening communities and advocating their right to access and use natural resources sustainably
    c. Supporting the public participation process and developing local and community capacity
    d. Amending laws and regulations in a timely manner with the economic and social changes as well as equitably enforcing these laws and regulations
    e. Ensuring that government investments are in line with the conservation and restoration of natural resources
    f. Advocating environmental tax collection and budget reforms to create incentives for the efficient use of natural resources and pollution reduction
    g. Generating income from the conservation of natural resources and biodiversity.

In addition, the NESDB drafted the Green Economy Strategy aimed at achieving six main goals, namely: (i) stop deforestation, increase forest area, manage the expansion of communities in protected areas, demarcation; (ii) promote economic forests, (iii) promote farm forest patches, (iii) promote sustainable forest use and conservation, (iv) promote herb production in the forest through a committee that look after herbs in protected areas.

It should also be noted that the concept of PES, measures to reduce the rate of deforestation under REDD, and the promotion of reforestation and afforestation are consistent with the principle of generating income from conservation of natural resources and biodiversity. On PES in Thailand, apart from the challenges of the PES scheme design, there are legal and institutional hurdles to be crossed. There is also the major issue of how to create effective demand for conservation measures as opposed to relying on the goodwill of conservationists, philanthropists, and private sector businesses that want to be involved as part of their CSR activities.

There are ongoing initiatives that aim to generate lessons and from which a more sustainable policy framework can be expected, such as Catalyzing Sustainability of Thailand's Protected Areas System (CATSPA) and integrated community-based forest and catchment management through an ecosystem service approach (CBFCM). These look into mechanisms to sustainably manage the forests but which cannot be separated from the goals of poverty alleviation. More concrete outcomes are expected from these initiatives than from other interventions from the newly elected government, which is most likely to be more concerned with economic growth and "reconciliation" policies. The best that one could expect is that the new government does not intervene with these concrete initiatives to allow them to follow the planned course.

Recommendations to Improve the Contribution of Forests to Poverty Alleviation

Based on information reviewed, some of the insights from the case studies and inputs from the consultation workshop,[9] the recommendations are discussed below in relation to three areas, namely: (i) legal measures, (ii) the use of economic instruments, and (iii) the value of data to support decision-making.

Legal Measures

The function of the laws in defining and protecting the rights to forestry resources is by defining the rights to access, use, and benefit from natural resources. Legislation may be necessary but insufficient simply for want of effective enforcement measures. Even if the legitimacy of the State over public land is questionable, financial and manpower resources are unlikely to be sufficient to provide the scale of protection of forestry resources required. From the information presented in this report, it is notable that the legal framework has gradually increased the recognition of the rights of communities. More recently, we are seeing the evolution of the debate over community forests into the concept of "Community Title Deeds". Recommendations on legal aspects, based on discussions with the participants to the national workshop are:

1. Educate people about existing legislation and regulations. Workshop participants agreed that people have to be informed about what their legal status is, what their entitlement

[9] A workshop was organized on July 8th to present findings and preliminary recommendations to a group of experts representing various organizations whose mandate is related to management of forestry, land resources and poverty issues. Present in this workshop were the Executive Board Member of the National Water Board of Thailand, former Chairman of the National Committee for Solving the Problem of Encroachment of Public Land, Director of the Land Policy Study Forum, and the former Secretary General of Agricultural Land Reform Office. Also present were representatives of the Department of National Park, Wildlife and Plant, Forest Industry Organization, RFD, Biodiversity-Economy Based Development Organization, GIZ, and the NESDB.

is, and their right to participate. Ensure that law enforcers and people have a common understanding of what the law says. In the initial draft of the paper, the recommendation was for the amendment of key pieces of legislation, namely the National Park Act and the Royal Forestry Act to accommodate the principle of shared responsibilities in forestry resources management. The justification then was that there was a need to harmonize the laws that still empower public agencies such as the DNP and the RFD and the role of the State as the sole "protector" and "custodian" of the forest. In addition, the bureaucratic framework also needs to be adjusted. This is because it is apparent that they still operate under the old paradigm as evidenced by the increase in the number of court cases on land-use conflicts, particularly on public lands. During the consultation process, many felt that amendment of the law, though desirable, will take a long period of time. Moreover, the issue was more to do with constraints on the part of officials, i.e., that they either do not understand the law, do not practice what they understand or do not try to interpret the philosophy behind the law because it is easier to just follow the law word-for-word.

2. Bridge the confidence-trust gap. For people who are affected by such laws, discontent and mistrust of State authorities can be due both to the questionable legitimacy of public agencies to exercise such authority and the different exercise of power of public agencies. There are numerous communities like *Ban Thung Yao* that still harbor mistrust and discontent towards the State, because despite their proven ability to look after their resources, the villagers' rights and entitlement to look after their own resources are still not formally recognized.
3. Enable access to the judiciary system. Discontent can also accumulate because of the difficulties in challenging authorities, requiring people to engage in unknown and complex legal territories. While the principle of the law protects the rights of citizens, such rights cannot be enforced because citizens do not have easy access to the judicial system. This necessitates the existence of legal pluralism and alternative dispute settlement mechanisms. Complex legal and judicial systems are of limited value to those who might need protection and these can be habitually abused by the politically powerful. Beyond the laws, the system of justice must be accessible and affordable to the general public. This was a recommendation made earlier by Nabangchang and Srisawalak that it was an essential condition for good governance in land and natural resources management (Nabangchang and Srisawalak 2008). It is also a proposal by the NRF.

The Need for Concrete Action Plans

Information provided in the preceding sections illustrate that there are no shortage of plans, but participants in the workshop shared that current plans appear to be more like "staple projects". What was felt to be lacking are the details of how to implement, the resources to implement the plans, how to monitor and evaluate where the quantifiable targets were achieved and more importantly, the changes the achieved targets brought about in relation to the broader goals. Furthermore, there are multiple ongoing projects involving international development agencies, donor agencies, and public agencies, all of which address similar and related issues such as forest resources, biodiversity, watershed management, poverty alleviation, community participation, etc. Under initiatives such as CARSPA and CBFCM, project sites were identified that represent key ecosystems in the various regions of Thailand. Rather than wait until the completion of these projects to synthesize the findings, there is much to be gained if the responsible parties for these projects, both donors and implementing public agencies, will undertake a discussion forum to identify complementarities, overlaps, and inconsistencies. After all what is expected from these projects are management and financing models that combine environmental with social and economic objectives and that can be implemented and sustained beyond the timeframe of the projects.

Creating Economic Incentives for Natural Resources Protection and Conservation Interests: The Potential Application of PES

Between economic and pro-poor land policies, the land balance is likely to be tipped in favor of the former, given the potential to capture private gains among those in control of the political power and administrative organs. One way of minimizing these unbalanced objectives is to use economic incentives to align commercial interests in the economic exploitation of land and natural resources with conservation efforts that incorporate poverty eradication objectives.

The use of economic incentives both to deter actions that risk creating negative externalities and to induce actions that create positive externalities might be valuable policy instruments to overcome the limitations of command and control measures. Many local communities located within protected areas are presently providing ecosystem services through measures undertaken to protect and conserve the natural resources and from which their livelihoods partially depend. Like *Tha Pa Pao*, many of these communities were awarded with recognition and as a result, benefited from inflows of financial and technical support. Then there are other communities like *Ban Thung Yao* in Lamphun province and *Ban Choeng Doi* in Sakhon Nakhon province that despite the recognition of their achievement in management of forestry resources, prefer to be left alone to manage their forestry resources in ways that community members feel are appropriate. In addition, there are many other local communities who are at present looking after their own forestry resources and at the same time providing ecosystem services but are unknown or unrecognized. Among these, some would be involved in civil and criminal court cases for illegal entry (rightly or wrongly) and occupation of public land. Some are overlooked or unrecognized for their contribution in ecosystems services by looking after forestry resources on which their livelihoods depend.

In such situations, the PES concept that seeks to provide economic incentives to communities maybe the win-win solution by bringing in additional technical and financial resources for conservation, provide employment and income for the poor, and at the same time, ensure that more environmental and sustainable flow of rents can be captured at the national level. But as the KARN-WS case study illustrates, the biggest challenge for the PES concept to work is how to create effective demand for ecosystem services. This will be easier where there are direct users of ecosystem services and also if those direct users recognize the link between the actions undertaken by the service providers and the incremental tangible benefits. In most cases, such direct links may be technically difficult to establish. Without such clarity, it will be challenging to convince buyers of the expected benefits and their reasons for paying. Given that the potential sites are most likely in ecologically sensitive areas, it is expected that the sites will be areas where there are legal restrictions. Thus what will be required is also a recommendation made earlier for the amendment of key pieces of legislation, namely the National Park Act and the Royal Forestry Act to accommodate the principle of shared responsibilities in management of forestry resources.

Despite the challenges, the concept of PES is consistent with the idea of introducing economic instruments. It is also complements the policy to issue Community Title Deeds because many of the sites where local communities that are applying for Community Title Deeds are located within national forest reserves, national parks, and wildlife sanctuaries. In return for collective rights, incentives should be used to encourage communities to jointly protect forest resources from encroachment by outsiders as well as engage in ecosystems rehabilitation and restoration. Given these activities by communities, it is logical that some system of transfer payment be provided in return but a possible resentment against rewarding local communities is when the legality of their existence within the protected area is questionable. That is why it is recommended that pilot PES projects be initiated for selected local communities that will be granted Community Title Deeds.

Linking Reforestation, Poverty Alleviation and the Potential to Maximize Land Allocated Under Agricultural Land Reform

To a certain extent, it can be said that reforestation has taken off well in Thailand. Due mainly to the influence of their Majesties, the King and Queen of Thailand, replanting forests captured the interest of private companies, institutions, and individuals for public relations purposes or for pure interest in the common good. On the other hand, reforestation is not only about planting saplings and taking photographs. The effectiveness of reforestation is contingent upon the survival rates, the growth pattern, and the expected benefits as degraded ecosystems are gradually restored. What must also be noted is that there are constraints that reduce the potential to combine reforestation efforts with poverty alleviation goals, as was the experience with some of FIO's earlier initiatives discussed.

One recent promising initiative discussed was the Trees Bank project initiated by the Bank of Agriculture and Agricultural Cooperatives. Within the conceptual framework of the project, planting trees is considered long-term capital investments and the BAAC will accept trees as "assets". After five years, the bank will issue a certificate that can be used as collateral. To expand on this concept, the Biodiversity-Economy Based Development Organization consulted with the BAAC, as well as FIO and RFD, over the possibility of developing financing mechanisms for reforestation. The proposal is that a CSR Fund be established within the BAAC. Private companies can deposit a CSR budget in this fund to be used for reforestation activities or natural resources conservation projects. This mechanism will help match demand and supply for conservation activities. A potential link with poverty alleviation goals is through the land factor. Currently, the benefit of the Tree Bank initiative to the poor can be limited by the fact that the BAAC requires that farmers have land rights. One possible approach discussed during the workshop was that the supply of land to launch the Tree Bank concept on a larger scale would be in the land reform areas, which represent around 30% of Thailand's agricultural acreage. Even before the Agricultural Land Reform Act in 1975, there was a Cabinet resolution that 20% of land allocated should be set aside for communal use, which includes community forests. Although, the resolution was not strictly followed, there is no reason not to explore the possibility of reinstating this idea in land reform areas. The rationale for this would be both the poverty situation of land reform beneficiaries, the direct and indirect benefits of reforestation of large tracts of land, and the increased potential to undertake this on a continued basis if such activities could be linked to a viable financing mechanism.

The Value of Data to Support Decision-making

The importance of data was clearly demonstrated by the experience of *Ban Thung Yao* while the case of *Ban Pa Kluay* suggests the potential to use findings from detailed economic analysis to support decision-making. In the case of *Ban Thung Yao*, data on the monetary value of the NWFPs provided solid evidence in demonstrating to the villagers the importance of their livelihood on forestry resources. Such data is also substantial proof to the RFD that the villagers can be self-reliant even without any external technical and financial support. The economic analysis of the various management options showed the distribution of costs and benefits and the trade-offs for different stakeholders, and the discussion can go beyond emotional appeals. Having said that, it is recognized that there will still be several barriers, some ideological and some technical. The ideological barriers present a greater challenge than the practical constraints for three reasons: the general concern about placing monetary values on nature, the cultural understanding needed, and adapting traditional ways of life.

References

Food and Agriculture Organization Regional Office for Asia and the Pacific. (2009). *Thailand forestry outlook study. Asia-Pacific Forestry Sector Outlook Study II Working Paper Series*. Working Paper No. APFSOS H/WP/2009/22. Bangkok, Thailand: FAO-RAP.

Jitsuchon, S., & Richter, K. (2007). Thailand's poverty maps. From construction to application. *In More than a pretty picture: Using poverty maps to design better policies and interventions.* World Bank.

Land Institute Foundation Study. (2000). *The study of land tenure and land utilization in Thailand: The economic and legal instruments to ensure maximization of land use*. A Study conducted for the Thailand Research Fund.

Nabangchang, O. (2008). *Good governance and natural resources: Tenure in Southeast Asia*. Food and Agricultural Organization Land Tenure Working Paper No. 4.

Nabangchang. O. (2003). *A cost-benefit analysis of resettlement policy: A case study of Ob Luang National Park*, Northern Thailand. Economy and Environment Program in Southeast Asia (EEPSEA) Research Report NO. 2003-RR10.

National Economic and Social Development Board Office of the Prime Minister Bangkok, Thailand. *The first plan (1961 - 1966): Phase 1.*

National Economic and Social Development Board Office of the Prime Minister Bangkok, Thailand. *The first plan (1961 - 1966): Phase 2.*

National Economic and Social Development Board Office of the Prime Minister Bangkok, Thailand. *The second plan (1967 - 1971).*

National Economic and Social Development Board Office of the Prime Minister Bangkok, Thailand. *The third plan (1972 - 1976).*

National Economic and Social Development Board Office of the Prime Minister Bangkok, Thailand. *The fourth plan (1977 - 1981).*

National Economic and Social Development Board Office of the Prime Minister Bangkok, Thailand. *The fifth plan (1982 - 1986).*

National Economic and Social Development Board Office of the Prime Minister Bangkok, Thailand. *The sixth plan (1987 - 1991).*

National Economic and Social Development Board Office of the Prime Minister Bangkok, Thailand. *The seventh plan (1992 - 1996).*

National Economic and Social Development Board Office of the Prime Minister Bangkok, Thailand. *The eighth plan (1997 - 2001).*

National Economic and Social Development Board Office of the Prime Minister Bangkok, Thailand. *The ninth plan (2002 - 2006).*

National Economic and Social Development Board. (2010). *Thailand Millennium Development Goal Report 2009.*

National Economic and Social Development Board Office of the Prime Minister Bangkok, Thailand. *The tenth national economic and social development plan (2007 - 2011).*

National Economic and Social Development Board Office of the Prime Minister Bangkok, Thailand. *The draft of the eleventh national economic and social development plan (2012-2016).*

Office of Agricultural Economics, Ministry of Agriculture and Cooperative. (1998). *Agricultural statistics of Thailand, crop year 1996/97.*

Office of National Economic and Social Development Board. (2010). *Thailand Millennium Development Goal report 2009*. NESDB.

Royal Forestry Department & Food and Agriculture Oraganization of the United Nations. (2010). *Global forest resources assessment 2010*. Thailand country report. FRA 2010/206. Rome: FAO.

Srisawalak, E. (2010). *Community land titles.* A study submitted to the Research Fund.

Srisawalak, E., & Nabangchang, O. (2006). *Developing database for land management at the local level*. A study commissioned by the Thailand Research Fund.

Sukhothai Thammatirat Open University. (2009).*A study on classification and measures for sustainable land use*. A Study commissioned by the Office of Environmental Policy and Planning.

XI

Assessment of the Contribution of Forestry to Poverty Alleviation in Viet Nam

Le Thi Van Hue*

Introduction

In Viet Nam, economic reforms known as *doi moi* were introduced in 1986. These reforms included the elimination of the cooperative's monopoly on agriculture and forestry[1], the introduction of short-term land use rights, and encouragement of privatization and market liberalization. These reforms dramatically improved living conditions and are said to be "one of the greatest success stories in economic development" (ADB et. al. 2003). Viet Nam made great economic progress in recent years, growing an average 8% per year. *Doi moi* has had a remarkable impact on hunger eradication and poverty alleviation (World Bank et al. 1999).

The reality of poverty is measured in terms of the livelihoods of the poor. The situation of being in poverty includes various aspects: limited income, vulnerability in the event of disaster, and lack of opportunity for decision making (ADB et. al. 2004). Poverty has its own peculiar logic and manifests itself in geographic patterns. Most poor people (about 90% of all poor in Viet Nam) live in rural areas (Socialist Republic of Viet Nam 2005b; United Nations 1996). The poorest of the poor reside in the central highlands, northern uplands, and along the north central coast. Ethnic minorities are disproportionately poor. Based on this concept of poverty and a cost-based method to calculate poverty indicators and an international poverty line, Viet Nam was seen as successful in reducing poverty. In 1993, 58% of the population was poor, and this figure steadily declined to 37% in 1998, 29% in 2002, 24.1% in 2004, 16% in 2006, 12.3% in 2009, and 10.6% in 2010 (Socialist Republic of Viet Nam 2005b). A third of the total population escaped from poverty in less than 10 years (ADB et al. 2004).

One might ask if this fast growth will help erase hunger and alleviate poverty in the next couple of years while around 90% of the poor live in rural areas. The livelihoods of the poor rely heavily on forests and forestlands. In most parts of the country, deforestation and biodiversity loss are occurring at an alarming rate.

The sustainable management and use of natural resources, in general, and of forests, in particular, are fundamental to human survival. Forests provide people with timber, firewood, non-wood forest products (NWFPs), as well as valuable environmental services. Forests play an important environmental role through watershed and water resources protection, soil erosion control, and regulation of climate. They also make great contributions to improving the livelihoods and alleviating poverty among rural and

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[1] In late 1986, the government abolished compulsory grain purchase quotas and instituted free trade at market prices, ended collectivized agriculture, and distributed farmland to individual households (Irvin 1995; Dollar and Litvack 1998).

mountain people (Ha 2009). Presently, 23% of Vietnamese communes are poor. These poor communes make up 50% of the country's total land area, of which 66% is forestland (Dinh Duc Thuan et. al. 2005). The most recent of Viet Nam's Living Standard Surveys shows that poverty incidence is highest in mountainous areas, such as the northern mountains and central highlands, where forestry resources are abundant. According to Sunderlin et. al. (2004 & 2005), the poorest of the poor, especially ethnic minorities, reside in or near forested areas.

Viet Nam's territorial area is about 33 million ha, of which 16.24 million ha is planned for three types of forests, namely: special use forest (2,199,342 ha), protection forest (5,552,328 ha), and production forest (8,495,823 ha) (MARD 2010)[2]. Recent data of the Ministry of Agriculture and Rural Development (MARD) show that Viet Nam's existing forest area and forest cover are increasing and contributing to poverty reduction in forested areas. As a result, the forest sector contributed to the national GDP (MARD 2010). Viet Nam's total forest area increased at annual average rate of 164,250 ha, from 12,601,800 ha in 2005 to 13,258,800 ha in 2009 (Ibid.). Forest cover increased at a rate of 0.4% per year, reaching 37% in 2005 to 39.1% in 2009 and 39.5% in 2010. All of this is due to support from Program 661, Decision 147 that supports afforestation, and official development assistance (ODA) projects. The increased forest cover contributed to important social objectives, such as rural poverty reduction and income generation, especially for 12 million ethnic minority people living in remote forested mountains in the country. These efforts include forest land allocation and rural employment. More specifically, 3.3 million ha of forests were allocated to households and two million ha of forests were contracted for protection. Reforestation through Program 661 created employment for 4.7 million people (Ibid.). However, the figures of Viet Nam's forest cover and forest reserve as well as information about forest quality and status are not correct. This was raised and discussed by many experts and managers in many workshops, as this is causing many difficulties in planning, land allocation, and forest management for policy-makers, managers, and forest owners.

Between 2005 and 2009, the forestry sector contributed only 1% of the national GDP, not including processing and export of forest products. In fact, 1% is very a very small proportion compared to the contribution made by agriculture, which is estimated at 14% per year. However, forestry contributes greatly to the national economy through the forest product processing industry (for export) and for its environmental values. Furniture exports increased from US$ 61 million in 1996 to US$ 3.55 billion in 2010 and created about 250,000 jobs per year. Moreover, if

Pedro Walpole

Forest resources and small farms provide much of the subsistence needs of rural families but not enough to get out of poverty, given their distance from markets, economic opportunities and social services.

[2] Special use forest is primarily for nature reserve, conservation of national standard forest ecology and the genes of forest flora, and scientific research, protection of historical monuments, leisure, and tourism. Together with protection forest, special use forest contributes to environmental protection. Protection forest is primarily used for water resources and soil protection, prevention of soil erosion and desertification, mitigation of natural disasters, climate moderation, and environmental protection. Production forest is used for production and trade of timber and NWFPs. Production forest and protection forest contribute to environmental protection.

[3] Financial support from the State's budget to the for-

the contribution of forestry to environmental services (such as protection of soil, water, and carbon absorption and other services) is fully calculated, the value is much higher, estimated at about US$ 29.7 billion (ADB 2009), accounting for 4-5% of the national GDP.

Nevertheless, poverty in the key forested regions has not reduced substantially. Therefore, the contribution of the forestry sector to poverty reduction is still limited. Household income generated from forest activities is still modest despite government's efforts.

Poverty reduction is a complex issue and requires cross-sector coordination and collaboration. The government of Viet Nam has increasingly paid attention to the abolition of hunger and poverty and to economic development, since 85% of protected areas are located in regions where poverty incidence is highest (ICRAF Viet Nam 2009). The government has also emphasized the tight links between poverty alleviation and forestry conservation by setting a goal to reduce poverty in the country to below 40% and to increase the country's forest cover to 43% in 2010 and to 47% in 2020 (Ibid.). This suggests that policy makers view the forestry sector as one mechanism for poverty alleviation.

Nevertheless, there has never been any thorough research on the contribution of forests to poverty reduction, although there are minor studies done by Sunderlin and Huynh (2004) and Dinh Duc Thuan et. al. (2005).

Poverty Reduction and Forestry in National Policy

National Poverty Reduction Strategy

Based on a cost-based method to calculate poverty indicators and an international poverty line, Viet Nam is seen to have successfully reduced poverty. In the 10-year socio-economic development strategy, the government expressed its commitment to job creation, poverty reduction, and social equality. The development strategy toward poverty reduction was integrated in socio-economic development plans for 2006-2010 with the following goals: (i) reducing the households considered poor from 32% in 2000 to 15-16% in 2010 (based on the General Statistics Office or GSO); and (ii) reduce 75% of households that are poor in terms of food (from 11% in 2000 to no food poverty in 2010).

In the 1990s, Viet Nam's poverty rate was around 75%, which was unacceptably high. It was reduced to 58% in 1993 and 37% in 1998, 29% in 2002 and 24.1% in 2004 (Socialist Republic of Viet Nam 2005b). This was further reduced to 19.5% in 2005, 14.8% in 2008, 12.3% in 2010, and 10.6% in 2011 (Index Mundi, retrieved 2011).

Doi moi has had a remarkable impact on Viet Nam's rapid economic growth, hence the eradication of hunger and poverty in Viet Nam (World Bank et al. 1999). However, the question put forward now is whether rapid growth can improve this in the near future. A report, Viet Nam Poverty Analysis, by the Centre for International Economics (2002) noted that doi moi seemed to have led to structural changes in the economy in which some sectors could expand and develop while some will still contract. It opens up the possibility that unemployment will increase and incomes will fall below the poverty line.

The socio-economic development plan for 2011 to 2015 on the implementation of the associated strategy shows the direction toward fast and sustainable growth, as well as increasing the country's potential to develop. The plan also mentions improving the quality, efficiency, and competency in international integration to make strong changes in the economic structure and promote industrialization and modernization. The plan targets the goals of increasing the average economic development rate at around 7-8% per year from 2011 to 2015, decreasing the average poor household rate based on the new standard to 2-3% per year, and increasing the forest cover to 42.5% (Decision 09/2011/QĐ-TTg).

UNDP (2011) stated that of all the Millennium Development Goals (MDGs), Viet Nam has made the most impressive progress on MDG 1 on poverty reduction. From a poverty rate of 58.1% in 1990, the country successfully reduced poverty by 75% in 2008 (14.5% poverty rate).

However, while overall poverty levels dropped remarkably, wide disparities still exist. For instance, more than half of the ethnic minority groups still live below the poverty line. New forms of poverty are also starting to emerge, such as chronic poverty, urban poverty, child poverty, and poverty among migrants. Tackling these new forms of poverty will require tailored and multi-sectoral approaches that recognize that poverty is more than just a household's income level in relation to a monetary-defined poverty line (UNDP 2011). In the 2010 Human Development Report, the population below the poverty line of Viet Nam in 2000 to 2008 was 28.9%. However, during the same period, 30.1% of the population are at risk of severe deprivation in living standards and the population at risk of multidimensional poverty is 12.0%.

The Asian Development Bank (ADB) also expressed that even though Viet Nam achieved this impressive progress, the poverty rate in the ethnic minority areas was still 52.3% in 2006, though considerably reduced compared to 86.4% in 1993 (ADB 2011). Recently, the government identified 62 poor districts to receive special support through programs, such as the New Rural Development Program for socio-economic development. This targets communes and villages and works particularly in mountainous areas where ethnic minority groups reside. It has a budget of about Vietnamese dong (VND) 74,000 million (equivalent to US$ 4 million) (MARD 2009). The Rapid Poverty Reduction Program under Resolution 30A was also implemented for a year in these 62 poor districts.

Forestry Policy

Viet Nam's socio-economic development strategy for 2001 to 2010 set a number of goals for the forestry sector Box XI.1. It should be noted that from 2005 until the present, logging is still banned in Viet Nam. The natural forest is still closed to extraction and timber is only harvested from planted forests, which are production forests.

Box XI.1. Forestry sector goals under Viet Nam's socio-economic development strategy, 2001–2010

The goals for the forestry sector specified in the country's socio-economic development strategy for 2001 to 2010 are as follows:

- Increase the forest cover to 43%. In the late 1960s, the forested area in Viet Nam was estimated to be 18.15 million ha, accounting for 55% of the total land area of 33 million ha. In the late 1980s, it dropped to 5.7 million ha or 17% of the total land area (Collins et. al. 1991; De Koninck 1999 in Sunderlin and Huynh 2005). The country's forest cover declined from 43% in 1943 to 20% in 1993 (Vo Quy 1996). Nonetheless, between 2005 and 2009, the forest area increased significantly from 37% in 2005 to 39.1% in 2009 with an average annual rate of 0.4% (MARD 2010). As of the end of 2009, Viet Nam's forest cover was 39.1% (MARD 2010).
- Complete forest land allocation to socialize the forestry sector. The goal set by the plan was to shift from the state's centralized forestry management to social forestry – community forestry and household forestry. Up until 2009, the area of forest land unallocated and managed by the Communal People's Committee was 2.74 million ha.
- Promote forest-based livelihoods
- Stabilize local people's farming practices
- Prevent deforestation and forest fires, and,
- Speed up the progress of commercial plantations to provide raw materials for domestic production and exports.

With these ambitious goals and tasks together with institutional and policy reforms, the cost to successfully implement the strategy was estimated at US$ 400 million per year for 11 years. But investments from the state budget and private sector reached only about US$ 50-60 million per year. A series of policies issued by the Government aimed to access the market for financial resources, such as

strengthening incentive mechanisms and encouraging organizations and the private sector to invest in forestry (through land allocation, lease, joint venture and association)[3].

Since 1998, the key investment policy of the government in forestry was the afforestation program for five million ha or Program 661. The program almost achieved its target of planting three million ha in the protection forest, but the target for production of forest plantation of two million ha was not met. The implementation of this program has shortcomings, such as a lack of strict regulations on project and budget planning. The program was modified based on the national assessment results (Decision No. 100/QD-TTg). The main amendments included the criteria and classification of forests to reduce protection forest, to increase forestry production, and to improve regulations on land allocation and the forest lease. The government also issued new policies on the development of production forest (Decision No. 147/2007/QD-TTg), i.e. to support forestation activities, to develop forest infrastructure and training.

In 2010, to innovate forestry management, the government established the General Department of Forestry under MARD with the responsibility of developing forest policies. The agencies at the provincial and district levels are responsible for managing forest protection and development activities. However, according to Wode et. al. (2009), many forest policies are relatively centralized with complex regulations that limit their application at the local level. The lower level management authority still has to submit its request to higher offices for approval. This situation is constraining the innovation and the effectiveness of the decentralization process. The administrative management and services-providing capacity for forestry sector at district and commune levels are still limited. The state controls and manages most forest areas in terms of land use, and issues exploitation quotas by command measures instead of economic measures[4]. Furthermore, the development of effective forest policy is constrained by the inconsistency and ineffective cooperation among ministries. Ineffective cooperation among ministries makes it impossible to establish a consistent and reliable information system.

Past and Present Contribution of Forestry to Poverty Alleviation

Resource use is shaped by the institutionalized patterns of interaction among individuals, households, and formal and informal structures of governance and control. The latter emerges with the communities and from larger political and economic institutions, such as the market (Tran and Rambo 2000). These institutions can either facilitate or constrain the ability of people in the community, as defined by gender, class, age, and social status, to manage their own resources. Over time, the level of contribution of forestry to people's livelihood and the state economy is changing and increasing. The following sections explore how subsistence use of forests and community forestry, commercial and industrial forestry, and payment for environmental services contribute to poverty alleviation in Viet Nam.

Community Forestry

Subsistence forest use

In Viet Nam, traditional community forestry existed for many generations and is closely linked to the survival and culture of forest-reliant communities (Nguyen 2001; Nguyen 2003). Many communities protected and managed the forests effectively with minimal inputs and funding from the State in comparison to State-managed forestry (MARD 2001). Traditional community forestry is considered

estry sector is not sufficient in accordance to plans. Therefore, arrangements such as land allocation, lease, joint venture and association are considered the best ways to attract capital sources from society to invest in forestry.

[4] Planning and implementation are still top-down and are not market oriented (Interviews with Mr. Dinh Duc Thuan, Head of ODA Forestry Project Management Board).

one of the best forms of management: it is efficient, cost-effective, and is advocated by local people (Nguyen 2003)[5]. Therefore, it should be promoted in the current social and economic context. The reasons are two-fold. First, local populations have a greater interest in the sustainable use of resources than the State or corporate managers. They are more aware of the intricacies of local ecological processes and practices, and they are more able to effectively manage those resources through local or "traditional" forms of access (Tsing et. al. 1999). Second, the government cannot afford to employ local people to manage forests on a long-term basis and the present state forest management is encountering great difficulties in remote areas (MARD 2001). Experience has shown that communities with a long tradition in forest management are able to use, conserve, and protect the forests well.

Forested areas used and managed by village communities consist of sacred forests, critical watershed[6] areas, and cemetery forests of ethnic groups. In some areas, forests previously managed by cooperatives were transferred to village communities after the cooperatives were dissolved (MARD 2001). Traditional forests managed by communities can provide timber (though in fairly limited quantity that can be used for building and fuel) and NWFPs. Traditional community forests can provide timber for public structural needs. Forest food sources are most extensively used to help meet dietary shortfalls during certain times of the year. Trees and forests are integral to farming systems. These benefits are shared more equally than those under other forest management systems in Viet Nam (MARD 2001).

Allocation of forest resources rights

Viet Nam established its *doi moi* policy in 1986, which brought about the following changes: (i) it eliminated the cooperative's monopoly on agriculture and forestry; (ii) it introduced short-term land use rights (up to 20 years for agriculture and 50 years for forestry); and (iii) it encouraged privatization and market liberalization. During the 1980s, a household-based economy increasingly displaced the cooperative-based economy (Le and Rambo 1999). The government shifted responsibility for the management of natural resources away from commune cooperatives and into the hands of individual farm households (Nguyen 1995).

During this period, Viet Nam's forest sector was gradually transformed from a centrally managed organization into a socialist one, with forests gradually being managed in a more sustainable manner (Pham 2008). However, this transition was slow and took place over 10 years. Due to the unsustainable use and management of resources, the area of quality forests declined. Forest cover dropped from 43% in 1943 to 27% of the total land of the country in 1990 (Vo Quy 1996; MARD 2009). From 1980 to 1990, Viet Nam's natural forest cover decreased by an average of 100,000 ha a year. The main causes of deforestation in Viet Nam are population-driven demand for forest products and agricultural land, and logging of large tracts of forest by the State Forestry Enterprises (ADB 2000). Since 1990, forest area increased due to efforts to afforest and rehabilitate natural forests.

The process of forest land allocation in Viet Nam was carried out since 1968 and through different periods (MARD 2009). The following is an examination of past and current contributions of the allocation of tenure over forestry resources to poverty alleviation.

1968-1982: This was the period of state and cooperative development, and Viet Nam's economy was centrally managed and all development plans were formulated and implemented from the central to local level. During this period, the issuance of overlapping and inappropriate forest management policies brought little benefit to local people (MARD 2009). They were not provided with long-term rights to forest resources, so there was no incentive to protect the forest further (Scott 2001). The actors in the centralized economy were mainly the government, state enterprises, and cooperatives.

[5] Traditional models of community forestry have long existed in Viet Nam. "Traditional models" meant systems of local level forest management were created in a community and not introduced from outside. Introduced models of community forestry are relatively recent. These are systems of forest management presented from outside the communities by the government, international agencies, or local NGOs. These may or may not be super-imposed on pre-existing traditional systems of community forest management.

[6] A watershed is the whole region that contributes to the supply of a river or lake.

Households participated in cooperatives, shared work, and benefited equally. This benefit mechanism between locals and the government was not mentioned in this period. Roles of individuals were not fully appreciated, except for the role of cooperatives. Active participation in economic production was poorly encouraged. Forest types and target groups were not clearly identified. Forest degradation and exploitation increased. Poverty was considered one of "Viet Nam's enemies," but the role of forestry in poverty reduction was not recognized or promoted.

1983-1992: During this period, allocation of forest land was based on land use planning. The Ministry of Forestry issued Resolution No. 1171 LN/QD on 30 December 1986 based on regulations to manage three types of forests, such as protection, special use, and production forest. Forest management was decentralized with the shift from state to people's forestry (social forestry) and there was a gradual movement from the subsistent economy to a market one. Forest land allocation (FLA) and long-term leasing is a vital policy of the Party and the State (Hua 2008). The policy aimed to carry out the forestry socialization program for protection and development of forests and the strengthening of society. They would also combine forest protection with economic and social development, and hunger abolishment and poverty alleviation (Ibid.). Instructions and documents related to the FLA program were issued, including the Land Law issued in 1988. The first forest protection and management law was issued in 1991. Land allocation during this period was divided into two phases. During the 1983-1989 period, 1.9 million ha were allocated to 1,724 cooperatives, 610 institutions and schools, and 349,750 households. From 1989 to 1992, 796,000 ha were allocated to 440,000 households and 5.8 million ha to the State.

1993-2005: The Land Law was revised in 1993, 1998, 2001 and 2003. The 2003 Land Law stipulated that people own the land and the State is the representative to manage the land. The concept of ownership, which was addressed in the Civil Law in 2005, included the right to occupy, the right to own, and the right to determine. The Forest Protection and Development Law was modified in 2004. Decision 327 in 1992 and Decision 556 in 1995 aimed to re-green the uplands. Under Program 327, major funds were allocated to upland provinces. The poor in the uplands benefited from the large investment, working as wage laborers for State enterprises in plantation, protection, and forest cleaning. Instruction 525 issued by the Office of Prime Minister in 1993 emphasized the modernization of agriculture, the strengthening of educational systems, the development of infrastructure, and the provision of safe water throughout the uplands. During the period 1998-2010, the Five Million Hectare Reforestation Programme (5MHRP) was implemented according to Decision 661. This aimed to contribute to the achievement of the Comprehensive Poverty Reduction and Growth Strategy. The 5MHRP aimed not only to reforest Viet Nam, but also to address issues of rural poverty and national socio-economic development.

According to the 2006 report of the Ministry of Natural Resources and Environment, the total area of forest land (11.3 million ha) allocated to households, state forest enterprises, communities, organizations, individuals, and foreign–invested organizations, accounted for 77% of the country's total forest land. The average allocation was 897 ha for organizations and three ha for households (Nguyen 2008). The remaining forest was temporarily allocated to the People's Committee at commune and district level.

According to Resolution No. 2159/QD-BNN-KL issued on 17 July 2008, the coverage increased to 38.2%. Total forest area was 12.83 million ha (10.28 million ha natural forest and 2.55 ha planted forest). The country's forest cover reached 39.1% in 2009 and 39.5% in 2010 (MARD 2011).

FLA to individuals and households

Since the early 1990s, when the policy on forest land allocation to households and individuals was implemented, the government focused on developing family forestry. As of 2005, the State allocated nearly 3.5 million ha of forest land (accounting for 23.7% of the whole country's forest land) to about 1.1 million households (MARD 2010). In 2008, the number of households allocated forest land increased to 1.3 million households with a total area of 3.8 million ha (about three ha per household), constituting

26.2% of the total area of forest land. It should be noted that households were allocated all the three forest types: 1.8 million ha of production forests, 1.6 million ha protection forests and 68,277 ha special use forests (MARD 2009).

According to FLA policy, households allocated with forest land are only allowed to use the land. Households allocated portions of the natural forests were allowed to use, rather than own the forests. In cases where households use their own money to invest in plantations, they would own the plantations (Nguyen 2008).

Allocation of forest lands to communities

The revised land law in 2003 did not state that forest land was subject to allocation to local communities. Viet Nam gave legal status to the local village community[7] in 2004. However, these community forests were badly neglected and significantly degraded (Sunderlin 2004).

The revised forest law in 2004 allows for the allocation of forest land to villages, and the benefit-sharing law offers substantial economic incentives for participating in community forestry. With decision-making power handed over to communities, poor households are now able to use their forestry land—their key asset—to improve their livelihoods, thus helping them stay out of poverty. Before the new law on forest protection and management was passed, the foundation for community forestry in many communities throughout the country was strong in spite of past policy barriers (Sunderlin 2004). Case studies conducted in provinces, such as Ha Giang, Yen Bai, Dien Bien, Son La, Lai Chau, Cao Bang, Hoa Binh, Nghe An, Thua Thien-Hue, Gia Lai, and Dak Lak show that there are hundreds of cases where communities were able to circumvent formal restrictions and implemented their own system of community forestry with or without external support (Forestry University 2002; Vu 2003; Nguyen 2003; Tran 2003; Nguyen 2001; Bui 2003; Vu 2003; Pham 2003; Phong 2003). The communities in these case study sites were able to convince local authorities of the soundness of their approach, i.e., community forest management is one of the best forms of forest management because it is efficient, cost-effective, and is advocated by local people (Do Hong Quan 2003). These studies show preliminary evidence that allocation of forests to communities can lead to improved local management of natural resources.

Communities with allocated lands do not receive full rights, compared to other organizations, individuals, and households[8]. According to Decree 181/2004/ND-CP issued on 29 October 2004 on the implementation of the Land Law, the State allocated protection forests to communities. However, communities were not allowed to allocate protection forest to their members; to change land use rights; to transfer, donate, lease, or mortgage; to act as a guarantee; or to contribute money to invest on the value of land use rights (MARD 2009). Local communities protect the forest together and decisions on forest management are collectively made. The State does not collect money from communities when allocating forest land or production and protection forests. Legally, residential communities are not fully recognized as legal entities, simply because they do not have assets.

As of mid-2009, the total area of forested land allocated to communities was only 191,400 ha, much less compared to the target of 2.5 million ha by 2010 and four million ha by 2020 in the forestry strategy (MARD 2010). Communities were allocated degraded natural forest without supportive policy or investments (Le 2006; MARD 2010). Since community forestry produced generally low returns, it is not contributing significantly to poverty alleviation.

[7] The village community is a community with the same customs, practices, and traditional attachment to the forest in terms of production, lifestyle, culture, and belief; is capable of managing the forest; and interested in applying for forest allocation.

[8] In areas where pilot projects are implemented, communities are provided land certificates but do not receive full rights as organizations. Individuals and households do.

Impacts of FLA policies

According to Pham (2008), there is no research conducted on the impact of the FLA program on poverty reduction, but there are research projects and reviews of the forestry sector by independent experts, research institutes, international projects, and management agencies at all levels. Those research projects were carried out on a small scale, focusing on one location, usually by one organization (Ibid.).

FLA as a sound policy (MARD 2009) promoted and brought about changes in forest protection and management. As a result, forests are better managed, and forest users' responsibilities and benefits from forest protection and management are brought together. Thus, favorable conditions were created for forest protectors so that they would feel confident to manage the forests and invest in forest development on the forest lands allocated. And in a number of places, post-FLA policies accompanied FLA that encouraged the local people to participate in forest plantations, contributing to the establishment of regions supplying raw materials (Pham 2008).

Forest management and protection received great attention from the government, relevant ministries, and departments as well as from the local government (Nguyen 2008). Priority policies and support programs were developed for those who are dependent on forests and ethnic minority groups who live near or around forests. As such, the living standards of local people were improved and their awareness of the importance of forest also increased (To 2008; Vuong 2008; Nguyen 2008). In addition, FLA helped State forest enterprises achieve their goals on the use of labor, capital mobilization, and the use of technology by their cadres and workers, thus improving the efficiency of State forest enterprises, creating employment, and increasing income for workers (To 2008). More specifically, until 2010, the Five Million Hectare Restoration Project created almost 4.7 million jobs, of which 490,000 were for the poor, primarily those living in mountainous areas. The project helped them increase their income and stabilize their livelihoods through contracts for forest protection and tending industrial and fruit trees.

Vuong (2008) provided insights into the FLA program from an anthropological point of view. According to him, FLA created small and medium farms in mountainous areas where ethnic minority people reside. The farm size varied from a few to several dozen hectares. These farm owners mainly engaged in cultivation, animal husbandry, and forest tree plantations. Such a model helped owners diversify income sources to reduce revenue losses. In contrast, farms with trees and animals with a high market value engaged in production and trade. There are still only a small number of farms in mountainous areas because profits from forests are low, except in the area that provides raw materials for the Bai Bang paper pulp industry (Vuong 2002).

FLA contributed to changes from shifting cultivation to fixed cultivation and permanent settlement. Since FLA was established, ethnic groups were provided with knowledge of new techniques in wet rice cultivation. Vuong also emphasized that FLA contributed to the change in the proportion of harvested forests and replanted or rehabilitated forests. This was considered a revolution in agriculture in the uplands of Viet Nam. It changed the components of the traditional ethnic community, making practices more diverse and providing them with opportunities to integrate with other groups of people. At the same time, FLA helped locals improve their cultivation and trade techniques.

FLA's contributions to gender equity were equally important. Prior to and even during the initial period of FLA's establishment, only the name of the household head, the majority of whom were men, was noted on the land use rights certificate (Red Book) (Le 2004; Vuong 2008). Women did not receive individual rights to the land, and the land use rights were mainly given to men. Women were disadvantaged by the lack of policy recognition of women's rights to ownership over resources, such as land (Tran and Le 1997; Ha 1997). When FLA started, both husband and wife were supposed to sign the Red Book together and contributed greatly to gender equity in rural Viet Nam where men were always respected and women were disregarded due to the persistence of patriarchal values.

Box XI.2. Factors constraining FLA's contribution to poverty alleviation

According to MARD (2009), FLA's contribution to poverty alleviation is still limited due to the following factors:

- Vague policies and unclear guidance of policy implementation;
- Insufficient polices on FLA, lack of consistency and synchronicity in the promulgation of policies, lack of support policies after FLA, especially for households and communities;
- Incompatibility with local conditions in each region;
- Lack of coordination among stakeholders;
- Lack of economic incentives;
- Poor quality of forests or access difficulties; and,
- Lack of support after land allocation.

Source: MARD 2009.

Commercial and Industrial Forestry

Smallholder schemes

Since 2008, the forest land area assigned to households and individuals to develop a forestry economy increased through the State's guideline to "socialize forest jobs and attract a large number of local people to join in forestry for hunger elimination and poverty reduction." The policies spelled out the benefits households could receive from smallholder schemes as follows:

- Households that are allocated forest land with natural forest will receive benefits according to Decision 178, which stipulates in detail the harvesting and benefit-sharing mechanism.
- Households that are allocated forestry land with no forest for forest plantation are provided rice or cash. On average, households receive VND 2-2.5 million per ha (US$ 100-125 per ha). Households are also provided the land use right certificate and they are allowed to harvest and benefit 100% from their planted forest.
- ODA projects provide support amounting to VND 10 million (US$ 500) depending on the project and the region with remote areas given special favor[9].

Parallel to FLA, the State developed other policies to support households engaged in forest planting. In 2008, the government promulgated Decision No.147/TTg to support people's participation in developing production forests to replace Program 661. Although this program was implemented in the entire country and was considered successful in some areas where people were allocated forest land and had better livelihoods, it was difficult for those living in poor areas with low education level to take part in the program. This was because the financial support from the government was low, which was VND 2-2.5 million per ha compared to the total real cost of VND 15-20 million per ha. In addition, the government had other support programs, such as providing rice to poor ethnic minority groups so that they could plant forest trees on impoverished swidden fields and offering micro-credit programs with low interest rates through the Bank for Social Policies to support people who invest in forest plantations.

From 1996, the government undertook 15 ODA projects, including loans and free assistance from bilateral and multilateral organizations to: support people to plant small forests and engage in other forestry activities; support FLA implementation; issue land use right certificates; contract forests for protection; and implement agro-forestry models, with an average of VND 2-10 million per ha, depending on the duration for support, time, and geographical conditions (Dinh Duc Thuan 2010).

[9] Interviews with Head of the Management Board of Forestry Projects, Ministry of Agriculture and Rural Development.

FLA, which grants land use right certificates to households and supports forest plantation both financially and technically, provided opportunities to local people to change their status from employees to owners of their own forest land. This created employment and increased the income of local people over the past years. Monitoring and evaluation were carried out in some projects and Program 661 showed that many areas were successful in developing small forestry models. These are areas where people actively participate in family forestry models, areas with market access, or areas with a clearly planned forestry land fund. It should be noted that up to now there is no official evaluation in terms of contribution to poverty alleviation in the entire country.

Village industries

There are no data available on the number of people working in the timber primary production and processing at the local level. Small-scale processing in areas with forestry potential is not yet developed and therefore did not contribute to poverty reduction. In some communes, there are small timber-cutting shops with most of their activities related to illegal logging. A number of local people who live near rich natural forests, such as the central highlands and south central Viet Nam are engaged in this activity. Small-scale timber-processing activities are often located in populated areas, such as the center of districts and communes, towns, or craft villages in the river deltas. Granting certificates to those shops or the management of their activities was not a focus.

Non-wood forest products (NWFPs)

Many of the rural poor in Viet Nam live in remote forested areas and depend on forest resources for a portion of their livelihoods. This is especially true of the country's ethnic minorities who mostly belong to the "poorest of the poor." It is estimated that the 24 million people residing in the mountainous areas are dependent on NWFPs (MARD 2006). These NWFPs include bamboo, bamboo shoots, rattan, medicinal plants, and animals to meet their basic needs, thus contributing to poverty alleviation despite the high rate of forest conversion and biodiversity loss in most of the country (Sunderlin 2004).

Despite the importance of NWFPs to local people, especially the rural poor, there is insufficient statistical data and officially published figures from the GSO as well as of the Directorate of Forestry on the volume of NWFPs harvested, processed and consumed domestically and exported (MARD 2010). According to the General Department of Customs, the total NWFPs export turnover value in 2005-2009 was over US$ 900 million, of which the value of bamboo and rattan products accounted for 70%. The percentage of women who were engaged in harvesting of NWFPs was 70% (Hoang 2006). It should be noted that medicinal plants of high potential do not receive relevant development support, although Viet Nam spends a lot of money to import oriental medicines from China. The figure shows that the growth of export turnover value over the last five years only met 15-20% of the annual growth target as indicated in the NWFP Development Strategy for 2006-2020 (MARD 2010). It is expected to grow annually 10-15% on

Pedro Walpole

Medicinal plants collected from the forests are still popularly used as part of the health care practices of the people, especially in upland villages.

average to reach US$ 700-800 million per year. This will allow NWFPs to make a greater contribution to poverty alleviation through employment creation. According to MARD (2010), NWFPs are expected to become key production goods by 2020.

Bio-energy production

Decision No. 177/2007/QĐ-TTg issued in 2001 by the Prime Minister on the Approval of the Project on "Bio-energy Development till 2015 and Vision up to 2025" emphasizes that bio-energy, a new alternative energy should be developed to replace part of traditional fossil fuel, contributing to energy security and environmental protection. Specific goals for each phase are spelled out in the Decision. Based on Decision No. 1855/QĐ-TTg on the Approval of Viet Nam's National Energy Development Strategy for 2020 and Vision up to 2050 issued in December 2007, it seems like the goals for bio-energy development do not include an explicit goal for poverty alleviation.

On 19 June 2008, MARD issued Decision No. 1842/QD-BNN-LN on the Approval of the Project on "Research on, Development and Use of *Jatropha curcas L*. in Viet Nam 2008-2015 and Vision up to 2015." The goal of the project is to create a new agriculture that provides a material supplying area and is connected to a diesel oil processing industry. The industry must be of high efficiency and large-scale, so that fallow, barren lands and lands with low agricultural productivity will be used effectively, contributing to improvements in the livelihoods of local people in poor areas as well as to environmental protection.

According to an official of MARD, jatropha was planted in several provinces throughout the country, but no research was carried out on the models so far. Thus, there is no available information on the contribution of bio-energy to poverty alleviation in places where jatropha was planted.

Large-scale plantation establishment

As discussed in Section 2.2, the forest area in Viet Nam increased through the establishment of plantations, predominantly for protection. As a result, a lot of employment was created, contributing to poverty reduction. However, there are no official data to show to what extent large-scale plantation establishment contributed to poverty reduction.

Large-scale forest planting is often done by State-owned forestry companies, including centrally and locally-managed forestry companies, paper-mill companies, foreign development investment companies or joint-venture companies or organizations, military units, forestry cooperatives, and household farms, including small and medium enterprises.

According to the 2006 GSO statistics, the entire country had 2,547 forest farms with an area of 56,276 ha as of 2005. Two-thirds (66.3%) of the forest farms are located in the north, and one-third (33.69%) in the south. The two regions with most farms are the northeast (786) and north central (759). The average farm size is 22.9 ha, which is four times the average size of forest land per household and two-thirds of the maximum forest land permitted for one household (30 ha). There are 18,862 workers comprising the total labor force and on the average, one farm employs 7.7 laborers, including 3.5 regular laborers (MARD 2010).

According to MARD data of 2008, the entire country has 3,300 forest farms with a total managed area of 61,050 ha. The two regions with the most forest farms are the northeast (886) and north central (859), and the average farm size is 18.5 ha.

Between 2005 and 2009, the number of households engaged in forest farms increased to 2,000 households and the forestry land area managed by these households increased by 353,000 ha. It is estimated that 55% of forest farms were granted land use right certificates. Majority of the farm owners are using forest lands allocated to households and individuals for long-term purposes. Some farm owners are renting land from other owners or are leasing land to other users under a fixed price from forest companies (MARD 2010). There are no data on income earned by households engaged in forest farms.

State-owned forestry enterprises/State forestry companies

After Decree No.200/ND-CP on re-arranging State-owned forestry enterprises was implemented in 2009, 157 State-owned forestry enterprises were converted into forestry companies. These included member enterprises or enterprises under management of production forests; 14 one-member limited companies with 100% of State capital; three joint-stock companies; four forestry centers; 96 management boards of protection and special use forests. Since 1 July 2010, forestry companies have been completely converted into State-owned one-member limited companies operating under the Enterprise Law (MARD 2010).

Up to 2009, forestry companies managed nearly 2.2 million ha of forests and forest lands. On average, each company manages 15,000 ha of forests, mainly production forests. There are 96 forest management boards managing 1.15 million ha, mainly protection forests.

With regards to the company's efficiency, there are three categories: (i) forestry companies under the management of the Provincial People's Committee; (ii) forestry companies under the management of MARD's General Company; and (iii) and other types of companies.

Employment in forest-product processing and manufacturing

Viet Nam is an important forest-product exporter to almost 100 countries and territories. Between 2005 and 2009, total forestry export turnover value reached US$ 11.2 million. Incomes from timber products export reached US$ 8.2 million (MARD 2010). In 2010, wood furniture exports reached US$ 3.2 billion. The production of chipwood for export is an incentive for forest planting and helps increase incomes for forest planters, especially households engaged in forest plantation (Ibid.). According to MARD official, 250,000 jobs were created from forest-product processing and trade from 2005 to 2009. It is reported that there is potential for poverty reduction through forest-product processing if government lays down appropriate policies to support small and medium enterprises in areas with potential forestry development.

Table XI.1 shows that from 2005 to 2009, over 130,000 people worked in forest-product processing enterprises in the entire country: 36.5% in the northern provinces and the rest in the southern provinces. The forest-product processing enterprises workforce is mainly located in two regions: the Red River delta (61.3% of all northern employees) and the southeast (64% of southern employees). Men comprised 76.5% of the workforce in forest-product processing and manufacturing while 23.5% were women (Hoang 2006).

Table XI.1. Total laborers of forest product processing enterprises (2005–2009)

Region	2005	2006	2007	2008	2009
North	36,831	42,808	44,126	48,523	48,290
Northeast	5,224	6,133	8,547	9,921	10,256
Northwest	730	889	859	816	951
Red River delta	25,205	28,445	26,001	28,657	26,965
North Central	5,673	7,342	8,710	9,130	10,120
South	71,804	65,852	74,543	80,808	89,625
South Central	14,360	15,394	15,224	15,023	13,456
Central Highlands	6,886	4,465	6,983	5,761	4,974
Southeast	46,329	39,705	45,146	51,231	62,341
Mekong River delta	4,230	6,289	7,192	8,794	8,855
Total	**108,635**	**108,660**	**118,669**	**129,330**	**137,915**

Source: Hoang 2006.

In 2009, the total capital of the forest product processing enterprises nationwide was about VND 26.9 billion, which increased 2.5 times compared to 2005. The largest increase in capital was in the Red

River delta and Mekong River delta (over four times), followed by the Central Highlands (3.4 times) and North Central (2.9 times) regions.

The forest-product processing sector has developed rapidly but is also unstable. It suffers from a lack of planning and strategic view, competitiveness, supportive industry, and trade name of products, especially when the Lacey Act of the USA and the Forest Law Enforcement, Governance and Trade (FLEGT) are implemented. This is because the implementation of issuing Forest Stewardship Council (FSC) in Viet Nam has just started and the requirement for importers to declare the country of origin of harvest and species name of all plants contained in their products is adversely affecting Viet Nam's export of its timber products to the United States and European Union countries. This may affect employment in the sector and, consequently, its contribution to poverty alleviation.

Payments for Environmental Services

Ecotourism

Ecotourism has become increasingly popular during the last decade in Viet Nam. This is primarily because both conservation and development organizations are looking for means of generating incomes from protected areas. It presents an ideal opportunity for tourists from the richer countries looking for new experiences. It is equally important that ecotourism is seen as an opportunity for local people to reap the benefits from this development, thus contributing to poverty alleviation. It is reported that 85% of protected areas are located in regions where poverty incidence is highest (ICRAF Viet Nam 2009).

For an ecotourism program to be successful, the implementers need to ensure that the benefits gained have an impact in the host area. All too often, tourism revenue leaks away from the local economy back to the countries from which tourists come from, and local communities end up seeing minimal benefits (Brandon 1993; Koch 1994). However, when carefully planned and managed, an ecotourism development in a tropical forest can provide a sustainable return, much of which can remain in the local community (Horwich 1988). According to the Hanoi Tourism Company (2011), tourism contributed 3.9% of Viet Nam's GDP in 2010 and is predicted to reach 13.1% by 2020. However, community-based or pro-poor tourism has not been pointed out as a way to enhance economic benefits (which are extending the length of stay; increasing expenditures; increasing linkages to other economic sectors; reforming State-owned tourism enterprises and encouraging more private or joint venture tourism enterprises). This encourages cross-sectoral tourism development while the World Bank Mekong Tourism Development project aims at cross-country development.

According to a Senior Advisor of the Pro-poor Sustainable Tourism at SNV-The Netherlands Development Organization, 99% of the poor are excluded from being hired as tourist guides. This is because prior to the new Law on Tourism (effective as of January 2006), to be a licensed tour guide in Viet Nam requires a college degree as regulated under the Tourism Ordinance 1995. This effectively excludes ethnic minority people from formally working as tour guides. Many did and do work unofficially, but this puts them in a relatively insecure position. Although some are treated well by local authorities and tourism businesses, they are still without legal protection. The new Law on Tourism under Article 78 permits local people without a college education but with extensive knowledge of local tourism features to be granted Narrator License to work as local guides. This article should provide many people the opportunity to formally acquire licenses to work as tour guides.

In addition, there is significant imbalance in the distribution of income from tourism between urban and rural areas, even though many tourist resources are located outside rural areas. It was found that many benefits from tourism bypass the majority of people living under the poverty line, especially in high-poverty areas (Nguyen et. al. 2007). A feasibility study conducted by SNV in November 2002 indicated a high potential to support Community-based Tourism (CBT) and Ecotourism (ET) development. Both CBT and ET are rapidly growing segments of the travel market that provide opportunities for diversifying tourism products and increasing tourism earnings through creating longer visitor stays. CBT and ET can be effective tools for rural development that can contribute to poverty alleviation,

sustainable resource use, rural infrastructure development, cultural conservation and community-building objectives.

In some pro-poor tourism initiatives, such as the CBT projects funded by SNV in Sapa and other areas, efforts focus on capacity building or supporting local people to host tourists for daytrips or overnight stays. As a result, the contribution of tourism to poverty reduction is not really significant (Nguyen et. al. 2007).

Payments for carbon

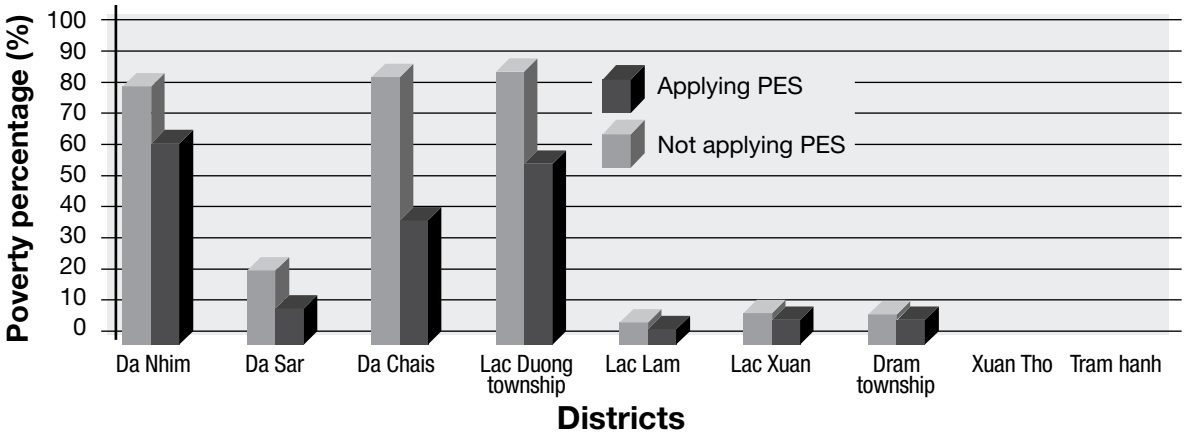
In recent years, PES, reduced emissions from deforestation and forest degradation (REDD) and carbon sequestration have become "hot" issues in academic dialogues as well as government discussions. On 20 April 2008, the Prime Minister issued decision 380/QD-TTg on the PES policy. This is considered to be one of the important legal documents required to mobilize financial resources from organizations and individuals benefiting from forest services to pay those who protect and develop forests. Lam Dong and Son La provinces were officially proposed to be the two pilot sites for the implementation of the PES policy. After two years, the result established a sustainable linkage between downstream forest environmental services (FES) users and FES providers (MARD 2010). Until September 2010, total payments from FES amounted to US$ 4.46 million. This fund was paid to 22 forest management boards, forest enterprises and 9,870 households including 6,858 ethnic households (Winrock International 2010). The report of MARD (2010) asserted that the PES policy contributed in assuring the stabilization and enhancement of livelihoods for local people involved in forest protection and development.

On 24 September 2010, Decree No. 99/2010/ND-CP on PES was issued, according to which the target groups receiving payments from FES would be forest owners, agencies, organizations, associations, households, individuals and communities holding the long-term forest protection contracts signed with State organizations.

Tran (2009) pointed out that the implementation of PES in Viet Nam met several difficulties. The overlapping of administrative management and responsibility between ministries increased transaction fees. The government recently looked at PES in terms of taxes and fees, and managed PES through environmental fees.

It was recognized that the income from PES and REDD could contribute to poverty reduction of forest dwellers. In the PES pilot project in Lam Dong province, local households in Da Nhim received an amount between VND 50,000-100,000 per ha per year for forest protection (from Program 661 and other social support programs). Meanwhile, between 6 and 19 March 2010, the pilot PES providers received VND 290,000 per ha per year, much higher than what was previously received in other programs (Winrock International 2010). Figure XI.1 below shows that in the pilot area in Lam Dong province, the application of PES decreased the poverty rate through higher incomes.

Figure XI.1. Influence of PES on poverty reduction in some districts in Da Nhim



Source: PFES: Research pilot project in Lam Dong, Viet Nam from 2006 to 2010, Winrock International 2010

However, Tran (2009) pointed out that the involvement of the poor was limited, the returned fund used for poverty alleviation from the PES budget was low, and contribution to poverty reduction was minimal. To promote the role of PES in poverty reduction, Vu et. al. (2008) suggested the need for a clear benefit-sharing system as well as a mechanism for fund allocation to local communities (service providers).

In conclusion, the direct contribution of PES to the poverty reduction process is slight and requires further research. The budget directly contributes to a small part of household budgets, but it does not help households or communities eliminate their poverty status. The payments are not adequate for local people's efforts. But it does help to increase awareness of their responsibilities and consequential benefits from conserving the forests. It also improves participation in forestry activities and indirectly empowers local people in the decision making process related to forest conservation and protection.

With regards to carbon payment, in the case study of Lam Dong, it was considered that the income from this source would definitely contribute to the poverty alleviation effort. Carbon payments have become a recent focal interest among academics and the government due to its relationship with climate change issues. In June 2010, Viet Nam hosted an international conference of the Katoomba group[10] on PES and carbon sequestration. In this conference, knowledge and opportunities on the market for PES and carbon were shared. There is as yet no empirical research available in Viet Nam to show the relationship between carbon payments and poverty alleviation.

Interfaces and gaps between forestry and poverty reduction

In 1986, Viet Nam shifted from a centralized economy to a market-oriented one. The country gained remarkable achievements in agricultural production, especially in rice production. From a country that suffered from rice shortages, Viet Nam is now a leading rice-exporting country. Developments in the agricultural economy are remarkable, such as in rice, tea, coffee, and cashew nut export.

To achieve these, the government relentlessly improved its agricultural policies to encourage economic sectors to join the development process, especially Land Policy (such as Contract 10, Contract 100, and a series of macro-policies placing farmers at the center of the development driving force). This contributed greatly to the national strategy on hunger elimination, poverty reduction, and food security. Viet Nam is acknowledged as one of the most efficient countries to implement such schemes.

Parallel with the agricultural development policy, the forestry sector also experienced a drastic change from centrally-controlled forestry (traditional forestry) to social forestry. The government aimed to attract and encourage as many sectors as possible to take part in forestry by issuing a series of policies regarding land allocation and lease, and national programs such as Program 327, Program 661, Program 100, Program 30A. But forestry policies were not as successful as the agricultural policies. The reason is that the forestry sector did not have appropriate solutions to assist households in the mountains to engage effectively in forestry practices unlike the agriculture programs that benefited wet rice farmers in the delta. FLA is considered completed in terms of the policy but no arrangements have been made to assist households to participate in forestry activities. That the allocated area of forests and forest lands is still large, accounting for more than 50% (MARD 2009) is a factor to consider in assessing the potential and actual effectiveness of forestry policy on hunger elimination and poverty reduction (about 25 million local people living near and in forested areas). It is not clear as to whether or not these policies promoted participation in forestry or stabilized the incomes of those who are dependent on forestry.

In the MDG on national hunger elimination and poverty reduction, the government issued the Central Resolution on "*Tam nông*" (Agriculture, Farmer and Rural Areas). It contains many action plans and policies, in which the forestry development policy is only one part of an initiative to improve rural living standards. Therefore, it is necessary to find out which factors limit contributions to poverty reduction.

[10] This is an international network focusing on market access relating to PES to build up sustainable financial mechanisms, and ecological system conservation and restoration.

As regulated by law, organizations allocated forests must be the representatives of the State for forest products and forest land. These representatives not only have ownership of the forest, but also have rights to its use (Nguyen Tan Phu 2009). There are millions of people living on forestlands under State ownership but are unable or do not have access to forests, thus leading to a conflict of interest between the State and the locals. Therefore, even if the State has policies in place to allocate forests, it is not always carried out and it is not clear who has ownership and forest use rights (Ibid.).

Forestry policies formed in recent years include Decision No. 178/TTg on benefit-sharing between those engaged in forest protection and development; revised law on forest protection and development issued in 2004; and Program 661 on the analysis of forestry growth and the contribution to national GDP, job creation and income from forestry, as discussed earlier in this section. The gap between policies and national poverty reduction is becoming increasingly more obvious with little contribution from forestry compared to its potential, due to the following reasons:

- Although the State has issued various policies on forest protection and development, there has been limited impact in the promotion of and motivation for forest development.
- Legal mechanisms are still State-managed and administrative procedures are complicated. There is a decentralized management mechanism but institutional arrangements are unclear.
- Coordination between management bodies and agencies in planning and implementing policies is poor.
- Due to limited budgets, implementation of policies and programs is not complete.
- Development of forestry policies encounters difficulties in Constitutional provisions and laws on land and forest protection and development.
- Policies do not bring about sufficient benefits for participants in these initiatives, so they do not have a strong commitment to the forest and cannot generate enough income. Consequently, the hunger elimination and poverty reduction strategies which depend on forestry, cannot be achieved.

National Case Studies

The three national case studies that follow are on traditional forestry, industrial forestry, and PES. The traditional forestry site is in Tham Village, Chieng Sinh Commune, Son La City, Son La Province; the industrial forestry site is in Mong Hoa Commune, Ky Son District, Hoa Binh Province; and the PES site is in Hom Village, Chieng Coi Commune, Son La City, Son La Province. The location and some basic features of the three sites are summarized in Table XI.2.

Table XI.2. Background information on the case study sites

Commune Site	Location	Forestry initiative	Total population	Number of households	Ethnicity	Poverty rate
Chieng Sinh	Son La City, Son La Province	Traditional forestry	10,648	2,591	Thai, Kinh, Mong, and Muong	4%
Mong Hoa	Ky Son District, Hoa Binh Province	Industrial forestry	5,091	1,196	Muong, Kinh, and others	30%
Chieng Coi	Son La City, Son La Province	PES	4,402	908	Thai, Muong, Kinh, Mong	30%

The Contribution of Traditional Community Forestry to Poverty Alleviation in Tham Village, Chieng Sinh Commune, Son La Province

Field site

Chieng Sinh Commune, Son La City, lies in the buffer zone of the Da River watershed, where the Son La hydropower plant[11] is located. Chieng Sinh is situated 20 km from the Son La hydropower plant. The buffer zone plays a vital role in the larger watershed of the Da River, as the forest in the area helps restore the underground water for the watershed. Further, it is also the resettlement area of the communities displaced by the hydropower plant. If the forests in the buffer zone are not protected, there will be adverse impacts on the watershed with ensuing negative effects on the lifespan of the hydropower plant.

Chieng Sinh is the gateway commune to Son La City. It is located on Highway Six, bordering Chieng Mung, Chieng Ban, Chieng Ngan, Hua La, and Quyet Tam Communes. Chieng Sinh is divided into 17 villages (*ban*) and eight groups (*to*) and covers 2,269 ha, of which 617 ha are agricultural lands and 1,082 ha are used for forestry purposes. Urbanization and development are extremely rapid. It is an agro-forestry community, also engaging in animal husbandry and commercial vegetable production, which seems secondary but presently plays a very important role in household economies. Over the past five years, the average total yield of food produce in the commune is 827 tonnes per year with coffee beans at 23 tonnes per year, soybeans at 18 tonnes per year, fruit at 204 tonnes per year, and vegetables at 1,278 tonnes per year (Chieng Sinh People's Committee 2010).

Chieng Sinh supports a population of 10,648 people divided into 2,591 households. It has an annual growth rate of 6.2% and a poverty rate of 4%. There are four ethnic minority groups residing in Chieng Sinh: Thai, Kinh, Mong, and Muong. Thais comprise the majority group, accounting for 42% of the total population of the commune.

Tham village

Research specifically focused on Tham Village (*Ban Tham*), one of 17 villages in Chieng Sinh commune. Ban Tham was selected due to its average size and because residents earn an average income of US$ 420 per capita per year. It is one of the villages most dependent on the supplementary income provided by forest resources, as it is situated close to the forest. Ban Tham is one of the villages where traditional community forests are well-protected without any external financial support.

Ban Tham covers 192 ha, of which 78 ha are forest land, 12 ha are agricultural land, 15 ha are used for vegetable farming, and 70 ha are used to grow fruit trees, coffee, cassava, and corn. Only one rice cropping is done a year due to lack of water resources. Rice production is between 600-800 kg for each paddy (0.18 ha). Ban Tham's population during this study (2011) was 373, divided into 78 households, and 97% are Thai, with the rest being of Kinh ethnicity (the majority Vietnamese). Laborers account for 50% of the village's total population. The poverty rate is 10%[12] and adding to this is poor access to agricultural land and a lack of technical skills in the village, although it is not largely affected by capital sources. It is reported that newly separated households are those that have little land.

According to the elders in Ban Tham, village forests were never allocated to its households. The Ban Tham Agricultural Cooperative was established between 1966 and 1967 and at that time, 120 ha of the village was forest land. During the period in which the cooperative was initiated, the forest was cleared for swidden fields and only 78 ha in the forests were left. Forest protection was a community task completed on a rotational basis. Labor was divided according to the number of members per household

[11] The Son La hydropower plant is the largest plant of its kind in Southeast Asia, with a capacity of 2,400 MW, covering an area of 22,400 ha.

[12] According to the Ministry of Social, Labor and Invalid Affair (MOLISA), the poverty line in urban areas was changed from VND 450,000 (US$ 22.5) to VND 500,000 (US$ 25) per person per month. In rural areas, it is now VND 400,000 (US$ 20), instead of VND 350,000 (US$ 17.5).

but turned out to be ineffective. The reasons were two-fold. First, it would normally take at least two or three days for the forest to be passed over to another household and during this period, the forest was not protected. Second, when the households that were in charge engaged in family activities, the forest was left unattended and other villagers would use this time to cut down trees. As a consequence, the forest gradually thinned.

In 2000, the agricultural cooperative was dissolved and land was re-allocated to the households. On average, each household was allocated 0.1 ha to farm vegetables. At the same time, the village's Management Board (MB) was established. According to informants, the MB operated in a different mode from the agricultural cooperative in the sense that the four principles of grassroots democracy were applied, namely, "People know, people do, people discuss, and people monitor." Villagers were also given the right to speak up and decisions were made democratically. The MB took charge of the village's forest and called for meetings to seek villagers' consensus on how the forest should be protected and how much each villager should contribute to pay for guards. A different mode of forest management was formulated and since then, 78 ha of the forest were allocated to four groups of villagers for management and protection. Each group selects two people to guard the forest. And it is not only the two selected guards, but all members of their families, who are in charge of management and protection. In this way, it is not only the selected men but also women who take part. If a guard does not perform sufficiently, he will be fired immediately, and a new member will be selected. The forest guards' selection criteria are as follows:

- The guard must be a male. It is argued that women are not physically as strong as the men and therefore they cannot walk long distances in the forest as the men can.
- The household must have at least one laborer.
- The head of the household must be middle-aged.
- The household must live close to the forest.

In the same village, two separate strategies for the effective management of forest land were applied, depending on the natural conditions of the forest. Two groups of forestry guards manage 28 ha of land each and are paid in the form of rice contributed by households living close to the forest. On average, each household member annually contributes three kg of rice in December. Each forest guard is paid 600 kg of paddy rice per year. Villagers can contribute in cash in case of drought and wet rice farming is not possible. Guards of the two remaining groups are allocated ponds and vegetable farmlands near their forest. Forest regulations were developed based on the village customary law.

This shows how much power and autonomy the Tham villagers were granted, thus stimulating local people's decisions to effectively protect the resources themselves.

Contribution of the community forest to the wellbeing of villagers

Income and forestry resources

In response to the question on how their efforts to protect their forests make a difference to their livelihoods, the respondents shared that they get almost no cash income directly from the forest. All respondents said that the direct benefits they get include firewood, bamboo shoots and strings, and small poles to make garden fences and trellises. During the *mang lay*[13] season, the village Management Board gathers a group, comprising one member per household, to go to the forest to collect *mang lay* shoots. The shoots collected by the group are then equally divided among all households in the village. In the past, people went freely to the forest to collect bamboo shoots and cut down trees. This, however, denied households without laborers a share of the *mang lay* shoots.

According to village regulations, each household is allowed to cut 50 small trees to use for garden fences and trellises each year. If a household needs more than 50 trees, they have to buy them at a price

[13] Mang lay (*Bambusa spp.*) is similar to bamboo shoots.

Pedro Walpole

Fuel wood collected from forests is an important source of energy for rural households.

of VND 1,000 per tree although the market price is VND 5,000 per tree. These trees are not sold to outsiders and the money from the sales is contributed to village funds.

On the importance of forests to the wellbeing of their households, the respondents believed that forests are 'very important.' This seems somewhat contradictory but, for many, their incomes come indirectly from the community forest. All the respondents said that the forest provides villagers with water for drinking, animal raising, and irrigation, and also helps improve the micro-climate in the area. All respondents agree that their households experienced improved wellbeing since the start of the initiative, and now over half of their income comes from the forest. They also described that this was largely due to the role of forestry and agricultural ventures. One villager reveals that:

> *The forest is very important to us. We could have died without the forest. Before 2000, we did not have sufficient water. Therefore, we could not grow vegetables. All households fetched water from a very long distance. The two lakes were very dry. Since the forest was well protected in the last six years, we have had plenty of water for drinking, animal husbandry, and irrigation. We have better rice crops and we have earned a great deal from growing vegetables for sale. On average, a mid-income household produces 1.5 tonnes of paddy per year and VND 40-50 million from the sale of vegetables. Both were not possible in the past when the forest was under the management of the agricultural cooperative.*

According to key informants, since the Chieng Sinh cement factory opened in 1997, the village became notably more polluted. All fruit trees and house roofs are covered with cement dust and, in the area where there is no forest, the streams and lakes are so full of nickel that villagers can no longer bathe there. The ones who tried to do so found that the polluted water aggravated their skin. In the area where there is forest, on the other hand, there were less visible effects of dust. The head of the village believes:

> *The cement factory does not contribute anything to our community other than pollution. We have fought against them for such a long time until finally the city government decided to move part of the city here and moved the cement factory away. The quality of our forest is much richer now. As a leader of the village I feel confident that as long as we have a rich forest, we will have everything. We could combat pollution and even climate change.*

Social structure, infrastructure, and education

Some members were asked what impact the initiative has had on the social structure, infrastructure, and education in their community. The response of the village related that the money collected from the sale of small trees to the villagers and fines paid by violators was put in the village fund. The fund is reported to the public every quarter and is spent on the maintenance of village roads, schools, and the health clinic. Although the contribution is not large, it contributes to infrastructure and education. One trader in the village says:

> *"The key to the success of the new mode of forest management is having democratic, reliable, and committed MB members. In the past, although the forest was under the management of the cooperative, no one took full responsibility for it. Consequently, the tragedy of the commons occurred. For the last six years, things changed for the better. The forest is better protected and managed. When an incident such as a forest fire occurs in the forest, the households unite to deal with the situation together. It does not matter whether they are rich or poor, everyone is happy to contribute."*

The village set up a scholarship program, the Study Encouragement Society, a few years ago. Each household contributes VND 150,000 to the society. The fund was set up for those who perform at an exemplary level in school. At the time the fieldwork was carried out, the village had two students at the Tay Bac University. Prior to this, the village did not have any member enrolled at the university.

Challenges villagers are currently facing

Majority of villagers claim that they are facing threats from neighboring communes (such as Chieng Ngan, Ban Co, and Ban Ban). It is reported that people from those communes go to Ban Tham's forest to collect bamboo shoots and firewood that they can sell. They even use flashlights to look for bamboo shoots. Internal threat is also a concern, with several residents collecting bamboo shoots and firewood at times. Unlike outsiders, internal violators collect bamboo shoots and firewood for domestic purposes rather than for sale.

One of their fears about the future is the possibility that their forest will not be protected and it will completely disappear. Some even believe that if the forest is allocated to households for protection and management, it will shrink much faster. Without the forest, life will become much harder and the effects on environmental destruction will be severe. Flash floods, tornados, and tsunamis will be much more likely and villagers will suffer from water shortage. Another concern is that although trees are replanted in place of those cut down, the survival of planted trees is still falling, mostly because newly planted trees are often trampled on by cattle. It is proposed that grazing in the forest be banned.

What can be done to improve the contribution of the initiative?

The respondents recommended the following to further improve the contribution of their efforts:

- Increase awareness with the slogan "As long as we have forest, we have water and we have everything."
- Environmental education programs should be launched in primary, middle, and secondary schools.
- The entire village should manage the forest.
- More trees should be planted in place of those cut down using tree species that are of high commercial value in the market.
- Grazing in the forest should be banned entirely.

The Contribution of Viet Nam Forest Corporation (Industrial Forestry) to Poverty Alleviation in Mong Hoa Commune, Ky Son District, Hoa Binh Province

Field site

The Viet Nam Forest Corporation (VINAFOR) was selected as the site for understanding the impacts of industrial forestry in a local community. VINAFOR is a State-owned company under the MARD and operates under the Enterprise Law of 2010. The company is mainly focused on forestry trade from afforestation to processing, export and import of wood products, including household wood products and plywood.

Hoa Binh Forestry One-member Limited Liability Company is a subsidiary directly under VINAFOR, located in Mong Hoa Commune, Ky Son District, Hoa Binh Province. It was established in 1998 after the implementation of the policy on re-arranging State-owned forestry enterprises according to Decision 187/CP. This brought about the introduction of activities related to forestry development and provided materials for the Thai Nguyen plywood factory and other wood processing factories.

Planting in the company's plantations is done through contracts with villagers of Mong Hoa Commune. The Hoa Binh Forestry One-member Limited Liability Company enters into contracts with the villagers of Mong Hoa commune to plant in the company's plantation according to the cycle of planted tree that lasts six to seven years. Villagers are provided the inputs, such as seedlings, fertilizer, and fees for labor days and forest protection. In return, villagers are responsible for forest plantation and protection for the entire contract duration. During the contract lifetime, the forest is considered the villagers' asset and therefore they have the responsibility to manage and protect the forest and have autonomy to either find markets for their timber themselves or sell it to the company at the market price. Over 70% of the population belongs to the Muong ethnic minority and more than 60% of the households rely on forestry for their main source of income. Income generated from the plantations contributes to over 80% of the total income of households in the commune.

While the forest is primarily used for production, it also plays a vital role in protecting the Da River Basin, which is only three km away from the Song Da hydroelectric plant.

Mong Hoa is a northern, mountainous commune of Viet Nam, three kilometers from the center of Ky Son district. The transport system is good as the commune is along National Road 6A. It covers an area of 1,866 ha, in which forestland accounts for over 70%. Mong Hoa commune has 17 villages with 1,196 households and 5,091 inhabitants belonging to various ethnic minorities: Muong (73%), Kinh (27%), and other ethnic groups (0.3 %).

The main source of income in the commune is through contracting with Hoa Binh Forestry Company to afforest state land leased for 50 years. This accounts for more than 80% of the total household income of 1,196 households. However, under the new national poverty line[14], around 30% of households in the commune are still considered poor.

Contribution of the community forest to the wellbeing of villagers

Before 1998, the state owned and managed all forestry land in the commune, though this proved to be ineffective as land was left bare. In 1998, the Hoa Binh Forestry Company was established under the guidelines of the government and Decision No. 187/CP. It reorganized the systems, merging forestry farms into the State Forestry Company to operate as a limited liability company under the Enterprise Law.

[14] The Prime Minister approved a higher poverty threshold for the period 2011 to 2015. In urban areas, the poverty line is VND 500,000 (US$ 25) per person per month. In rural areas, it is now VND 400,000 (US$ 20) per person per month.

According to government guidelines, the state enterprise initiative will have a positive impact on forestry development in Ky Son District. This is with a particular emphasis on planting new forests in barren areas, commercial afforestation, and developing forestry businesses. Those residents who do not own land will sign a contract to receive company forestland for afforestation. On average, the share of a household is between 10 and 20 ha, depending on working ability and regardless of their socio-economic status. The company will be responsible for providing the financial support with low interest rates to obtain materials, such as seeds, fertilizers and new technology. They will also ensure the efficient care and protection to the forest and people, especially during the period when trees are not yet mature to ensure people's livelihoods. Sources of capital for some infrastructure development programs of the government, such as Programs 134 and 135, helped develop rural roads to reduce forestry costs.

Since 1998, Hoa Binh Forest Company has made vital contributions to the increase in awareness of forestry issues. It has successfully increased participation in the initiative, and now many people in the commune are reaping benefits from the land, capital, equipment and technical support they receive. Overall, there have been some noticeable positive impacts on living standards in Mong Hoa.

Company policies regarding support offered to the Mong Hoa people are very specific. One contracted villager of Mong Hoa commune said:

> *My family has three members. I received 30 ha of forestland from the company for afforestation with a cycle of seven years. The trees, the majority of which are acacia and eucalyptus, reach their maturity in Year 7. I am now at the second cycle. The company encourages us to renew the contract, since we have experience from the first cycle. After seven years, the gross profit is approximately VND 1.2 billion and the net profit is around VND 600 million (equivalent to US$ 30,000). The net profit for each ha for seven years will amount to an average of US$ 1,000. The company buys all the raw materials to be harvested from the plantation at current market prices. If we find the price offered by the company lower, we can sell the products to external markets.*

Some contracted farmers further related that during the first two years of the cycle when the canopy is not yet closed, they plant cassava. Technicians of the company help them grow cassava in such a way that when they harvest the cassava, it does not affect forest trees. In addition, they still have rice paddy fields to grow rice so that they have sufficient food to eat while waiting for the trees to reach their maturity.

With the contracts signed and forestland distributed, the company created jobs for about 1,000 households and more than 3,000 workers within an area of 2,000 ha. Indirectly, company policies encouraged the growth of thousands of hectares of forest in its location near the Da River hydroelectric plant. This has a contribution to water regulation, soil conservation, and other environmental values. There has been an increase in crop and vegetable production, thus securing food supply in the commune. Mr. Tho, a leader of the commune People's Committee believed:

> *Company policies on forest development clearly improved the life of people in the commune. Before 1998, villagers' incomes were small and depended on swidden agriculture. Since 1998, most people in the commune have stabilized their income by switching to forestry it was their main source. People said that before 1998, looking for firewood was difficult because all forest land was managed by the State enterprise. Now, this area is managed and traded among villagers, and we do not only have sufficient firewood for animal husbandry development and but also for sale in the market.*

When contract farmers of Mong Hoa were asked if the operation of the company contributed to the improvement of basic services in the community, they all said that the company constructed and paved the roads in the village for forestry purposes that the villagers are also benefiting from. In addition, they

are provided both input and output services for forestry production as well technology transfer.

It was reported that the company has 30 staff members who either hold bachelor degrees or were graduated from vocational schools. Each is paid US$ 175-200 per month, which is in accordance with the State Corporate Law. The majority of the company's staff members are not from Mong Hoa. They come from other areas north of Viet Nam. The company does not have any workers; instead, it contracts farmers to plant trees for the company.

Challenges villagers are currently facing

The establishment and renewal of state forestry enterprise in Hoa Binh Forestry Company brought remarkable benefits, with the shift from centralized state forestry management to the market economy and the mobilization of organizations, residents, and communities to participate in managing and developing forest resources. Through this, forest lands will be used more effectively, employment will be created, and the local people's income will be increased, thus, contributing to reducing poverty. However, this model needs to be more sustainably developed. Both the company and local people still face difficulties and challenges:

- The area of forest land managed by the company is relatively concentrated, but the area of forest land allocated by the State to residents for 50 years is small and fragmented due to a lack of planning at the local level. This leads to low efficiency of use and investment.
- Forestry policies are not sufficiently synchronized to provide a motivating power for development. For instance, there should be policies on finance, investment, taxes, etc. to link to forestry policy.
- At present, local people as well as the company leaders do not have access to the State's information and policies on FSC, PES, REDD plus programs, etc. Particularly with regard to FSC, the corporation is in the process of recruiting consultants and applying for FSC for the total area of forest owned by the corporation. They are also eager to participate and implement those activities to increase the value of their forest products.

What can be done to improve the contribution of the initiative?

For the company's forest policy to be implemented effectively and sustainably in Mong Hoa commune, the following recommendations should be taken into consideration:

- The company's wood-product processing plant for export in the commune is under construction. As such, local people desire that their children need to be given vocational training so that they will be hired to work for the plant in the future.
- To make local people feel secure to participate in forest planting, which is associated with households, the company should have a stable policy on land allocation for a longer term beyond the normal tree growth cycle of seven years.
- The State as well as the corporation should have policies ensuring stable outputs to support forest planters because planting forests has a long cycle associated with big risks.
- On capital sources and interests, the State should have a policy supporting low interest rates in favor of forest planting.
- The government should work out an insurance policy for forestry as soon as possible. Due to adverse impacts caused by climate change, the risk in planting forests in areas where forest fires usually happen would be difficult to manage given the available equipment.

The Contribution of Payments for Forest-related Environmental Services to Poverty Alleviation in Hom Village, Chieng Co Commune, Son La Province

Field site

Hom village supports a population of 1,361 people divided into 274 households. The village lies along Highway 6 leading to Thuan Chau District of Son La, making trade markets easily accessible. The village's total land area is 596 ha, of which 18 ha is agricultural land, 228 ha is used for coffee plantation, 338 ha is allocated forest, 6.6 ha is residential land and 3.7 ha is pond area. In the past, the land used for coffee plantation was planted with mulberry for silkworm production, until people found that this activity was not highly profitable. Based on the advice of agricultural extension workers, they shifted to coffee plantation. Villagers' income sources are mainly coffee production, fruit trees, and agriculture. In 2010, local people received high incomes from coffee, despite unfavorable weather conditions, and yields are expected to be higher in 2011. The area used for coffee plantation has been counted as forest area when calculating for PES for local forest owners.

In Hom village, there are 136 forest owners, divided into two groups: the household group and the community. The total amount of money from the PES fund distributed to forest owners in the village was VND 77,196,829 (equivalent to around US$ 3,899) (Department of Forestry, Son La Province 2010). The question raised here is whether or not the PES payment has truly contributed to the economy of 1,361 local people of this village.

Son La Province has successfully completed the process of fair allocation of forest land. In Hom village, local people who are allocated forests for protection and development have the right to collect firewood from the forest for their domestic consumption. In addition, if they need wood for building their house, they can ask permission from the forest protection division located in the commune. As all forests are now allocated, people are more able to recognize the consequential benefits, responsibilities, and rights over forestry resources. This positive assessment is share by the head of a poor household:

> *Now I have to protect our forest from people who plan to steal the wood. This forest is our family forest, so we have to keep it. I can collect firewood that is enough for what we need. Since our house is very near the forest, we have to protect the trees; otherwise, if it rains, our house will be damaged. In addition, we have to protect the forest since, if we lose one tree, we will be fined. Once a month, I have to selectively cut down bushes so that the trees can develop well.*

Local people recognize the benefits the forest brings and these are not solely financial benefits. None of the interviewed villagers mentioned the economic interest that they can get from the forest; instead, they cited sources of firewood for daily consumption, wood for house building, etc. It is probable that this function of the forest is considered too ordinary for the local people, so nobody talks about it until there will be a deficiency. However, a number of respondents mentioned other benefits obtained from protecting the forest. A teacher in the village said:

> *Through media coverage, climate change is no longer a strange concept to local people. I will never convert my forest land into coffee plantation as I heard on the radio about the causes and effects of climate change many times. I know that if I cut down my forest, nothing can prevent the big hard rock rolling down to the village from the mountain. If it happens, we will lose our farm land. Also, cutting down the forest will contribute to climate change and will have negative impacts on our life.*

Living in an area where most of the land is forest, there is no doubt that it brings many benefits to locals both directly and indirectly. Before the PES program, this village was also involved in the forestry protection and development program, Program 661. In comparison, PES, according to officers, provides more benefits. Local people receive VND 120,000 (US$ 6) per ha of forest from

the PES fund per year, compared to VND 50,000 per ha per year from Program 661. However, the income received for the production of coffee and fruit from PES is still too small. For some, the amount they receive can only buy a pack of seasoning or salt. Some people even have forgotten how much they got given that the amount was so small, and they have used the money to buy junk food for their children. Mrs. Bun said:

> *I received VND 12,662 (equivalent to US$ 0.6) for protecting my forest in 2010. I have one ha of land, but received payment for only 10% of this. According to the forestry officer, this is because only 0.1 ha of my forest is mature enough to be considered for payment. I will have to develop the rest of the forest further to get a VND 108,000 (US$ 5.2) per year. It seems impossible to ask a poor woman, the head of my household, to do so as it takes much time and effort to develop forest. My family requires much more than US$ 6 per year to maintain sufficient living conditions.*

Mrs. Bun's household received the smallest amount of PES payment in the village. In comparison, Mr. Lan, who possesses 25 ha of forest, received payment for eight hectares of his land and was given no explanation as to why he did not receive the full sum.

It is calculated that for each ha of forest converted to growing coffee, people can get at least VND 30 million (equivalent to US$ 2,000) per year. The income from coffee-growing is seen to be much more than that what is generated from PES payments. This explains the trend to convert forest into coffee land. Mrs. Xuan, a trader in the village recalls:

> *I am from a rich household in Hom village. I own two shops near the road, one ha of coffee plantation, 200 ha of forest and 100 ha of wet rice land. My family earns money from various sources such as shops, selling pig meat, trading silkworm, selling coffee, and other services. In 2009, my net income from coffee was VND 8 million (US$ 40), but I expect to earn a net income of VND 50 million (US$ 2,500) in 2011. I converted almost all of my 200 ha of land to grow coffee. Coffee plantation also functions effectively to protect the water supply. I still keep a small area of forest in the highest area of my land, under which I grow coffee, so that the trees can keep water for the coffee. Other people have seen my forest develop very well. I heard about the PES payments, but I did not mind given the size of payments and as the profit from coffee is so much higher.*

Most of the people interviewed said that the PES payment is too small relative to the effort that local people have to make for forest development. Some mentioned that villagers in a neighboring commune cut down forest trees to grow coffee. They now are facing flash floods in the rainy season and suffer from a lack of water in the dry season. They also have to buy drinking water at a price of VND 55,000 per cu m.

In 2010, Hom village owned 366 ha of forest and received VND 50 million from PES. Hom community is the owner of the 366 ha of forest, thus the payment for forest service will go to the community budget. Based on the discussion and agreement of the whole community during their meetings, this money was spent on building irrigation canals to support the rice fields, and purchase of plastic chairs and drums for the village meeting hall.

But in specific cases, PES clearly does not contribute to local people's economies. All those interviewed agreed that PES payments were too small to encourage them to plant and protect forests. In some cases, it is said that PES causes people to be much busier and therefore more tired as they have to watch over the forest and cut trees more regularly. Members of the women association of Hom village agreed to take care of 18.56 ha of forest. In March 2011, they received VND 1,500,000 (US$ 75) for PES payment for taking care of the forest for the entire year of 2010. Recently, some people who managed small forest areas tend to want to return the forest to the community since they feel that it is hard to take care of the forest.

In conclusion, PES until now has not strongly proven its contribution to local livelihoods. At present, it is hard to determine whether PES contributes to poverty reduction but it is possible to say that it can partly support local people in poverty avoidance and raise the awareness of local people about the importance of forest protection and development.

Challenges and difficulties

PES implementation meets many challenges at all levels, from the province to the commune. First, at provincial level, implementation is still not clear and there are no detailed circulars and guidance given to local staff in terms of payments. There is no guidance for financial mechanisms from the provincial Department of Finance either.

Second, cooperation between agencies and departments is poor, with no regulations in place for partners or buyers who refuse or are late to pay PES. Suoi Sap hydro power plant is an example of such a company that keeps delaying payments.

Third, it is sometimes not clear who the real owners of the forest are. The survey completed in 2005 is now outdated and the plots of land might have changed or were transferred to other people. In some cases, the owner dies without leaving a will. This has caused difficulties for forestry officers in identifying plots and owners.

Fourth, low incomes from PES have discouraged local people from protecting the forests. Now, some want to shift to other higher value commodities, such as coffee and fruit.

Fifth, the formula developed by MARD on calculating how much money a forest owner will be paid based on the forest type is very difficult and complicated. It does not differentiate between rich forest and poor forest. This kind of application, on the one hand, has brought benefits to those forest owners whose forests are not really rich. On the other hand, it does not correctly evaluate the efforts of owners whose forests are better. It therefore can create inequality in paying the FES, creating conflict among villagers.

What can be done to improve the contribution of the initiative?

- A detailed survey of the forest area and classification should be completed to ensure that no one will be taken out of the PES program and the area of forest that they protect matches the area on the certificate.
- Owners will be required to exert further efforts in the care and protection of newly planted forests, and there should be a mechanism to support them financially.
- To avoid locals from converting their land to grow coffee and rice, awareness needs to be raised to improve attitudes and behavior toward the forest.
- The formula for computing for PES should be reconsidered to provide owners with a fair payment corresponding to the effort in protecting the forest.

Outlook for Forestry and Poverty Alleviation

As discussed in Section 2, the socio-economic development plan 2011-2015 on the implementation of the associated strategy, set the goals of increasing the average economic development rate from 2011 to 2015 at around 7-8% per year; reducing the poor household rate based on the new standard, down to 2-3% per year; and increasing the forest cover to 42.5% (Decision 09/2011/QĐ-TTg). Viet Nam is a middle-income country and by 2020, it will be an industrial country. It is also estimated that the population of Viet Nam will reach 100 million people by 2020. Rapid population growth and economic progress will dramatically increase demands for forest products as well as forestry services (MARD 2007).

Viet Nam's forestry development strategy 2006-2020 lays down the goals for up to 2020 as follows: (i) establish, manage, protect, develop, and sustainably use 16.24 million ha demarcated for forestry; (ii) increase the country's forest cover to 43% in 2010 and to 47% in 2020; (iii) ensure the more active participation of economic sectors and social organizations in forestry activities. These goals are intended to make forestry contribute more to the socio-economic development process, environmental protection, biodiversity conservation, poverty reduction, and livelihood improvements in mountainous areas and to national security.

In short, the forestry sector is committed to focus on three areas: (i) ensuring forest protection and development to increase forest cover to 47% in 2020 as well as forest quality; (ii) increasing the gross forestry output value, including forest-product processing and environmental services to contribute more to the national GDP; and, (iii) increasing the poverty alleviation potential of community forestry, environmental services, household farms, the furniture industry, and afforestation projects.

The potential for forestry and poverty alleviation in Viet Nam looks very bright. It is hoped that implementation of the strategies and policies mentioned above will be carried out in a well-coordinated manner in contiguous areas, rather than in piecemeal and isolated instances so that poverty reduction, forest protection and development can all take place in ways advocated in this report.

Recommendation to Improve the Contribution of Forestry to Poverty Alleviation

As the case of Viet Nam in this study illustrates, the level of contribution of forestry to poverty is differentiated depending on the macro-structures of state and economy, and forms of management of natural resources. The study assessed the contribution of forestry to poverty alleviation over the country's history as far back as the cooperative period. The research findings show that the contribution of forestry to poverty alleviation tends to be increasing, especially after the *doi moi* era.

During the *doi moi* period, the forestry sector attained important achievements, the most important being the shift of the forestry sector development approach from State-based forestry development to social forestry development with the participation of a wide range of stakeholders, including households and private enterprises that play major roles in forest plantation and forest product processing. From 2005 to 2009, many breakthrough policies were put in place in the forest sector. Forestry projects were effectively implemented. Program 661 and ODA projects played very important roles in raising the awareness of government agencies as well as the entire society on the important roles of forests and their resources. In addition, the country's forest cover and the total forest areas remarkably increased in the period 2005-2010. The goals of poverty reduction and improved livelihoods of the rural population in mountain areas were largely met, with a significant decline of the poverty rate from 2006 to 2009 in provinces where forest resources are abundant. Environmental protection, biodiversity conservation, and environmental service were also pursued.

However, the contribution of the forestry sector to poverty reduction is still limited. Forestry growth is still low and unsustainable. Forest potential is not properly exploited, particularly in the case of timber, NWFPs, and environmental services. Plantations and natural forests have very low yields and low quality that cannot meet the demands for socio-economic development. Poverty in key forestry areas is still high. Household income generated from forest activities is still modest despite a great deal of effort made by the government.

For forestry to further contribute to poverty alleviation, government should continue to focus on poverty reduction. Community forestry, eco-tourism, NWFPs, industrial forestry, and PES should all be pursued equally. This is due to the fact that Viet Nam's forest land is fragmented and people who live in and near forests are ethnic minority groups and are poor. They have limited access to capital sources and technology. Therefore, one single initiative will not work for specific communities.

The following should be taken into consideration:

1. Review, plan, investigate and update forest resources employing new technology and international standard methods.
2. Mobilize capital sources to complete forest land allocation and for lease to organizations, households, poor communities so that they would have productive materials.
3. When carrying out planning and allocating forest land to households or communities for plantation, attention should be paid to the development of each timber product (small timber, large wood, planks, fiber, pulp, etc.) to link with the development of small and medium private enterprises and restructuring of state forest companies, so that they could operate more effectively under the market mechanisms to support households or communities in marketing and purchase of forestry products.
4. Complete the development of the Sustainable Development Forest Plan in all provinces in the country. Each forest owner needs a concrete plan. As such, concrete solutions toward improving natural and planted forest quality, effectively managing and bringing into play the values of natural forest, working out solutions on seedlings and technological advances to improve planted forest productivity as well as values of forestry production.
5. Accelerate review and planning development of ecotourism areas and regions for NWFPs development, exploitation and processing of small forest products in communities, and develop credit policies for specific development goals.
6. Quickly develop specific and detailed plans to implement effectively PES and specific action programs for REDD plus.
7. Continue to promote international relations, management and effective use of ODA funds in forestry. Forestry ODA programs or projects must take the lead in implementing policies as well as technical solutions, organization, and management of national forestry activities.

References

Asian Development Bank (ADB). (2009). *The interim assessment of national strategy and plan*. Viet Nam 2007-2010. Hanoi, Viet Nam: ADB.

ADB. (2010). *Report on Viet Nam potential economy*. Hanoi, Viet Nam: ADB.

ADB et al. (2003). Viet Nam development report 2004: *Poverty. Joint donor report to the Viet Nam consultative group meeting*. Hanoi, Viet Nam: ADB, AusAID, DFID, GTZ, JICA, Save the Children UK, UNDP, and the World Bank.

Báo cáo phát triển Việt Nam 2011 (Report on Viet Nam development 2011). 2010. Paper presented at the Conference of Consultation Groups and Funding Agencies for Viet Nam, Hanoi, Viet Nam.

Bui, M. D. (2003). *Mot so van de giam ngheo o cac dan toc thieu so Viet Nam (Issues of poverty alleviation in Viet Nam's ethnic minority groups)*. Hanoi: Social Science Publishing House.

Center for International Economics, Canberra and Sydney. (2002). *Viet Nam poverty analysis*. Retrieved from http://www.ausaid.gov.au/publications/pdf/vietnam_poverty_analysis.pdf

Chính sách Lâm nghiệp với Phát triển Kinh tế xã hội Tây Nguyên (Forestry policy and the socio-economic development in the central highland). 2010. Paper presented at the Conference on Policy mechanism in the Central Highlands of Viet Nam.

Commins, S., Benson, L., El-Wakil, S. Gambirazzi, G., Song, S., & Wood, F. (2001). *Poverty reduction strategies in Viet Nam*.

Decision 380/QD-TTg on the pilot policy for the payment for forest environmental services. 2008.

Decree 99/2010/ND-CP on the policy for payment for forest environmental services.

Dinh, D. T. et al. (2005). *Lam nghiep, Giam ngheo va sinh ke nong thon o Viet Nam (Forestry, poverty reduction and livelihood in the rural of Viet Nam)*. Chuong trinh Ho tro nganh lam nghiep va Doi tac. Hanoi.

Dinh, D. T. (2010). *Review of plans to implement ODA forestry projects. Hanoi*: MARD.

Do, T. B. &Tran, T.V.A. (2003). *Gioi va cong tac giam ngheo (Gender and poverty alleviation)*. Hanoi: NXB khoa hoc xa hoi.

GTZ and Winrock International. (2010). *Guidelines on implementation of decree on payment for forest environmental services*. Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ).

Hoang, M.H., Van Noordwijk, M., & Pham, T.T. (2008). *Payment for environmental services: Experiences and lessons in Viet Nam. Hanoi*, Viet Nam: World Agroforestry Centre (International Center for Research in Agroforestry.

Hoang, T.D (2006). *'Gender issues in the forestry sector in Viet Nam' in Governments of Finland, The Netherlands, Sweden and Switzerland*. Hanoi: Nhà xuất bản Nông nghiệp, MARD.

ICRAF Viet Nam. (2009). *Gắn kết bảo vệ rừng, phát triển kinh tế và xóa đói giảm nghèo – các vấn đề về phương thức tiếp cận ở Việt Nam (Proceeding on relating forest protection, economic development and poverty alleviation – issues on approaches in Viet Nam) on March 4-6, 2009 in Hanoi, Viet Nam*. International Center for Research in Agroforestry.

Jamieson, W., Goodwin, H. & Edmunds, C. (2004). *Contribution of tourism to poverty alleviation*. Pro-poor tourism and the challenge of measuring impacts.

Kerkvliet, B. (1998). Wobbly foundations: Building cooperatives in Rural Viet Nam, 1955–61. *South East Asia Research* 6 (3): 193–251.

Le, H. (2004). *Coastal resource use and management in a village of Northern Viet Nam (Unpublished doctoral dissertation)*. The Hague, The Netherlands: Institute of Social Studies.

Luis Gamez. (2007). *Development of policy for the payment for environmental services in Viet Nam and considerations for its replicability in Asia-Pacific region.*

Ministry of Agriculture and Rural Development (MARD).(2003). *Forest sector manual. Chapter forestry development orientation*. MARD.

MARD. (2004). *Report on implementation of comprehensive strategy on development and poverty reduction in the rural area*. MARD.

MARD. (2007). *Chiến lược Phát triển lâm nghiệp Việt Nam giai đoạn 2006-2010. Strategy of Viet Nam forestry development in the period of 2006-2010*. Hanoi: Agriculture Publishing House. MARD.

MARD. (2010). *Annual reports of Forestry General Department*. MARD.

MARD. (2010). *Hệ thống thông tin đánh giá ngành Lâm nghiệp FOMIS (Forestry monitoring information system)* – Progress report presented at the Forest Sector Support Partnership Annual Meeting on January 25, 2011, Hanoi, Viet Nam.

MARD. (2010). *Report on Viet Nam Forestry Company's (Vinafor) operation and business management*. MARD.

MARD. (2010). *Report on Hoa Binh Forestry Company's operation and business management*. MARD.

MARD. (2010). *Report on socio-economic and production of the forestry company in Mong Hoa commune, Ky Son District, Hoa Binh Province*. MARD.

MARD. (2011). *Tom tat ke hoach phat trien rung giai doan 2011-2020. Summary of Forest Development Plans 2011-2020*. MARD.

MARD. (2010). *On the implementation of the Decision 380/QD-TTg dated April 4, 2008 of the Prime Minister on the policy for payment for FES*. Mid-term evaluation report.

Nguyen, D. C., Vu, N., & Hansson, J.(2002). *Community forestry development in the northern mountain of Viet Nam*. Hanoi: Viet Nam-Swedden Mountain Rural Development Program (MRDP).

Nguyen. H.D. (2008). 'Đề án giao rừng, cho thuê rừng - những vấn đề cần ưu tiên' in *Tropenbos International Viet Nam and MARD, Kỷ yếu diễn đàn quốc gia về giao đất giao rừng ở Việt Nam*. Hanoi: Nhà xuất bản Nông nghiệp, MARD.

Nguyen, K. D et al. (2007). Pro-poor tourism in the GMS: Viet Nam case study. In *Pro-poor tourism in the Greater Mekong sub-region*. Development Analysis Network.

Nguyen, Q. T. (2011). *Payment for environmental services in Viet Nam: An analysis of the pilot project in Lam Dong province*. Institute for Global Environmental Strategies (IGES).

Nguyen, S. C. (2003). *Nong nghiep, nong thon Viet Nam thoi ky doi moi 1986-1992*. NXB Thong ke Hanoi.

Nguyen, T. P. (2009). *Focus in pilot PES policy in Viet Nam*. Paper presented at the National Workshop on Linkages between Forest Protection and Socio-economic Development and Poverty Reduction – Issues and Approaches in Viet Nam. Hanoi, March 4-6, 2009.

Nguyen, V. P. (2003). *Report on community forest management in Gia Lai Province*. Paper presented at the National Workshop on Allocation and Management of Natural Forest in Community Forestry in Hanoi, Viet Nam.

Nguyen, V. X. (2001). *Community forest management in Dak Lak province: Policies and practices. Paper presented at the National Workshop on a Policy Framework to Support Community Forest Management in Viet Nam in Hanoi*, Viet Nam.

Pham, X. P. (2001). *Present status of community forest management in some provinces of mountain areas of North Viet Nam*. Paper presented at the National Workshop on a Policy Framework to Support Community Forest Management in Viet Nam in Hanoi, Viet Nam.

Pham, X.P. (2008). *Overview of Forest Land Allocation Policy in Viet Nam: Real status and orientation for the coming period*. Paper presented at National Forum on Forest Land Allocation in Viet Nam organized by Tropenbos International Viet Nam and MARD.

Resolution 30a/2008/NQ-CP on support program on fast and sustainable poverty reduction for 61 poor districts. The Government of Viet Nam.

Resolution on socio-economic development plan of 2011. (2011). National Assembly of Viet Nam.

Scott, P. (2001). *Feasible study on the cooperation of special use management in Viet Nam*. Consultation Report for Non-timber Forest Product Center.

Socialist Republic of Viet Nam (2005a). *The national target program on poverty reduction for the period 2006-2010.*

Socialist Republic of Viet Nam. (2005b). *Viet Nam achieving the Millennium Development Goals*.

Socio-economic development plan period 2011 -2015. The Government of Viet Nam.

Sunderlin, W. & Ba, H.T. (2005). *Poverty alleviation and forests in Viet Nam*.

Sunderlin, W. D. & Huynh, T. B. (2005). *Poverty alleviation and forests in Viet Nam*. Bogor, Indonesia: Center for International Forestry Research.

Sustainable poverty reduction period 2011 - 2015 and implementation mechanisms for ethnic minority and mountainous. Retrieved from http://chuongtrinh135.vn/Default.aspx?tabid=115&News=1113&CatID=6

Tô. Đ.M (2008). 'Phân tích chính sách giao khoán, cho thuê rừng và đất lâm nghiệp - thực trạng và giải pháp' in Tropenbos International Viet Nam and MARD, *Kỷ yếu diễn đàn quốc gia về giao đất giao rừng ở Việt Nam*. Hanoi: Nhà xuất bản Nông nghiệp, MARD.

Tran, H. (2009). *PES for the poor in Viet Nam*. Information collected from CIFOR, ICRAF and Charles Darwin University. Retrieved from http://www.thiennhien.net/news/193/ARTICLE/8522/2009-05-06.html

Tran, H.B. (2003). *Report on experimental community- based forest management models in the province of Thua Thien Hue*. Paper presented at the National Workshop on Allocation and Management of Natural Forest in Community Forestry in Hanoi, Viet Nam.

Truong, Q. (1986) *Agricultural collectivisation and rural development in Viet Nam: A north/south study (1955–1985)* (Thesis of Doctor of Philosophy). University of Amsterdam.

Tsing, A.L., Brosius, J.P. & Zerner, C. (1999). Assessing community-based natural resource management, *Ambio* 28 (2): 197–8.

United Nations, (1996). *Catching up–Capacity development for poverty elimination in Viet Nam*.

UNDP, (2011). *Achieving MDGs with equity.* Retrieved from http://www.undp.org.vn/mdgs/viet-nam-and-the-mdgs/?&languageId=1

UNDP, (2010). *2010 Human Development Report: Viet Nam ranks 8th in per capita income growth* Retrieved from http://www.amchamvietnam.com/?id=4108

Viet Nam Forestry Club. (2009). Lâm nghiệp Việt Nam: Nhìn lại chặng đường hơn 20 năm đổi mới cùng đất nước *(Viet Nam forestry: Looking at 20 years of development and renovation with the country).* Hanoi: Agriculture Publishing House.

Viet Nam Socialist Republic. *(2007) National target program on poverty alleviation 2006-2010.*

Viet Nam's socio-economic development strategy from 2011–2020. The Government of Viet Nam.

Vu, L. (2003). *Assessing the effectiveness of the management of community forest in Cao Bang province.* Paper presented at the National Workshop on Allocation and Management of Natural Forest in Community Forestry in Hanoi, Viet Nam.

Vu, L. (2003). *Assessing the effectiveness of the management of community forest in Cao Bang province.* Paper presented at the National Workshop on Allocation and Management of Natural Forest in Community Forestry in Hanoi, Viet Nam.

Vu, T. P. (2008). *Building payment mechanisms for carbon sequestration in forestry: A pilot project in Cao Phong district of Hoa Binh province*, Viet Nam.

Vương. X.T. (2008). 'Giao đất giao rừng ở Việt Nam từ góc nhìn dân tộc học' in Tropenbos International Viet Nam and MARD, *Kỷ yếu diễn đàn quốc gia về giao đất giao rừng ở Việt Nam*. Hanoi: Nhà xuất bản Nông nghiệp, MARD.

Winrock International, (2010). *Payment for forest environmental services: Case study of pilot project in Lam Dong province from 2006 to 2010.*

World Bank in Viet Nam, (1999). *Viet Nam development report 2000: Attacking poverty.* Hanoi, Viet Nam: The World Bank in Viet Nam.

Wode &Huy, B. (2009). *Forest resource management in Viet Nam*. Hanoi: MARD.

http://www.indexmundi.com/vietnam/population_below_poverty_line.html

http://www.gtzmnr.org.vn/index.php?option=com_content&task=view&id=227&Itemid=9

http://ddpext.worldbank.org/ext/ddpreports/ViewSharedReport?&CF=&REPORT_ID=1336&REQUEST_TYPE=VIEWADVANCED