

# ASIA-PACIFIC FORESTS AND FORESTRY TO 2020

## Forest Policy Brief 01



## Forests for a greener future

With only 0.2 hectares of forest per person, the Asia-Pacific region is, per capita, the least forested region in the world. Reinvestment in forests is necessary to reduce timber import dependence, support biodiversity conservation and climate change mitigation, revitalise rural economies and protect land and populations from environmental hazards and the impacts of climate change. Expanding the region's forest base will be an essential component of a greener future.

Since 1990, 38.7 million hectares of primary and other naturally regenerated forest have been lost in the Asia-Pacific region - an area greater than the size of Japan. The overall low levels of per capita forest area in the region make these reductions even more significant. In South Asia, in particular, 23 percent of the world's population relies on only 2 percent of global forest resources and per capita forest area stands at only 0.05 hectares. The largest total reductions in forest area since 1990 were, however, in Southeast Asia where deforestation amounted to 33.2 million hectares or 7.6 percent of the land area (Fig. 1).

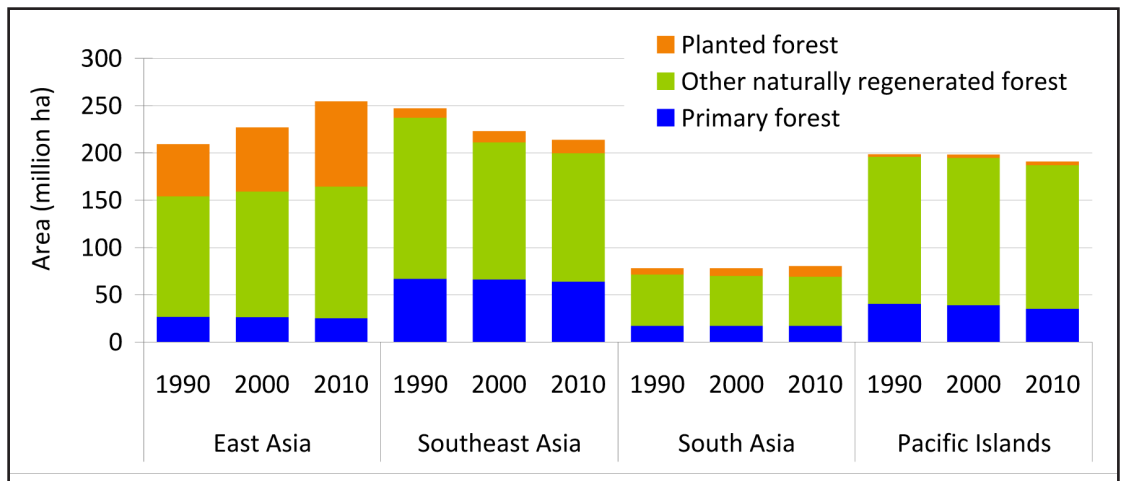
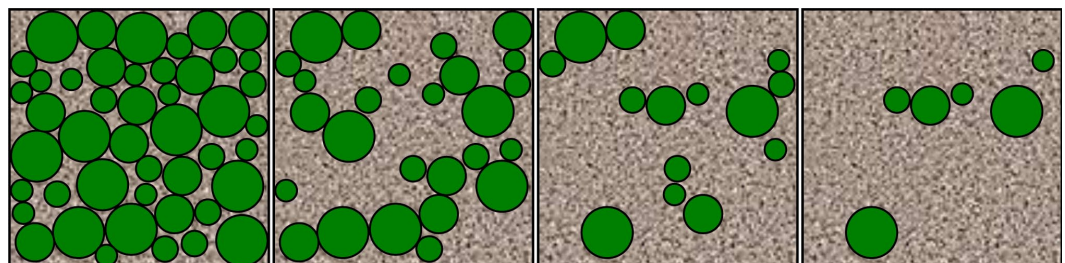


Figure 1. Forest area by category in Asia-Pacific sub regions, 1990-2010.

Forest degradation, although widespread, often goes unnoticed (Box 1). For example, standard forest cover definitions will fail to capture changes in forests above 10 percent canopy cover (Fig. 2). Low reported stocking densities, falling timber production and increasing incidence of forest fire, are symptomatic of widespread and increasing levels of forest degradation around the region. Together, deforestation and forest degradation have resulted in a decline in the provision of forest goods and ecosystem services in many countries including those related to carbon, water and biodiversity.

Figure 2. Representations of 70, 40, 20 and 10 percent canopy cover - all constitute 'forest' under the FAO definition.



### Box 1. Forest degradation in Lao PDR

In Lao PDR, forest cover in 2004 was estimated at 41.5 percent using a minimum canopy cover limit of 20 percent. In 2005, Lao PDR reported 70 percent forest cover using a 10 percent canopy cover limit. These figures suggest that almost one third of the land area of Lao PDR is covered with highly degraded forests.

Source (FAO 2011)

With reductions in the areas of primary and other naturally regenerated forest in the Asia-Pacific region, biodiversity continues to be lost at a high rate. Forest conversion is the primary driver of species loss and agricultural expansion is the main cause of forest conversion. A biodiversity crisis threatens Southeast Asia with estimates that 13-42 percent of species will be lost in the subregion by 2100, at least half of which could represent global extinctions. In South Asia, mining and infrastructure development are major threats to biodiversity while in East Asia urban development is added to the list. In the Pacific, invasive species are posing a major threat to biodiversity along with mining, logging and agricultural encroachment.

As natural forests have been cleared and degraded, and logging bans have come into force, timber production has also declined across much of the region. Concurrent investment in timber production either through institutional strengthening to enable sustainable



management of natural forests for production or through plantation development has only been seen in a few countries. Imports are increasing as a result and the region's former pre-eminence as a global timber producer has waned.

Between 1997 and 2007, Asia-Pacific industrial roundwood production fell by 5 percent, led by reductions in East and Southeast Asia (Fig. 3). Production increases in South Asia and the

Pacific were accounted for by India and Australia where significant private and public investments in plantation development have been made. Industrial roundwood import dependence of Asia-Pacific countries jumped to 18 percent between 1997 and 2007. In East Asia, the change was much more pronounced, from 6 to 29 percent, driven almost entirely by China (Fig. 4).

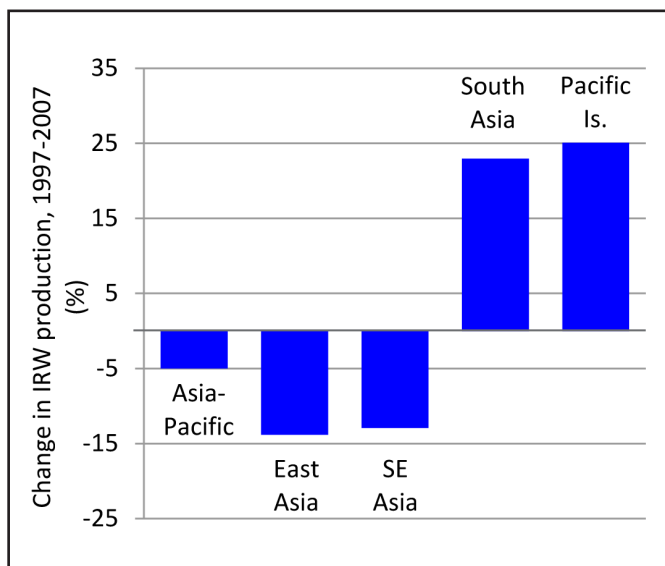


Figure 3. Change in industrial roundwood production in the Asia-Pacific region, 1997-2007.

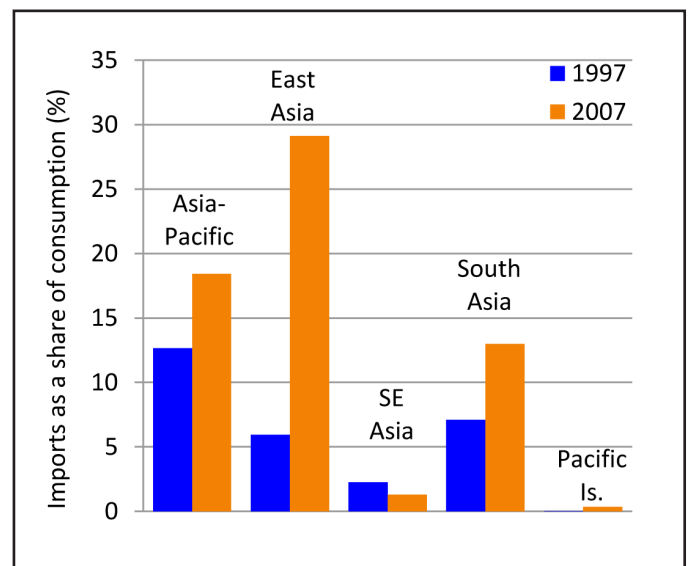


Figure 4. Asia-Pacific industrial roundwood imports as a share of consumption, 1997, 2007.

As Asia-Pacific populations expand and incomes grow, demand for wood products, especially processed products such as panels and paper, is set to increase significantly from the low per capita levels seen today.

Dependence on timber imports is increasing and although the region is unlikely to suffer wood shortages, measures aimed at increasing forest protection may further increase wood imports. Under

such circumstances, efforts will be necessary to maintain or increase wood production to help avoid displacement of forest degradation to countries where forests remain intact and governance is weak.

Investment in forest resources has been cited as essential in mitigating climate change and limiting global human induced temperature rise to within 2°C. Deeply entrenched social causes of deforestation and forest degradation constrain, however, the extent to which forestry sectors in the region can realistically be expected to respond to international calls for emissions

reductions. Emissions reduction policies that stimulate economic activity, e.g. through investment in sustainable production of wood, may help to overcome some of the barriers to reducing emissions from forestry.

Investment in forest resources will also be necessary to help address the impacts of climate

change including increases in the incidence of landslides, floods, droughts, and disasters in coastal areas. Protection forests in the region are generally poorly managed and attention is needed to increase the contribution of forestry to climate change adaptation and to help forests adapt to climate change (Box 2).

### Box 2. Climate change impacts in Asia

Most regional climate change studies project changes in the seasonal distribution of rainfall, with drier and/or longer dry seasons and shorter, more intense wet seasons. Increases in tropical cyclone intensities by 10 to 20 percent are expected while average temperatures are projected to increase by 0.8-2.2°C by 2039.

Changes in climate are expected to increase incidence of fire, forest dieback and spread of pests, pathogens and invasive species, and are also likely to directly affect tree physiology, forest growth and biodiversity. Increases in extreme rainfall events are likely to directly increase the frequency of landslides in sloping areas. At the same time, increased road development and rising levels of human activity in forest areas are likely to increase fire risks and may result in increasing cycles of forest devastation.

Maintenance of forest health and vitality will be of key importance in relation to climate change-related threats.

Source: Several sources cited in FAO (2011)



Notwithstanding trends in primary and other naturally regenerated forests, tremendous efforts are being made in several countries around the region to recapitalize forestry sectors and restore forest ecosystems. While international

discussions related to prevention of deforestation and degradation have become protracted, the extent of planted forests in the region has increased by 45.6 million hectares since 1990 - largely due to the efforts of China and Viet

Nam. In India and the Philippines increases in forest cover have also been recorded while some other countries in the region appear to have decoupled the relationship between economic development and deforestation.

### Box 3. Reforestation and plantation production

Asia as a whole had 125 million hectares of planted forests in 2005, with an estimated potential annual production of about 495 million cubic metres; over twice the current total reported production of industrial roundwood (Carle and Holmgren 2008).

Improvements in plantation production of timber could have major effects on future demand for timber from natural forests and would also provide green building materials with a carbon footprint much smaller than substitute products such as concrete, steel and aluminium.

Millions of hectares of grassland and heavily degraded forests in the region may become economically viable sites for plantation development and assisted natural regeneration of forests if newly developed financing mechanisms prove workable.

## The way forward

Heightened global interest in forests and forestry constitutes the greatest opportunity in recent times for the forestry sector to deliver on society's priorities for forestry. Global climate change related initiatives aimed at reducing deforestation and forest degradation, including the role of conservation, sustainable management of forests and enhancement of forest carbon stocks (REDD+), are providing growing support for sustainable forest management. Given the opportunities that presently exist, funnelling start-up investment into accessing and acquiring additional financing seems appropriate.

Notwithstanding emerging opportunities for international support for forestry, the progress shown by several countries in the region suggests that national investment can act as the primary driver for forest protection and forest expansion. Experience from countries where such programmes have been undertaken will bring increased clarity in relation to the relative benefits of different approaches and practices. Farm forestry and private sector investment have been particularly effective in various subregions while state-run schemes have also proved effective.

To attract and make the most of investments in forestry, an enabling institutional environment is essential. As such, reinvention of forestry institutions will often



be necessary. Improvements in institutional responsiveness, flexibility and efficiency are essential to cater to increased demand for forest goods and ecosystem services. At the same time, calls for improved social and economic justice mean that direct government control over forest resources will need to be gradually relinquished. Government forestry agencies may need to confine responsibilities to regulation and oversight while allowing the private sector, civil society and local actors to manage a larger proportion of the national forest estate. A major factor in encouraging investment will be increased clarity and stability of forest and forest land tenure. Without appropriate allocation of rights and responsibilities, investment in forestry may be wasted.

With the region's forest area beginning to stabilise and in view of the rising demands for agricultural land, focus should be directed

towards improving forest quality and raising the production of ecosystem services through forest conservation and rehabilitation and afforestation/reforestation. Protected areas provide a widely recognized means of conserving ecosystems and species and offer major potential for conserving forest biodiversity. Providing adequate funding to monitor and maintain protected areas and diverting mining and infrastructure development activities away from precious forest resources will reduce the level of threat to much of the region's biodiversity.

Recapitalization of the region's forest resources is essential for a greener future. Continued high rates of economic growth in the region provide the means to ensure that necessary steps are taken. Failure to invest in forest resources may cost more in the long run than investing while conducive conditions prevail.

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# ASIA-PACIFIC FORESTS AND FORESTRY TO 2020

## Forest Policy Brief 02



## Back to basics: field-level forestry

Institutional frameworks that fail to provide incentives to invest in forest management and a succession of high-level national and international priorities in forestry mean that field-level activities are often overlooked. The health and vitality of forests in the Asia-Pacific region and their productivity are often compromised as a result. With demands on forests increasing and climate change threatening, efforts to maintain ecosystem services and benefits from forests should focus attention on effective management at the field level.

Many of the day-to-day field-level activities that physically determine the future of forests and forestry are often overlooked: monitoring of forest health and vitality; fire management; forest patrolling; silvicultural activities; reduced impact logging; and forest inventories among others (Box 1, Box 2).

The enthusiasm at national and international levels for prioritization of development or sectoral objectives - poverty alleviation, devolution and decentralization, climate change mitigation, forest law enforcement and governance - although of great importance, can divert attention from field-level activities.

Often, the reality in the field is that forest management cannot keep pace with developments in national and international dialogues. In fact, high-level decisions may even go completely unnoticed by the grassroots. While theory, science and policy may advance, at the local level - where the trees are growing



and where demands for wood, non-wood forest products and ecosystem services are increasing - lack of capacity and knowledge are often highly constraining. For example, local-level fire management is rarely supported despite education and rapid response being the most efficient ways to control forest fires. Similarly, lack of forest rangers and guards means that biodiversity losses continue to occur and carbon stocks are at greater risk. Reduced impact logging is rarely practiced in the region despite its clear environmental and economic benefits.

The long life cycle of trees and forests means that in spite of current high-level priorities, long-term management activities must continue in order to ensure the sustained flow of benefits. Without focus on practical aspects of forestry, it is possible that, by the time changes agreed in international dialogues are translated to field levels, a protracted period of institutional strengthening and training will be required for results to be realized.

Among the challenges to implementing sustainable forest management, the International Tropical Timber Organization (ITTO) has drawn attention to the almost universal lack of resources needed to manage tropical forests properly: staff, equipment, vehicles, etc. (ITTO 2011). In relation to protected area management, WWF has highlighted the need for increased attention to field-level issues including management planning, monitoring and evaluation, budgeting and awareness raising, staffing and law enforcement (WWF 2004, 2007).

### Box 1. Reduced impact logging

Because of the generally low quality of harvesting operations in the region, logging has perhaps the most significant impact on forest health and vitality. Associated degradation reduces not only the present value of forests, but reduces regenerative capacity and leaves a legacy of low forest productivity, reduced commercial viability and impaired ecological functioning. Reduced impact logging (RIL) significantly lessens damage to the residual stand and is economically justified by savings from reduced damage and future benefits resulting from increases in forest growth and yield.

Addressing forest health and vitality, and forest degradation in particular, has become a topic of much debate in anticipation of a global mechanism to reduce emissions of carbon dioxide from deforestation and forest degradation (REDD). Improving the climate change mitigation potential of forests and increasing stocking densities are closely allied

goals and, as such, climate change funding could go far towards improving the health and vitality of forests in the region.

Adaptation of forest management is also likely to be necessary to achieve mitigation goals. For example, maintaining ecosystem integrity such that carbon is not lost through forest drying and fire, or ensuring

the security of pollinators and reproductive capacity are likely to be necessary long-term measures in utilizing forest potential for climate change mitigation. Acting while ecologically conducive conditions prevail is likely to result in lower costs than under future conditions if degradation continues.

## Box 2. Fire management

Since 1997/1998, when fires swept across large areas of the Asia-Pacific region, responses have been limited and the sources of problems have often remained unaddressed. For example, forest managers and local inhabitants are not usually responsible for fire control and land tenure arrangements may promote short-term strategies and excessive use of fire as a management tool. Weak governance and ineffectual legal and regulatory systems may also hinder law enforcement with respect to fire (Rowell and Moore 2000).

Due to increased opening and drying of the region's forests, changing weather patterns and increasing risks of anthropogenic ignitions, there is a strong need to improve fire management. Fire has to be tackled at the source, either through prevention or rapid response. Fire management can be improved through information and awareness campaigns, improved legislation and faster fire responses. Communication networks and monitoring schemes may also be necessary, as well as specific local-level management practices.



## The way forward

Greater attention needs to be given to building field-level capacities to bridge a growing gap between international dialogues, policies and field activities. In particular, efforts are required to channel the new financial resources available through carbon mechanisms (especially REDD+), and other payments for ecosystem services, into enhancing field capacities.

There will be increasing needs for responsive management systems and to improve ecosystem resilience. Forest monitoring to quickly detect and tackle outbreaks of pests and diseases, effective fire management, restoration of forest

functions after disturbances and reduced impact logging, are all necessary elements of the improved forest management envisaged. However, field capacities in these elements fall far short of levels required to meet international standards.

Practical steps to improve on-the-ground forest management may include voluntary codes of practice, which seek to provide benchmark standards to guide forest managers. For example, codes of practice for forest harvesting, fire management and for planted forests have been developed and the economic and ecological logic of implementing these codes should act as the main

incentive in encouraging their uptake and improving forest management. However, such guidelines and codes of practice are often insufficiently disseminated or adhered to and science and technologies, although developed, often do not make it to the field level.

Major attention to training, capacity development and enforcement of regulations is sorely needed if hopes are to become realities. Efforts to bridge high-level decision making with grassroots field practices are critically important. With these investments in forest management, a greener future with increased employment, higher production and improved environmental protection can be expected.

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For more information, please go to the outlook website: <http://www.fao.org/asiapacific/forestry-outlook>

# ASIA-PACIFIC FORESTS AND FORESTRY TO 2020

## Forest Policy Brief 03

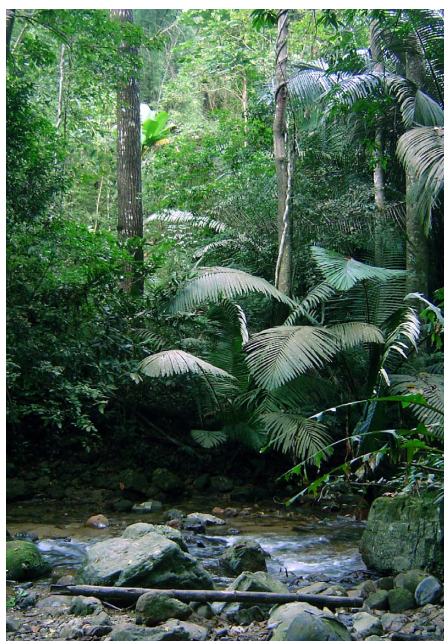


## The forest biodiversity challenge

Most of the terrestrial biodiversity within the Asia-Pacific region is contained within forests. Protected areas are the mainstay for biodiversity conservation although other forest areas are also important. Habitat destruction and extraction of high-value species are major threats to biodiversity. Ecosystem stability is based on interdependence among constituent species and with biodiversity loss, resilience to change is reduced. Awareness raising, stringent environmental impact assessments, and improved law enforcement are required.

While the Asia-Pacific region is extremely rich in biodiversity, it is also a region where biodiversity is under threat, having 13 of the world's 34 identified biodiversity hotspots (Box 1). Despite a long history of conservation efforts, the threat of major losses of biodiversity persists in view of intense human pressures. Rapid growth of economies and associated direct and indirect impacts on land use continue to cause significant erosion of biodiversity.

Reduction of forest cover has greater impact on levels of biodiversity than other threats. Reduction in forest density and forest fragmentation, including through logging, also have severe impacts and can lead to increasing risk of catastrophic fire and a resultant acceleration in species loss. In the Asia-Pacific region, primary forest constitutes only 5 percent of the total land area and only 19 percent of all forests are considered primary. The area of primary forest in the Asia-Pacific



region declined at an estimated 0.5 percent per annum between 2000 and 2010, up from 0.2 percent between 1990 and 2000.

Throughout the Asia-Pacific region, maintaining biodiversity poses a huge challenge. The porosity of national borders and park boundaries and huge demands for

wildlife will continue to threaten marketable species. Increased access to more isolated areas - as roads are constructed - will increase rates of depletion. Conservation of biodiversity will be particularly difficult for low-income, resource-rich countries, in view of enormous internal and external pressures. Southeast Asia, in particular is highly vulnerable to biodiversity loss (Box 2).

### Box 1. Biodiversity hotspots

A biodiversity hotspot is a region with a significant reservoir of biodiversity that is threatened with destruction. To qualify as a hotspot a region must contain at least 1 500 endemic species of vascular plants (0.5 percent of the world's total) and at least 70 percent of the original habitat must have been lost. The Asia-Pacific is home to half of the world's ten most at-risk hotspots.

Source: CI (2007).

### Box 2. Biodiversity crisis in Southeast Asia

Approximately 45 percent of the primary forest in the Asia-Pacific region is in Southeast Asia and much of Southeast Asia's biodiversity is contained within forests. Four biodiversity hotspots are located within the subregion, and forestry-related activities therefore have important repercussions on global biodiversity.

In combination with climate change and the increasing frequency of El Niño events in recent years, reduction in forest density and forest fragmentation leads to greater risk of catastrophic fires and accelerated species loss. The wildlife and bushmeat trade has reached an unprecedented scale in Southeast Asia with greater forest access and increasing demand behind the upsurge. It is estimated that between 13 percent and 42 percent of species will be lost in Southeast Asia by 2100, at least half of which could represent global extinctions. Containing and reversing losses will take a multinational and multidisciplinary effort involving awareness raising, enhanced protection and conservation incentives.

Based on Sodhi *et al.* (2004).

Protected area systems have expanded rapidly since the early 1990s and almost all countries in the region are signatories to the Convention on Biological Diversity. Biodiversity remains under threat, however, from the following challenges:

- Funds and capacity to manage protected areas generally remain deficient.
- Often conservation efforts are focused entirely on land (or forests) earmarked as protected areas and biodiversity conservation outside such areas gets very little attention.
- Rapid growth of economies and increasing demand for land for agriculture, to supply

export markets as well as growing domestic populations, is resulting in accelerating encroachment.

- Rapid expansion of infrastructure, dams and mines has had major impacts in many protected areas.

Apart from habitat destruction, the empty forest syndrome threatens the Asia-Pacific region. Greater forest access and huge demand for wildlife for food, medicine, pets and fashion, particularly from China, has led to increased trafficking and many species with high commercial value are now endangered. The Convention on International Trade in Endangered Species (CITES) and related international agreements

often remain unenforced and much of the supply originates in 'protected' areas. At present, however, forest loss associated with low incomes and low levels of development remains the greatest threat to biodiversity (**Box 3**).

Despite continuing threats, levels of deforestation and forest degradation within protected areas are generally lower than in surrounding landscapes and protected areas will remain the cornerstone of forest biodiversity conservation. Pressure on forests in the region is, however, widespread and conservation measures in other forest areas, including production forests, will also be required (see ITTO/IUCN 2009).

### Box 3. Biodiversity decline in Papua New Guinea

Papua New Guinea (PNG) has the largest intact block of tropical forests in the Asia-Pacific region and is home to 6-7 percent of the planet's species. It is predicted, however, that 83 percent of commercially accessible forests will have been cleared or degraded by 2021. Commercial logging and mining are the largest threats to forests and to biodiversity while slash-and-burn agriculture and establishment of oil palm plantations have also led to widespread losses. Given that PNG is a low-income country reliant on agriculture and logging for economic development, great efforts will be required to minimize biodiversity losses.

Source: Shearman *et al.* (2008)

### The way forward

Benefits from biodiversity conservation will largely accrue in the future; in the meantime, maintaining species diversity is mostly an issue of preserving the wealth of nature for the benefit of future societies. Biodiversity is effectively a public good, which limits the scope for market-based approaches to management, requiring the public sector to play the leading role.

In particular, there is a great need to raise awareness of the importance of biodiversity, particularly among consumers of wildlife products, and to improve financing and law enforcement in relation to protected areas. Financing is important for staffing and management planning, while the establishment of checkpoints, patrols and border controls can provide effective support for protected areas. Incentives to increase outmigration

and reduce immigration into high value conservation forests may also be useful.

Improvements in monitoring and implementation of environmental safeguards in association with infrastructure developments are of key importance and greater care should also be taken in placing rural roads and maintaining the integrity of protected areas in the face of new developments.

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# ASIA-PACIFIC FORESTS AND FORESTRY TO 2020

## Forest Policy Brief 04



## Reinventing forest policies and institutions

With demands on forests expanding and diversifying, and the forestry agenda becoming increasingly fragmented, institutions responsible for forest management must compete with and complement other sectoral interests to prove their worth to society. Institutional restructuring or “reinvention” may be necessary to grasp opportunities and ensure that society’s demands are effectively and efficiently provided for. In particular, institutional structures need to reflect transitions in forest policies from timber-focused management to focus on protection, conservation and management for a wide range of goods and services.

Traditional forestry institutions operating centralized command-and-control structures are becoming increasingly outmoded as natural forests are depleted of timber and demands for ecosystem services such as watershed protection, biodiversity conservation and climate change mitigation increase. At the same time, calls for greater social and economic justice and for greater local participation are growing, and allocation of rights and responsibilities to local levels is increasingly seen as key to meeting social, economic and environmental goals in forestry.

To be successful, remain relevant and avoid being outmanoeuvred by more dynamic agencies, forestry institutions need to ensure flexibility, strategic management capabilities, strong “sensory” capacities and an institutional culture that responds to change.

Dramatic deterioration in the extent and quality of forest resources in the region has led to criticism and questioning of the roles, objectives and institutional cultures of traditional state forestry agencies. Important institutional weaknesses include:

- failure of forest management systems to adequately protect forest resources;
- failure to adequately safeguard livelihoods of the

forest-dependent poor and indigenous groups; and

- sluggishness in reacting robustly to new demands and ensuring representation of key stakeholders in decision-making.

In many countries, forestry is accorded relatively low priority by governments regardless of its economic importance. The forestry portfolio is often held by a relatively junior minister and forestry departments are usually subsumed within broader ministries for agriculture, natural resources, environment or rural industries. The forest policy arena is also being fragmented by an increasing diversity of specialist agendas, which further dilute the prospects for forestry agencies

to provide leadership. In such circumstances, the development of strong advocates and champions for forestry within the government is hindered, and the impetus for change is constrained (**Box 1**).

A major objective of institutional re-inventions around the world has been the rationalization of activities and assets to enhance the efficiency and international competitiveness of the forestry sector. This drive to improve the efficiency of government agencies has similarly been demonstrated in efforts to reduce the size of administration and curtail bureaucratic involvement in field-level management, thereby inducing greater separation between macro- and field-level functions.

### Box 1. Forestry administration in China

An Asia Pacific Forestry Commission/FAO study examined the impacts of institutional restructuring of forestry agencies in Asia and the Pacific. A key finding in China was that:

*“Powerful forestry administrative organizations are necessary for the revival and development of forestry in China. In the State Council reform of 1998, however, the Ministry of Forestry was downgraded and re-organized as the State Forestry Administration (SFA) and although the state has constantly increased input into forestry to accelerate the pace of development, the SFA seems to lack authority. In addition, the re-organization and lowering of the forestry authority negatively influenced local forestry organizations. Some local governments abolished or incorporated their forestry organizations into other institutions and this resulted in numerous difficulties in forestry development.”*

Source: Zhang (2008).

Re-allocation of rights and responsibilities in relation to forest resources and re-distribution of benefits and risks has been necessary to promote engagement of stakeholders in managing forests. Shifts towards private sector and village/community, household and/or individual ownership mean that many more actors are involved in forestry (Box 2). Forestry agencies, as they withdraw from field-level activities, must prove their worth by facilitating design and implementation of policy and

regulations that stimulate, rather than stifle, production of forest goods and services under these decentralized regimes.

Over past decades, forest and forestry policies have been formulated to encompass the principles of sustainable forest management in all countries in the region. Policy has, however, often emerged from processes that fail to assess or accommodate stakeholder opinions and the situation on the ground. Policy is also commonly

poorly understood or supported by a broad range of stakeholders, especially those at the local level.

Despite all the credentials of good forest policy, many examples are simply text book models of forest policy, inappropriate for the circumstances into which they were born. Implementation has therefore often been lacking and circumstances suggest that institutional reforms beyond policy and legislative amendments are necessary.

## The way forward

Forestry institutions must facilitate increased production of forest goods and services by relinquishing direct control over forest resources. Shifting to facilitative and regulatory roles while increasing flexibility and responsiveness will involve enormous challenges.

Global and regional experiences demonstrate that quantum shifts in forestry often occur due to the emergence of tangible economic, political or social shocks. Forecasts and reasoned argument are often insufficient to effect change, especially where governance is weak and other pressing matters are at hand. Environmental degradation is also often an insufficient catalyst unless acute repercussions are experienced.

Nonetheless, there are many steps that can be taken to help precipitate change. To a large extent, assessment of field-level forestry issues and what can realistically be achieved is a first step. Capabilities in terms of human and financial resources and available knowledge, and ability to operate with broader socio-economic constraints, have to be more rigorously taken into account if policy objectives are to be achieved. Political will and

### Box 2. Inclusiveness is essential for attainment of climate change related goals in forestry

The challenges that confront forestry - with respect to climate change and otherwise - and difficulties in implementing forest policy through centralized mechanisms suggest that much greater inclusion of forestry stakeholders at various levels is necessary.

Traditional forms of forest governance that focus on hierarchical, top-down policy formulation and implementation by the nation state and the use of regulatory policy instruments are insufficiently flexible to meet the challenges posed by climate change.

(Seppälä et al. 2009)

leadership are critical elements. To stimulate progress, a variety of methods may be employed such as institutionalising transparency through public consultation, publication of plans and procedures, implementation of public opinion surveys, etc.

During such campaigns, institutional strengthening and human resource development are likely to be of considerable importance in helping officials to adopt new roles and ways of working. Forests and forestry-related objectives must be prioritized if they are to be realised. Issues that will require immediate attention include:

- **Tenure reform.** Tenure will remain one of the core issues in empowerment of local

communities and in enabling them to address natural resource degradation and poverty.

- **Reform of public sector agencies** with emphasis on facilitatory and regulatory functions and shifting managerial functions to the private sector, including farmers and communities.
- **Changes in institutional cultures** to promote meritocracies, reward efficiency and effectiveness and to minimise nepotism and corruption.
- **Improved land-use planning** and careful management of land conversion programmes.

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# ASIA-PACIFIC FORESTS AND FORESTRY TO 2020

## Forest Policy Brief 05



## Learning for the future: forestry training and education

National and international focus on forests and forestry has grown rapidly in recent times. New factors are coming into play and an increased understanding of forest-related processes and how to manage them for the greatest benefit is required. Improved performance at all levels will be necessary and it is likely that a protracted period of institutional strengthening and training will be required to implement new standards and expectations effectively.

Education is necessary both to address human resource limitations in forestry and to increase awareness among the general public of forests and forestry. The long time scales over which national-level changes in forests and forestry occur strongly suggest that education in relation to values of forests and the opportunities and challenges faced should be a key focus in the Asia-Pacific region. The current scarcity of skilled human resources in many countries points to a clear need to improve tertiary education in forestry, while there is also evident need to strengthen education in a general sense and to increase awareness in relation to forests and natural resources.

The region's growing population and skew towards younger generations place significant emphasis on the need for improved education and awareness. Currently, 51 percent of the region's population is under 30 years of age (Fig. 1). By 2020, this group will acquire huge purchasing power while increasingly taking responsibility for steering the region's institutions. Without an environmentally smarter next generation of consumers and decision-makers, it is likely

that environmentally sustainable practices will remain outside the mainstream and resources will be irretrievably eroded. More immediately, the lack of human resource capacity in forestry and the increasing complexity of forest management, particularly with respect to climate change, imply that high-quality education and training should be made available to those working in forestry and related disciplines at local, provincial and national levels.

Currently, institutional capacity within the forestry sector is scarce in many countries in the region. At the national level there are often only a handful of people with a comprehensive understanding of state-of-the-art forestry and although national and international NGOs provide vital support in several countries, in others the potential of civil society remains largely unrealised in forest management.

At the field-level, severe skill deficits exist in relation to

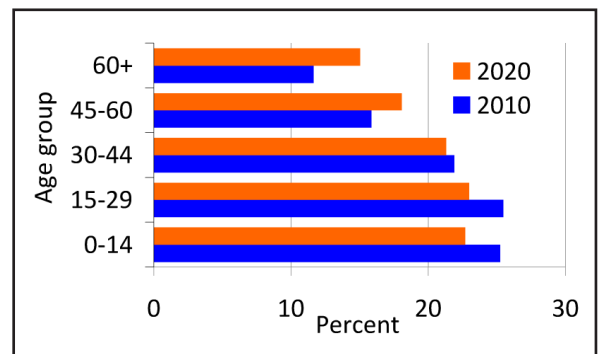


Figure 1. Age distribution in the Asia-Pacific region in 2010 and 2020.

forest management. Knowledge of techniques for community engagement, reduced impact logging, fire management, forest mensuration, afforestation/reforestation, assisted natural regeneration and many other areas is often lacking. Among those fully or partially dependent on forests, understanding of formal forest policies and legislation and of local-level rights and responsibilities is often almost non-existent and, as such, forest policy implementation is often lacking. More generally, topics such as the natural environment and natural resources are often not well covered in the curricula taught in schools and urban children may leave school without ever having visited a forest.



At the policy and strategic-planning levels, constraints in forestry often stem from poor identification of policy issues, poor policy formulation and inadequate support for implementation. Technical solutions are rarely lacking and yet the contributions of forestry remain deficient in many countries. Forestry professionals' abilities to evaluate economic, environmental

and social aspects of forest policy; to effectively communicate findings and opportunities; to formulate proposals and policy papers; and to oversee policy implementation and evaluation often need upgrading. Analytical and communication skills and in-depth understanding of the multiple issues that make forestry a uniquely challenging area for effective policy making are needed.

Different approaches are needed at different levels and formal tertiary-level forestry education need only form part of it. Indeed, forestry professionals do not need to come from backgrounds in forestry if they possess the basic skills and qualities needed to advance forestry.

## The way forward

The weak implementation of forest policy in many countries in the region suggests that education is particularly important in relation to the policy process. Without an understanding of the means by which stakeholders can be consulted and then mobilised to tackle complex problems, it is almost certain that forest policy will continue to exist in document form only. Too often, local-level stakeholders are completely unaware of the aims of forest policy and their rights and responsibilities. Heavily centralised processes and command-and-control approaches are no longer tenable and efforts need to be made to re-educate forestry officials to enable them to adapt to new roles (Box 1).

A first step along the path towards institutional strengthening might be an institutional skills audit to compare current skills to necessary skills. External assistance to assist upskilling is likely to be necessary and many organizations are becoming more involved with training in forestry and development. Within institutions there is also a need to promote learning cultures, and to

### Box 1. Professional forestry education

Constraints in forestry often stem from poor identification of policy issues and poor policy formulation. The FAO Forest Policy Short Course aims to upgrade forestry professionals' abilities to evaluate economic, environmental and social aspects of forest policy; to effectively communicate findings and opportunities; to formulate proposals and policy papers; and to oversee policy implementation and evaluation.

ITTO's fellowship program, established in 1989, aims to strengthen the expertise of mid-level professionals working in tropical forestry while promoting sustainable management of tropical forests, efficient use and processing of tropical timber, and production of better economic information about the international trade in tropical timber.

provide mechanisms to transfer skills in addition to providing external training. In implementing education and training activities, different methods will be appropriate at different levels and may range from training of trainers, as part of a cascading approach, to individual scholarships for highly skilled positions.

Another key area for educational improvement in relation to forests and forestry is in schools (Box 2). Creating respect for the natural world and understanding of the multiple benefits that forests offer - from biodiversity protection to timber production - will be vital for the future management of

the region's natural resources. Environmental education is equally important for urban dwellers as well as rural people. Without a basic understanding of natural resource issues, growing disparities between urban and rural areas, in terms of both wealth and understanding, may divide opinion and threaten the unity and inclusiveness of approaches to national development. An important way to introduce young people to forests is through formation of nature groups, visits to forest areas and involvement in activities such as tree planting, which instil a better understanding of the component processes behind forest ecosystem functioning.

### Box 2. Kids to Forests

"Kids to Forests" is an FAO initiative aimed at exposing school-age children to the multiple benefits of forests through hands-on learning experiences that can lead to a better understanding of sustainable forest management. The initiative organizes country programmes including interactive field visits, games, activities and discussions that excite and educate students about sustainable forest management, as well as developing appropriate educational materials. At the heart of the initiative is recognition that education can address forestry knowledge gaps and is a key to shaping how people engage with forests.



# ASIA-PACIFIC FORESTS AND FORESTRY TO 2020

## Forest Policy Brief 06



## Better governance, better forestry

With pressure growing on natural resources in the Asia-Pacific region, good governance is becoming increasingly important in maintaining forests and the broad range of non-market benefits that they provide. Indications of falling governance standards across the region suggest that a large proportion of the social and environmental benefits of forests to current and future generations may be lost, along with timber revenues and other market values. With increasing national and international interest in forestry and recent development of measures aimed at eliminating international trade in illegally sourced forest products, Asia-Pacific forestry now has a chance to address governance issues and move towards a greener and more equitable path.

In many Asia-Pacific countries, forest related activities have been dominated by business-government coalitions, often with military involvement. The socio-economic contribution of forestry remains poorly realized and underestimated due to the capture of benefits by unaccountable interests. Lack of collection of royalties and taxes has also undermined markets for products from sustainably managed sources while mounting social and environmental costs have often been overlooked.

World Bank governance indicators measure the quality of six aspects of governance: (i) control of corruption, (ii) rule of law, (iii) regulatory quality, (iv) government effectiveness, (v) political stability, and (vi) voice and accountability. Assessment of trends in these indicators show that government effectiveness<sup>1</sup> improved in 58 percent of Asia-Pacific countries between 2000 and 2010 while other indicators fell in over 55 percent. Regulatory quality and voice and accountability showed particularly frequent and steep declines.

Rising government effectiveness suggests that although attainment of policy goals is improving it is against a background of rising corruption and political instability, weakening

### Box 1. Governance defined

The World Bank defines governance as “the traditions and institutions by which authority in a country is exercised” while RECOFTC - The Centre for People and Forests refers to governance as “a system of rules and institutions that provides the basis for societies to make decisions and take action.”

voice and accountability and rule of law, and falling regulatory quality.

Corruption constitutes a significant threat to forestry and to national economies, particularly where revenues are substantial. Scores for control of corruption<sup>2</sup> fell in 55 percent of Asia-Pacific countries between 2000 and 2010 (Table 1). Overall, 71 percent of the Asia-Pacific forest area is in countries where control of corruption scores below zero. Between 2000 and 2010, corruption worsened in almost two-thirds of these countries. In the remaining better governed countries, covering 29 percent of the region’s forests, corruption increased in only one third. These opposing trends signal widening disparity in the region. Importantly, however, corruption diminished in Indonesia, location of 13 percent of

the region’s forests. Viet Nam, DPR Korea and several Pacific countries also showed positive trends.

Table 1. Corruption in Asia-Pacific countries, 2000-2010\*

	Control of corruption score	
	2000	2010
New Zealand	2.36	2.36
Singapore	2.24	2.18
Australia	1.96	2.06
Japan	1.17	1.54
Brunei	0.38	0.86
Bhutan	0.38	0.83
Malaysia	0.34	0.12
R. Korea	0.29	0.42
Fiji	0.03	-0.91
Thailand	-0.13	-0.34
Samoa	-0.14	0.13
PR China	-0.24	-0.60
Sri Lanka	-0.25	-0.43
Maldives	-0.29	-0.63
India	-0.37	-0.52
Kiribati	-0.38	-0.05
Mongolia	-0.41	-0.71
Philippines	-0.46	-0.82
Tonga	-0.53	-0.31
Nepal	-0.54	-0.69
Vietnam	-0.61	-0.58
Vanuatu	-0.68	0.35
Solomon Is.	-0.76	-0.46
Lao PDR	-0.78	-1.07
PNG	-0.82	-1.14
Pakistan	-0.82	-1.10
Cambodia	-0.85	-1.21
Indonesia	-0.88	-0.73
Bangladesh	-0.96	-0.99
Myanmar	-1.31	-1.68
DPR Korea	-1.80	-1.34

Source: WDI 2012

\* Scores range from -2.5 to 2.5. Green indicates a positive trend between 2000 and 2010, red indicates a negative trend.

1. Reflects perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government’s commitment to such policies.

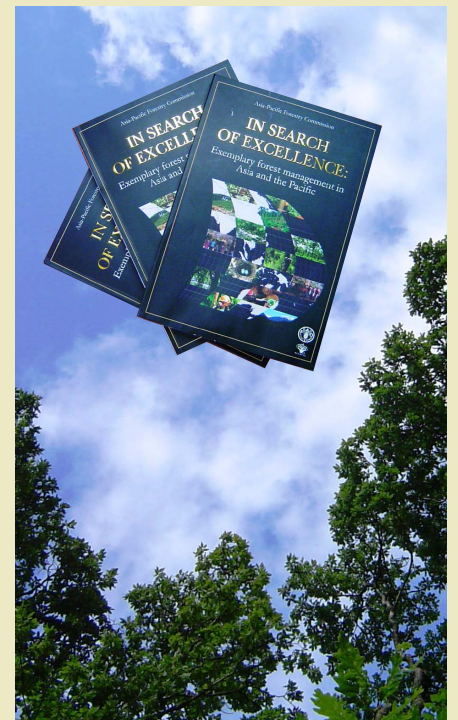
2. Reflects perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as “capture” of the state by elites and private interests.

In practice, impacts associated with weak governance in the region have led to calls for greater social and economic justice while the region's growing middle class and increasingly well informed civil society are voicing demands for improved environmental governance. With the growth of new media and communications and wider availability of remotely sensed information it has become increasingly difficult for illegal and inequitable practices to pass unnoticed and even in countries with authoritarian governments or those that on paper are poorly governed, positive changes have taken place.

### Box 2. Towards a model of good forest management

An APFC initiative “In search of excellence” found that elements of excellence in forest management include “commitment, resource security, attention to improving livelihoods for local people and/or profitability, sound institutional and management frameworks, attention to silviculture and ecosystem management, and application of sensible management philosophies. The core of the model is anchored on reaching societal consensus with regard to how forests should be managed and what we want from forestry.”

Source: Durst et al. (2005).



### The way forward

The question for Asia-Pacific forestry is how to promote sustainable forest management when governance quality is fluctuating. In general, there are several clear steps that governments need to take:

1. Deciding what to achieve with forests in terms of balancing economic, social and environmental aspirations - or, more specifically, balancing stakeholder aspirations;
2. Deciding on a system of incentives and penalties (carrots and sticks) to achieve these objectives;
3. Ensuring objectives are consistent and achievable - by ensuring that policies, legislation, and institutions are aligned to promote the objectives and that sufficient resources are available to achieve the objectives;
4. Making a clear policy statement to communicate objectives to wider society;

5. Evaluating policy implementation and refining to maintain progress towards objectives.

Just as governance issues are caused by a number of factors, a suite of responses is appropriate to promote change (Box 2). Specific measures to address governance include:

- Investment to promote well-structured institutions and solid policy implementation including strengthening of law enforcement;
- Implementation of transparency and anti-corruption measures and increased public engagement;
- Clarification of legal frameworks and clear allocation of roles and responsibilities,
- Dissemination of information on forest related rights and responsibilities at all levels, in appropriate languages and by appropriate media;

- Reduction of poverty in forest areas given that illegal acts often result from an insalubrious coalition between the corrupt and powerful and the weak and desperate;
- Improved monitoring - forest patrolling, crowdsourcing,<sup>1</sup> remote sensing.

International measures implemented to block illegally harvested products from entering high-paying markets also hold great potential in efforts to promote sustainable and legal production of timber and forest products. The EU Illegal Timber regulation, the amended U.S. Lacey Act and similar draft legislation in Australia, New Zealand and Japan provide opportunities for Asia-Pacific governments to promote sustainable forest management and prevent loss of the region's natural resources and associated revenues.

1 - Collecting information from the general public.

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For more information, please go to the outlook website: <http://www.fao.org/asiapacific/forestry-outlook>

# ASIA-PACIFIC FORESTS AND FORESTRY TO 2020

## Forest Policy Brief 07



## Making forestry work for the poor

Under Millennium Development Goal 1, Asia-Pacific governments are committed to halving extreme poverty by 2015 and many have adopted poverty-related measures in national forestry policies and programs. The high incidence of poverty in forested areas and the high dependence of the poor on forest resources suggest a leading role for forestry in poverty eradication. Achievements to date have, however, fallen short of expectations. By strengthening tenure, building local capacity to manage resources, providing credit and supporting livelihood development and income generating activities, the forestry sector can tackle poverty and help to achieve MDG 1.

Despite acknowledgement of the importance of forests for poverty alleviation, forestry activities have not been effectively integrated into poverty reduction programmes in most countries. Even when poverty alleviation is an explicit objective of forest management, it is often afforded much lower priority than objectives such as state revenue generation and biodiversity conservation.

Historically, forestry agencies have focused on industrial logging operations, and the contribution of forests to poverty alleviation has been limited. The focus on industrial activities has in fact often created or aggravated poverty (Mayers 2006). The poor commonly lose rights and access to forests allocated for logging or plantation development and seldom share in the economic benefits.

Recent initiatives to include local communities in commercial timber



production have often failed because of a lack of systematic attempts to address obstacles. Often, community involvement in forest management is sought in poor-quality, low-productivity forests. Providing “little trees to little people” is, however, unlikely to alleviate poverty and often adds to the burden faced by poor communities. In several countries, withdrawal of timber rights through logging bans has also exacerbated poverty while community timber plantations

### Box 1. Forests and poverty alleviation.

Forests can help bring about poverty mitigation and avoidance by serving as sources of subsistence, seasonal gap fillers and safety nets. Forests can also support poverty elimination through savings, investment, accumulation, asset building and permanent increases in income and welfare (Sunderlin, Angelsen and Wunder 2003).

have not proven economically attractive for small holders. In many countries, small and medium forest-based enterprises (SMFEs) employ millions of poor people but are seldom given high priority by governments.

To address these problems and increase the contribution of the forestry sector to MDG 1, renewed attention from forestry policy makers is necessary.

### Box 2. To what extent is poverty alleviation integrated in national forestry agendas?

- For the first time, the Indonesian Ministry of Forestry’s strategic priorities for 2004-2009 included development for communities in and around forests.
- China has adopted massive forestry-based programmes to improve environmental conditions and reduce rural poverty, with relative success in increasing forest cover and rural household income.
- Pro-poor measures included in Nepal’s Forest Policy 2000 include prioritizing those below the poverty line in the allocation of leasehold forests and hiring the poor and the landless in forest-related work.
- Under India’s Joint Forest Management (JFM) programme about 30 percent of the national forest area (~23 million hectares) is managed by local committees. Poverty alleviation through improved supply of wood and other products and income generation are the primary objectives of JFM.
- The Bhutanese government’s 10th Five-Year Plan includes establishing community forestry and expanding commercial harvesting amongst its strategies.

Source: FAO 2012

Community forestry in the Asia-Pacific region benefits large numbers of stakeholders while traditional forestry activities sustain millions of forest-dependent people. But, while there are some success stories, community forestry programmes have not generally lifted large numbers of households from poverty.

While forests and forestry can be sources of income for the poor, “devolved forest management, NWFPs and outgrower schemes have to date not provided meaningful and sustained revenues to overcome poverty” (RECOFTC 2009). Policies developed over the past decade that have sought to broaden local participation in local forest management and increase benefits from forests need comprehensive revision to reflect governments’ international commitments to poverty alleviation.

Legal uncertainties and policy inconsistencies often weaken the status of community forestry. Where forests have been allocated to individuals and groups, capacity building and investment in productive activities are also needed.

### The way forward

To improve the contribution of forestry to poverty alleviation, approaches must be tailored to the local context. Particularly, emphasis should be placed on the following:

- Improving familiarity with poverty in forest areas amongst forestry policy makers;
- Allocating clear and secure forest tenure and use rights over good-quality, productive forests to poor people;
- Ensuring consistency and continuity of policies;

### Box 3. Towards greater integration of forestry in poverty alleviation strategies

“The challenge for forestry is not just the restoration of trees or forest-dwelling biodiversity, but also the growth of a political and social landscape that facilitates people’s abilities to make choices to secure their livelihoods; to move beyond forests as a resource that maintains them in poverty to forests as part of a wider livelihoods approach as a means to step out of poverty.” (Hobley 2008).

Most tenure systems maintain state ownership over forestlands and simply specify local management and access rights or benefit sharing arrangements. Timber rights have occasionally been transferred to communities, but allocated forests are often degraded and alternative livelihood activities are required in the hiatus before benefits materialise.

Harvesting and marketing regulations for wood and non-wood forest products often need to be simplified to allow community members to benefit from their efforts. Specific measures also need to be taken to prevent benefits from being captured by more powerful families and thereby widening existing income disparities.

Schemes to pay for or market forest ecosystem services - including watershed protection, biodiversity conservation or carbon storage/sequestration - have the potential to enhance local income. However, the technical and institutional complexities involved in establishing payment systems demand careful assessment prior to implementation. The complex financial transactions involved in global carbon trade are often beyond the grasp of local communities. New income earning opportunities are also likely to be grabbed by outsiders, and related restrictions could deprive the poor of what they have traditionally enjoyed.

- Training communities in skills necessary to sustainably manage forests, and improve livelihoods - literacy, accountancy, decision making, critical thinking, etc.;
- Strengthening local level institutions, especially to democratize decision making and ensure transparency and accountability;
- Integrating forestry-based poverty alleviation activities into broader rural development programmes;
- Supporting movement up the value chain, especially through development of processing and marketing arrangements.
- Supporting community enterprises and SMFEs by simplifying regulations relating to resource access, harvesting and marketing; increasing credit availability, providing marketing support and developing partnerships between forestry companies and communities.

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For more information, please go to the outlook website: <http://www.fao.org/asiapacific/forestry-outlook>



# ASIA-PACIFIC FORESTS AND FORESTRY TO 2020

## Forest Policy Brief 08



## Forests and gender in a changing environment

Addressing the role of women in forestry is central to sustainable resource management and rural livelihood improvement. Improving women's access to forest resources and effectively including them in decision making leads to greater investment in children's welfare and has positive effects on economic growth and sustainable resource management. Opportunities for women to adopt new roles and improve their livelihoods are increasing but gender imbalances still threaten sustainable development. As challenges associated with globalization, food- and energy security and climate change emerge, a renewed focus on gender in forestry is needed.

Gender has received considerable attention in forestry during the last few decades and there are many instances of women playing critical roles in the conservation and management of forest resources. Often women have been at the forefront of battle with loggers and land developers as in the case of the Chipko movement in India and in Ban Thung Yao in Thailand (Box 1). Yet the full potential of women as resource managers and as users of forest products and services remains unrealised.

Withdrawal of governments from many economic activities as a consequence of current austerity measures has led to the expansion of informal employment and increased exploitation of women as cheap labour. Women's knowledge of resource management is not utilised adequately, or worse, such knowledge is marginalised. New opportunities provided through REDD+ could bypass women unless issues such as tenure and carbon rights are resolved and asymmetries in access to knowledge are addressed. These issues require renewed effort to ensure that women play an equitable role in sustainably managing forest resources and improving the contribution of forestry to poverty reduction, income generation, health, nutrition, education and broader economic and social outcomes.



### Gender and community forestry

Considerable attention has been given to enhancing the involvement of women in community forestry in the Asia-Pacific region. Improvements in forest management and livelihoods have been supported by greater inclusion of women in decision making and addressing factors that restrict women's access to knowledge - e.g., higher workloads, lower status and restricted mobility. For example, in Nepal 50 percent of representation in Forest User Group

governing bodies is earmarked for women. Similar efforts have been made in other countries yet several challenges persist:

- Formal moves to empower women are often not translated into practice, especially in the context of persistent caste and ethnic prejudices and most decisions are taken by men.
- Increasing competition for resources continues to curtail access to land and forests, particularly affecting women. This is all the more so in the context of large scale trans-border land acquisitions.

Demographic changes, and work-related migration of men in particular, has incidentally led to female empowerment in rural areas. However, lack of knowledge and lack of access to networks can hamper women in efficiently adopting their new roles (FAO 2010).

### Box 1. Women claim forest rights in Thailand

In return for a support fund and tourism-related income, the people of Ban Thung Yao were asked to allow a reserve to be established in the surrounding forest. Villagers, however, feared loss of access to valuable non-wood forest products and the women of the village led the resistance: "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".

Source: Nabangchang 2012

## Women and forest enterprises

Although gender segregated statistics for forestry enterprises are scarce, invariably women tend to be confined to low-wage “niches” and their share in employment declines rapidly at higher levels. There has been an improvement in access to credit, through the growth of micro-financing for example, but enterprise support programmes and market-led approaches to poverty alleviation and income generation often fail to address gender-specific issues. Trade liberalization and associated competition has, in many instances, undermined the viability of local enterprises and although new opportunities have emerged, few rural women have been able to take advantage (IFAD 2008). To improve the position of female entrepreneurs several Asia-Pacific countries have supported collective action by women through self-help groups and women’s cooperatives.

Gender issues in forest enterprises and large industries include discrimination in relation to remuneration and promotion, and lack of attention to gender differences that disadvantage women in the workplace (maternity leave, childcare, etc.). Exposure to chemicals, arduous and dangerous working conditions and lower wages present significant additional difficulties and economic and food crises also appear to weigh more heavily on women’s shoulders as women are often the first to lose their jobs and suffer from reduced income and higher food prices. As value chains are expanding and pushing both men and women into the paid labour force, these issues are likely to require increased attention.

## Forestry institutions

At the institutional level, many community management and policy making processes fail to effectively address women’s stake in natural resources management. Women may be physically present in decision-making bodies but their voices are not always reflected

due to the prevalent social norms or because of lack of education or literacy (Agarwal 2010). In almost all countries, however, women are poorly represented in forestry institutions. The proportion of female workers in Asia-Pacific forestry institutions in the 15 countries from which data is available averages 15 percent. The Philippines, China and Mongolia score highest with around a third of employees female (FAO 2010). Neither the number nor the proportion of females has changed significantly during the last decade. The proportion of females with first or higher degrees employed in publicly-funded forest research centres is higher at around 27 percent.

## The way forward

While there has been some progress in addressing gender issues in forestry, many of the old problems remain. Larger social and economic changes - demographic transition, globalisation, increasing competition for resources, development of markets for ecosystem services - have created new challenges and opportunities. While empowerment is dependent on the larger social and cultural context, the forest sector needs to take steps to strengthen women’s involvement and take advantage of emerging opportunities:

- Forest policies should explicitly outline how the sector aims to enhance the involvement of women in forest management. Many countries have strong equal employment opportunities

programs, policies and legislation that could be adapted in other countries to improve gender equity.

- More effort is required to democratise decision making in forestry institutions through enhanced transparency.
- Multi-level education and training provides the foundation for improving gender equity. At governmental levels, analysts and field staff need training in gender analysis and gender issues including how men’s and women’s different experiences, needs and priorities need to be understood to achieve equitable outcomes.
- Effective gender analysis requires gender segregated and cross-sectional data that recognize the heterogeneity of women across age, ethnic, education, marital status and other categories. The lack of reliable data on gender in forestry indicates the inadequate priority currently afforded this topic.
- In industrial settings, equal employment opportunities should be supported and must recognise that policies and programs often need to be tailored to accommodate gender differences. Gender equity considerations need to be taken into account in priority setting, programming, project design, approval and implementation at all levels. In some situations, safeguards against sexual harassment and violence may also be necessary.

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