![APFNet 10 years 2008 - 2018 logo]

An overview of in-service training arrangements of public forestry agencies in the Asia-Pacific region

A regional study conducted under the APFNet Trainers in Forestry Network

Asia-Pacific Network for Sustainable Forest Management and Rehabilitation

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Acknowledgement

Abbreviations and Acronyms

As the Asia-Pacific Network for Sustainable Forest Management and Rehabilitation (APFNet) was proposed at the Asia-Pacific Economic Cooperation (APEC), APFNet publications follow APEC terminology. Members of APFNet should be referred to as "economy" or "member economy" / "economies" or "member economies", except in the case of international and non-governmental organizations, academic institutions and the private sector.

APFNet	Asia-Pacific Network for Sustainable Forest Management and Rehabilitation
CEFET	Center for Forestry Education and Training (CFET)
CONAFOR	National Forest Commission (of Mexico)
EIA	Environmental Impact Assessment
FA	Forestry Administration (of Cambodia)/Forest Authority (of Papua New Guinea)
FD	Forest Department
FAO	Food and Agriculture Organization of the United Nations
FWTC	Forest and Wildlife Training Center
GIS	Geographic Information System
GPS	Global Positioning System
HRD	Human Resources Development
ICT	Information and Communication Technology
IRD	Institute of Forest and Wildlife Research and Development (Cambodia)
ITTO	International Tropical Timber Organization
MARD	Ministry of Agriculture and Rural Development (of Vietnam)
ME&F	Ministry of Environment and Forestry (of Indonesia)
MOF	Ministry of Forests (of Fiji)
MFSC	Ministry of Forests and Soil Conservation (of Nepal)
NFP	National Forest Programme
RECOFTC	Regional Community Forestry Training Center for Asia and the Pacific (also known as – The Center for People and Forests)
REDD+	Reducing Emissions from Deforestation and Forest Degradation (Full meaning of REDD+ is – "Reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing economies")
RFD	Royal Forest Department (of Thailand)
RIL	Reduced Impact Logging
RS	Remote Sensing
RUA	Royal University of Agriculture (Cambodia)
SDG	Sustainable Development Goal
SERFOR	National Forestry and Wildlife Service (of Peru)
SFA	State Forestry Administration of China
SFM	Sustainable Forest Management
TICA	Thailand International Cooperation Agency
TIF Network	Trainers in Forestry Network
TNA	Training Needs Assessment
UNFCCC	United Nations Framework Convention on Climate Change

Executive Summary

The concept of human resource development (HRD) is a broad term, which has evolved over time and consists of a set of elements, e.g. training and development, organization development, collective learning and career development. The objective of HRD is to attain better performance of both individuals and organizations. In-service training, an important component of HRD, is a concrete and formal learning activity provided by an organization to improve its employees' level of knowledge and skills needed for better perform their responsibilities and achieve the mission of the organization. Though it cannot represent the full picture of HRD, in-service training could be a good starting point to understand the whole system of HRD of individual economies and the region. In this report, in-service training of public forestry agencies in 11 economies (all developing economies) in the Asia-Pacific region is reviewed and compared to understand status and trend of human capital cultivation in the forest sector in the region.

Status of in-service training in public forestry agencies in the AP region

Most reporting economies have clear policies and programs on HRD, capacity building and in-service training. Some of the economies, such as Malaysia and Thailand, has well defined policies and plans in the national economic development plan. The activities of in-service training include short-term training on specific issues, and higher academic degree programmes, carried out either in domestic institutes or abroad. The target groups of in-service training in most economies range from technical personnel, to policy makers, professional foresters, technicians and forest labourers.

The implementation of in-service training programmes varies among economies. China, given its scale of forestland and number of the forestry staff, ranks top in the scale of annual in-service training activities and recipients. Indonesia, Thailand and Mexico also reported large number of in-service

training activities. Facilities and budget are important resources affecting the implementation. Most public forestry agencies reported owning training centers, though their conditions decline in some economies. Several economies also receive support from international organizations. Due to differences in the size of the forestry sector and agency, the absolute budget figures among economies in annual in-service training are not comparable. But limited budget and irregular release of budget for training is a common challenge restricting its implementation.

Many economies carry out Training Needs Assessment (TNA) regularly, however, the results do not necessarily feed into the update of training plans, due to other restrictive factors such as limited resources, and lack of good training modules. The use of innovative methods in training in some economies are quite encouraging. China has widely applied the use of information and communication technology to develop online training courses, and Thailand has recognized the need of follow suit.

Challenges facing public forestry agencies on in-service training

The report notes several common challenges facing public forestry agencies on in-service training:

- Lack of adequate and predictable funding
- Training needs assessment are not done systematically
- Knowledge and skills gained through training are not applied effectively due to institutional barriers or lack of motivation
- The training plan is not well coordinated across the different levels of forestry agencies due to institutional restructuring or uneven development between different areas
- Lack of proper planning of staff in-service training
- Training agencies and facilities are not sufficient
- Training approaches and quality are yet to be improved

Future trend in skill requirements

Due to rapidly changing environment, the domain of forestry development has also been expanding. The nature of forest management has becoming ever more encompassing, from sole focus on timber to multiple functions, and from just public forest managers to multiple stakeholders. The role of forests has also been accentuated in climate change, modern technologies, and global environment related policy process. To tackle those challenges, modern foresters and public forestry agency staff have to stay abreast with new knowledge and technologies. Apart from traditional forest management skills, future forestry professionals have to learn many new skills, ranging from cutting-edge technologies, to policy knowledge and management skills. Knowledge regarding climate change, application of remote sensing, international negotiations, and soft skills related to communication and management is worth special attention.

Recommendations

Based on the reports of the economies, to improve the effectiveness of in-service training programmes, the public forestry agencies may wish to:

- Appreciate the value of training needs assessment and accordingly prioritize conducting systematic TNA at regular intervals for updating its in-service training programming;
- Maintain a robust staff skill profile to select the right staff for the appropriate type of training (domestic or external);
- Enhance coordination and cooperation among the providers of training;
- Seek support from all sources, including bilateral and international cooperation agencies, for upgrading and up keeping of training infrastructure and training intellectual resources.

For APFNet and its TIF Network, the most appropriate action would be to nurture an enabling environment for collaborating and sharing the knowledge, resources and experiences among member economies:

- Lay down a clear roadmap for the TIF Network;
- Provide technical support to assist economies in formulating training programmes, identifying training resource persons, and linking such resource persons with interested forestry agencies;
- Build a network of trainers on priority training topics;
- Explore cooperation with other public agencies dealing with natural resources, environment, and education, as well as private sector and civil society organizations;
- Facilitate communication and networking among members;
- Conduct case studies of in-service training in some public forestry agencies to understand unique circumstance, and different factors affecting capacity building of their human resources.

This publication, though does not represent a complete picture of in-service training in the forest sector in the AP region, is the first of kind to review the status of in-service training as part of the overall forestry HRD system, which also identifies the areas for future research in this area.

1. Introduction

Context

The Asia-Pacific Network for Sustainable Forest Management and Rehabilitation (APFNet) is dedicated to advancing sustainable forest management and forest rehabilitation in the Asia-Pacific region. With 31 members, including 26 economies and 5 international organizations, APFNet thrives to advance those noble causes through policy dialogues, demonstration projects, information/ knowledge sharing and capacity building programs.

The "Trainers in Forestry (TIF) Network", initiated by APFNet in late 2014, aims to strengthen the effectiveness of forestry in-service training efforts in the Asia-Pacific region through provision of technical guidance, exchanges, and collaboration. As such, this Network is focused on engaging forestry human resource development (HRD) policy makers, public forestry training institutions and forestry training officials.

Through several consultation workshops, forestry trainers and officials responsible for human resource development have identified several challenges facing forestry HRD, and in particular, the in-service training, and proposed a number of activities to enhance opportunities for exchange of experiences and best practices, and for cooperation on in-service training, among the member economies. In this regard, they also recommended to conduct a study on the current status of in-service training in public forestry agencies in the region to better understand the existing in-service training systems, available resources and challenges experienced by public forestry agencies, to be used as a basis for developing a strategy for the TIF Network.

Purpose of the study

The purpose of this regional study is to:

- provide a brief review of literature on HRD, in particular, on training and development;
- present a picture of the status of the in-service training in public forestry agencies in the region; and
- contribute to the development of a long-termstrategy for the TIF Network in the Asia-Pacific region

Scope of the study

The study includes discussions on:

- definitions of HRD and in-service training; and their relevance in forestry;
- global and regional trends in forestry and its implication on HRD of public forestry agencies;
- skills needed by officials working in the public forestry agencies;
- role of HRD in public forestry agencies and particularly, of in-service training;
- summary of economy reports on their forestry in-service training systems and in-service training resources of public forestry agencies of economies in the region, including common challenges faced by public forestry agencies on in-service training; and
- recommendations for economies, APFNet and TIF Network on improving in-service training opportunities and qualities in the region.

Methodology

The regional study is primarily based on the individual economy reports on in-service training systems of public forestry agency of APFNet member economies. All member economies were requested to provide information on their HRD policies and detailed information on in-service training programmes, facilities, resources, programme impacts and lessons learned. An outline for their inputs was developed and sent out to all 26 member economies by the Secretariat on 29 June 2017 with a deadline of 31 August 2017, which was extended to 31 October 2017, to receive as many submissions as possible. For the purpose of the reports, "In-service training" in a public forestry agency is defined as:

"training given to staff members and other field-level seasonal employees to develop and/or enhance their skills in sustainable forest management (SFM), rehabilitation of degraded forestlands and related fields."

In total, 11 economies[1] provided their reports with information on their in-service training in their public forestry agencies, from low to middle income developing economies.

In addition, a desk-top research on theories and practices of HRD and in-service training was also done to enrich the understanding of the subject matters.

Limitations

The study draws its information on current on the ground only in-service training from 11 economies of the region (out of 26 member economies of APFNet) from Southeast Asia (Cambodia, Indonesia, Malaysia, Thailand, Vietnam), East Asia (China), South Asia (Nepal), Pacific Islands (Fiji, Papua New Guinea) and North and South Americas (Mexico and Peru). Thus, both from the geographic and economic development perspectives, the inputs cannot be considered representative and accordingly, this report as comprehensive or representative of the whole region. Readers may bear this limitation in mind while perusing this report. Nevertheless, it is expected that this report would provide some valuable information on in-service training in public forestry agencies, which may be common to most developing economies of the region.

Structure of the study

The report is arranged in the following manner: Section 2 discusses the issues of human resource development and in-service training in general as well as in the context of sustainable forest management. Section 3 presents a consolidated picture of the current policies, programmes and lessons learned by APFNet member economies in regard to in-service training in their forestry agencies, based on the reports provided by aforementioned 11 member economies. It will also discuss the opportunities and constraints of the forestry agencies in improving in-service training programs and enhancing their human resources to effectively meet the existing and emerging forest management challenges. Drawing from preceding sections, the last section (Section 4) draws a few conclusions and recommendations for TIF Network for consideration.

Readers, interested in any particular economy, can receive a copy of its report by contacting APFNet Secretariat.

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[1] Cambodia, China, Fiji, Indonesia, Malaysia, Mexico, Nepal, Papua New Guinea, Peru, Thailand and Vietnam.

2. Human Resource Development (HRD) and in-service training in the context of SFM

2.1 Definitions of HRD

Background

General literature on human resource development (HRD) is believed to have originated in the context of evolution of theories and practices of management of business enterprises, which are guided by the motive of efficiency, innovation, customer satisfaction and profit maximization. However, over time it broadened to cover the management of public and non-profit organizations. No organization can function without people; and an organization functions better if it has well skilled and motivated people as its workers, employees or managers. Organizations need employees capable of thinking, performing, and adapting. Organizations are fully aware that human capital is the primary determinant of organizational success and that continual development of and investment in human capital is the key to success (Stroberg-Walker, 2005). Organizations, in particular, private businesses that have made learning, education, and development a priority have seen it pay off through greater profitability and increased worker job satisfaction (Coblentz, 1988; Filipczak, 1989 as cited by Rowden 2002). They would also be better prepared to close the gap between the level of worker skill and present and future needs.

So, what exactly is "Human Resource Development"?

Human resource development (HRD) is defined in many ways by a large number of experts but the credit for introducing the concept of HRD goes to Leonard Nadler[2] in 1970, who defined HRD as a series of organized activities conducted within a specified time, and designed to produce behavioral change. The definition has evolved over time with more elaboration and addition of other attributes/elements. Currently it consists of a set of elements, for example, training and development, organization development, collective learning and career development (McLagan, 1989 as quoted by Dooley, 2002). Appendix 1 provides a collection of definitions of HRD, summarized by Dooley (2002), with some additional definitions from this author's literature search. The primary goal of HRD of an organization is to develop the capabilities of each individual in relation to his or her present job responsibilities as well as his or her expected future role(s).

The website of Auburn University on human resource development seems to have well captured the essence of the current understanding of the term HRD, which states: "The objective of HRD is to provide programs which orient, train, and develop the employees of the University by improving the skills, knowledge, abilities, and competencies necessary for individual and organizational efficiency and productivity

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[2] Leonard Nadler, emeritus professor of George Washington University was regarded as father of Human Resource development, according to a website - www.whatishumanresource.com

as well as a personal career path"[3]. In other words, the focus of HRD is on developing a superior and motivated workforce that can meet organizational and individual goals and provide the best service to its stakeholders. It also underscores that career development and job skills acquisition, once on the job, are the joint responsibility of the employee and the employing organization.

An organization, which has a strong HRD framework, clear mission and dynamic leadership tends to be successful in retaining its workforce and keep them motivated. A recent Gallup study in the USA found that roughly half of the 7,200 people surveyed who left their jobs, did so because of a bad manager or leader (Snyder 2015) as cited by Gandolfi and Stone. 2016). Research has shown that job satisfaction and employee retention are higher in organizations that show appreciation for job well done and make recognition through various rewards (a reward may not necessarily be a rise in salary) (Gandolfi and Stone. 2016). This also clearly indicates the importance of enhancing the capability of employees to be a good manager and leader as they climb the career ladder.

Training and development

Training and development of employees are considered an essential component of HRD in any organization. Employee training and development is a broad term covering multiple kinds of employee learning.

Scholars note the difference between "training" and "development". Training is a programme that helps employees learn specific knowledge or skills to improve performance in their current jobs. Development is more expansive and focuses on employee growth and future performance, rather than an immediate job role[4]. Seth Stone, Adjunct Faculty of the School of Business & Leadership, Regent University, Virginia, USA on 29 September 2017 wrote on LinkedIn[5]: "Contrary to popular opinion, these two words are not synonyms. While there are many differences, the biggest in my mind is that training is about building a skill set and development is about building

the whole person. The former has its rightful place, but the later will pay bigger dividends in the end."

Generally, in any organization, a newly recruited or promoted employee initially reports to his/her new position with at least the entry level skills. With time, however, those skills can be expanded and enhanced through a series of job-related learning activities and experiences. Learning in the workplace occurs in and beyond formal training classrooms. Accordingly, training can be differentiated, at least in the following types:

- formal,
- informal, and
- incidental.

Formal learning (or in-service training) is specifically planned programme or experiences to instruct people how to perform specific defined jobs. *Formal training* includes both as expressed organization goal and a defined process. *Informal learning* is any learning that occurs where an employee gains knowledge and skill through observation and assistance from coworkers. Often such learning process is not designed or planned by the organization. *Informal learning* can occur whether or not there is an expressed goal, and can serve individual as well as organizational objectives. *Incidental learning* occurs as an unintended by-product of some other work-related activity such as trial-and-error experimentation. Formal and informal learning tend to be intentional whereas incidental learning is not. Although interconnected, informal and incidental learning are not necessarily the same. Learning, as opposed to training, is more appropriate to a business environment in which jobs are constantly changing (Marsick and Volpe 1999 as cited by Dooley 2002, Higgs 1994).

In-service training

In-service training is a concrete and formal learning activity provided by an organization to improve its employee's level of knowledge and skills needed for efficiently and effectively discharging his/her responsibilities to achieve the mission of the organization. The mission of an organization could

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[3]   http://www.auburn.edu/administration/human_resources/hrd/

[4]   https://www.allencomm.com/resource/what-is-employee-training-development/

[5]   https://www.linkedin.com/pulse/5-keys-successful-human-resource-development-seth-stone-/?articleId=
      8480202405973526948#comments-8480202405973526948&trk=sushi_topic_posts_guest

be increasing productivity, competitiveness or profitability in the case of "for-profit" business organizations. In the case of public and "non-profit" organizations, it could be for effectively safeguarding public interests and efficiently discharging the mandate of the public organizations for the benefit of society. In-service training is an ongoing process or continuous series of activities rather than ad hoc events.

There is a difference between formal education and in-service training, even though both are meant to enhance knowledge and skills of an individual (worker/employee). Formal education is often a pre-requisite to be eligible for the entry into the professional career whereas training is a learning process during the employment period, organized by the employing organization, to enhance an understanding of a particular topic or technique, directly linked to an individual's current or future job responsibilities.

Refresher training is a special kind of in-service training, specifically designed for individuals who are promoted to a higher position (as a part of HRD) but require certain different set of knowledge and skills that were not contained in his/her formal degree programs (e.g., technical-level officers who got promoted to professional level positions based on their long services and good performance at technical level but who lack certain theoretical and managerial knowledge because of the level of job for which s/he was prepared for from the degree s/he acquired.

2.2 Trends in forestry and their implications on public forestry agencies

Forest status

Forests have contributed to human settlements and development of civilizations throughout history. However, in the past century or so, population and economic growth have resulted in a significant decline in forest areas worldwide. Deforestation and forest degradation, particularly in developing economies in post-World War II have been very high. In response to this crisis, a number of actions have been taken at international and economy levels. As the recent Global Forest Resource Assessment 2015 (FAO 2016)[6] noted, forests and forest management have gone through substantive changes in the past 25 years, with many positive developments. However, despite the fact that the rate of loss of forests have been cut by over 50 percent as more and more forests are brought under sustainable forest management practices, deforestation and forest degradation are occurring in still very high rates in many developing economies. Other challenges noted by FRA 2015 include:

- Lack of effective incentives or enforcement of policies, legislations and regulations.
- Continuation of unsustainable forest practices and forest conversion – despite of positive changes and increased efforts.
- Continued problems in equitable or effective benefit-sharing from forest utilization with local communities.

APFNet member economies collectively are the most populous region in the world. Regarding the forest cover trend in APFNet member economies:

- Forested areas are increasing in China, Fiji, India, Lao PDR, Malaysia, Mongolia, Philippines, Chinese Taipei, Thailand, the United States of America and Vietnam. Almost all increases are through planted forests. According to FRA 2015, China has the highest annual increase in forest area not only in the region but also in the entire world in 2010-2015.
- Economies where forested areas continue to decline include Bangladesh, Cambodia, Indonesia, Mexico,

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6   http://www.fao.org/3/a-i4793e.pdf

Myanmar, Papua New Guinea, Peru and Sri Lanka. Indonesia and Myanmar have the second and third highest deforestation rates in the world in the same period.

- Despite the increasing trend in forested area at the aggregate level, forest degradation remains a serious problem in Asia-Pacific region, and the implementation of sustainable forest management continues to be a daunting challenge.

Changing perceptive on forests

In addition to above trends, there are several other in the forest sector as well as in other sectors at international and local levels that are significantly impacting how society perceive forests and forest management decision processes. A few among these are:

- Conceptual shift in forest management from a traditional "sustained yield" of timber paradigm to a more inclusive "sustainable forest management" paradigm that tries to manage forests not only for timber but for all other forest products and services that forests provide and the society value, for example, non-timber forest products, climate change mitigation and adaptation, the conservation of forest biological resources, ecosystems, the maintenance of quantity and quality of water, the provision of opportunities for recreation and cultural experiences.
- Climate change policy and programs are probably most directly and significantly impacting on forests management approaches. Forests role in climate change both as source and sink, as well as in mitigation and adaptation to climate change is well recognized in the global agreements on climate change such as UNFCCC, Kyoto Protocol and the most recent 2015 Paris Agreement on climate change.

The development of policies and programmes on reducing emission from deforestation and forest degradation (REDD+)[7] is already having significant effect on how forests are managed in many developing economies.

- Increasing public awareness of the inter-linkages between forests and environment, economic growth and social justice has led to more voices and demands for stakeholder participation in policy making related to forests. Thus, forest management decisions are no longer exclusively under the public forestry agencies. Public forestry agencies have recognized this trend and its potentials in forest management, and are accordingly, opening up and making collaborative and participatory decision-making a mainstream.
- At global-level policy and programs, forest issues are considered more in an integrated and coordinated way of meeting sustainable development goals[8]. Consequently, economy- and local-level policies and programmes are being adapted accordingly.
- The changing pattern of use of paper products due to technological innovation and changing consumer preferences. The worldwide surge in Internet and digital media has direct and negative impact on printed materials such as traditional newspapers and books. Demand for such products have been declining across the board. However, Internet-based market places of consumer products such as Amazon have caused the demand for packaging paper. Thus, while demand for printing paper has generally declined worldwide it is upset by increase in demand for packaging paper products to a certain extent (presentation by Mr. Bill Bohn, North America Area President of Valmet Inc. at Auburn University, on 11/29/2016)[9].

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[7] Full meaning of REDD+ is — "Reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing economies"

[8] World leaders met in the United Nations in September 2015 and adopted the "2030 Agenda for sustainable development" which contains 17 Sustainable Development Goals (SDGs) and 168 Targets to be accomplished by 2030. SDG 5 and SDG 15 have specific targets on forests.

[9] Valmet, a Finnish company, is a leading global developer and supplier of technologies, automation and services for the pulp, paper and energy industries. For more information, visit http://www.valmet.com/about-us/valmet-in-brief/.

Trends in education in forestry and related disciplines

Nair[10] (2004), and O'Hara and Redelsheimer[11] (2012) have analyzed changes in society and their implications on the forest sector as well as on forestry education and training. They have underscored the rapid changes in the society and their expectations from forests, forest institutions and forestry professionals. In summary, some of the key trends in forestry education and training across the globe are as follows:

- In many of the emerging economies, there is a rapid increase in the proportion of industrial sector (Nair used the term "societies") and a corresponding decline in the proportion of agrarian and forest-dependent communities. On the other hand, most developed economies are in post-industrial stages, where knowledge is becoming the main source of wealth. As postindustrial segment expands, provision of environmental services becomes more important; there is an increasing demand for the use if forests for recreational and other services from forests.
- Changes in the relative economic importance of different sectors in the economies also affect forestry and forestry education. As the economies develop, the employment and income in most primary sectors, such as forest and agriculture tend to decline, while they are increasing in the industrial and service sectors. Thus, professional job opportunities in the primary sector, including forestry, are unlikely to expand. Furthermore, due to rapid technological innovations, most increase in productivity in primary sectors will be achieved through enhanced technology rather than increase in employment.
- Both papers noted the declining trend in enrollment of students in traditional forestry education institutions, primarily due to limited or less attractive employment opportunities compared to professions like medicine, law, engineering and information technology. There is a trend of closing the traditional forestry degree programmes in the universities in North America

and the UK. This is, however, not limited to the forest sector but common in other primary sectors such as agriculture, animal husbandry and fisheries.

- In addition, many important institutional changes in the forest sectors of developing economies indicate a need for different knowledge and skills for people working in the sector. For example, the role of the public sector in forest management, especially as regard to wood production is diminishing in favour of the private sector and community ownership and management of forests. The increase in civil society and other stakeholders in advocacy and policy making also calls for revisiting the scope of modern forestry education and training.

All these changes within and outside of the forest sector are impacting on how the modern public forestry agencies prepare themselves to effectively serve the society and what kinds of knowledge and skills its professionals human resources need to be equipped with.

2.3 Skills needed by modern forestry professionals and role of in-service training in public forestry agencies

As noted above, due to a new understanding of the role of forests on climate change, the changing societal perception and preference about forests, and evolving technologies are altering the science and practice of forestry. And this evolution continues at an increasing pace. As such, the definition of forestry as a profession and the role of foresters are also evolving.

The shift from timber production-focused forestry to multi-functional forests and sustainable forest management with a wide range of objectives, demands a greater suite of abilities for present-day foresters. This is a worldwide phenomenon that emphasized a broad-based education grounded in forest, environment, social, and complex management sciences. The training in modern technologies

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[10] CTS Nair. "What does the future hold for forestry education" (Unasylva No. 216, Vol 55, 2004)

[11] K. L. O'Hara and C.L. Redelsheimer. "Divergent trends in accredited forestry programs in the United States: Implications for research and education". Journal of Forestry, June 2012).

is even more important because of rapidly changing technologies and their value in better management decisions in forests and other natural resources.

Considering the trend in the forest sector and its relation to other sectors of the economy, there is an obvious and urgent need of preparing future forestry professionals differently - in public as well as private sectors. Thus, skills of forestry professionals, in particularly, those in public forestry agencies, need to be built and continuously expanded in multiple areas, for example (not an exhaustive list) on:

- Traditional forestry and ecology such as silviculture, inventory, harvesting and processing, (ecology, engineering, etc.);
- Newer and emerging issues and technologies such as climate science, carbon inventory, biodiversity conservation, ecosystem and other non-timber services of forests, information technology, GIS, LIDAR, genetics, etc.;
- Social sciences: economics, sociology, people-oriented management techniques, conflict management, arbitration, negotiations, etc.;
- Global policy development processes and mechanisms;
- Financial management;
- Project management; and
- Personnel management.

Training and education are playing an integral role in this ongoing evolution. Educationally-driven research is a significant stimulus and contributor to new concepts and procedures. Trained and educated graduates are carriers of the latest technologies and practices as they enter the workforce. Specialized short-term in-service training programmes, strive to keep currently employed forest resource planners and practitioners up to date on the latest developments (Higgs 1994).

In-service training in forestry profession is a critical component to stay abreast with new challenges as well as new knowledge and technologies to effectively address both new and old challenges in forest management. Thus, it should be a part of HRD strategy of the forestry agencies as with any other modern public or private institutions. Its importance cannot be over-emphasized.

As early as 1993, the Seventeenth session of the FAO Advisory Committee on Forestry Education (Bangkok, Thailand, 13-15 December 1993) concluded that "continuing education" – which includes in-service training - is essential for forestry practitioners for two fundamental reasons: to maintain competence of forest managers throughout their careers; and to give specialized knowledge to individuals as the need arises during their careers.

The reports by economies for this study have identified a number of new skills and upgrading of traditional forestry skills, needed by modern forestry agencies and their professional foresters to perform their responsibilities more efficiently and effectively. The economies have also consistently highlighted the importance of in-service training to acquire such skills and knowledge (more on Section 3).

3. In-service training in public forestry agencies in the Asia-Pacific region (highlights from economy reports)

3.1 Policies and programmes on in-service training

The majority of forests in all reporting economies are publicly owned, which means that their forestry agencies have a significant role in the protection and management of forest resources, and regulating production of forest products and services. This requires highly skilled and motivated human resources. Thus, the role of training of public forestry agency personnel is critical and well recognized by those agencies. Accordingly, the agencies have been providing in-service training on a wide range of topics to different levels of their employees.

In broad term, the in-service training in those economies includes short-term training on specific issues, procedures or technologies as well as higher academic degree programmes (such as M.S and Ph.D.). Both types of in-service training can be provided in domestic institutions or abroad, but most often short-term in-service training programs are provided in domestic training centers within the forestry agencies or in academic institutions (i.e., universities and colleges).

Most reporting economies have clear policies and programs on HRD, capacity building and in-service training. Some economies have HRD well recognized in their national economic development plans, strategies and various laws for all government agencies. Other economies reported strong recognition of capacity building in their forestry sector policies also, for example, in Cambodia's national forest programme and Capacity Building Plan for the Forestry sector (CBPFS). Box 1 shows a few examples of policy frameworks in select economies.

In-service training activities

The number of in-service training courses and training recipients (non-degree courses) in several economies are substantial (Table 1).

China, probably has the most elaborate programme and infrastructure for in-service training in its forestry agencies. During the 12th five-year plan (2011-2015), the State Forestry Administration of China (SFA) had organized and supervised forestry authorities at all levels to conduct various in-service training activities, which totaled more than 17 million attendants. Among those attendances, 1.2 million are from management staff, 800,000 from professional & technical personnel, 3.4 million from forestry workers and 12 million from forestry farmers. In 2013, 483,500 attendants were recorded for the training for employees in the forestry authorities. In 2016, SFA directly organized 308 trainings, with 30,400 attendants. In 2017, the plan is to carry out 290 trainings, with nearly 30,000 attendants expected. Those trainings are mainly implemented by about 50 departments and affiliated agencies under SFA. This can be regarded as an indication of how high a priority is given to forestry in-service training by Chinese forestry authorities at all levels and how it has contributed to China's success in increasing its forest cover.

Several other economies also reported a large number of in-service training activities. For example, Indonesia trains more than 15,000 forest officers and trainees from private sector and communities per year from its Central and regional training centers. Likewise, Thailand trains on average 13,000 government employees and communities annually; and Mexico more than 2600 annually.

The subject matters of the in-service training include mostly technical forestry issues such as seed and nursery, reforestation techniques, forest inventory, management planning, silviculture, harvesting and modern survey using remote sensing, GIS, etc. Several economies also reported providing in-service training in general HR management, project planning, climate change adaptation, community and public relation.

Two general types of in-service training observed: (i) related with updating skills on new technology or administrative procedures to conduct current responsibilities; and (ii) educating and preparing for future higher level positions and responsibilities (through promotions). Most economies reported on the first types of training but a few such as Nepal, Cambodia, Malaysia, Mexico also reported on their training programmes for both types of in-service training.

Box 1. Selected examples of policy framework on HRD, capacity building and in-service training

Cambodia

National Forest Programme (NFP) 2010-2029 clearly spelled out its specific objectives on capacity building and in-service training, as to:

- promote upgrades of the basic education in natural resource management;
- increase capacity within the Forestry Administration (FA) and other forestry stakeholders, to enable them to confidently face the challenges posed by new and innovative Sustainable Forest Management models;
- improve the capacity and efficiency to develop extension strategies, and deliver extension services which actively support ongoing local forest management and reforestation activities;
- develop the research capacity of the FA, colleges, universities and independent non-government research organizations to provide reliable and independent information to support the development and implementation of forest policies and national goals on SFM, environmental protection and poverty reduction; and
- support mainstreaming of SFM at local and national levels.

It also has a 3-year Capacity Building Plan to support the implementation of NFP.

Malaysia

Each of the three Forestry Departments of Malaysia has its own Human Resource Training Policy (HRTP), which is guided by the Public Sector HRD Policy of 2005. The objective of the HRTP of the Forest Department are to:

- establish a systematic and continuous training system in order to produce and sustain human resources that are professional, possesses high integrity and competent in performing their duty and responsibility;
- enhance creativity and innovation in services;
- enhance skills and knowledge personnel in various fields of forestry through continuous learning; and
- provide career development for the departmental personnel.

Thailand

Policy guidance for HRD for Thailand's Royal Forest Department comes from the National Economic and Social Development Plan and the 20-year National Strategic Plan for 2017-2036. Both those documents give priority to HRD and capacity building for enhancing the efficiency of public sector management and promoting good governance. Accordingly, the Royal Forest Department has developed a 20-year Strategic Plan for 2017-2036. It focuses on:

- enhancing the capacity of responsible bodies under forestry sector;
- increasing technology transfer from both national and international organizations;
- strengthening the networking of government and private sectors for SFM; and
- applying local knowledge into SFM scheme.

Table 1. Highlights of training activities in the reporting economies

Economy	Training activities	Trainees
Cambodia	• FWTC training (2006-2010): avg 14/yr for FA officials • No recent data on training courses by FWTC • IRD in 2015: avg 5/yr	• No information on number of FA officials trained by FWTC • IRD in 2015 trained: 112, mostly community forestry people outside of FA
China	• SFA, through its 50 departments and affiliated agencies, organizes and supervises various in-service training activities at all levels • In 2016, SFA organized 308 training activities • In 2017, the plan is to carry out 290 training activities	• During 2011-2015, avg of 3.4 m/yr attended, which includes: managers (6.9%), professional & technicians (4.6%), forestry workers (19.5%) and forest farmers (69%) • In 2016, 30,400 attendants • In 2017, 30,000 attendants expected
Fiji	NA	NA
Indonesia	• 9 training courses on a wide range of topics • Training provided by the CEFET and 7 regional training centers • Also provides MS and PhD opportunities	• 15,000/yr during 2005-2017 • (But the tables in the report shows training provided to, on avg, 4,311/yr forest officers and 1,143/yr non-government staff)
Malaysia	• About 100 training courses/yr • 12 training centers • Also provides MS and PhD opportunities	NA
Mexico	• During 2014-2017, CONAFOR organized 182 courses/yr	• Avg 2655 staff/yr
Nepal	• During 2014-2017, MFSC organized 51 courses/yr • Training provided by its 1 central and 5 regional training centers • Judiciary training for officers who have semi-judicial responsibilities	• Avg 983 staff/yr
Peru	NA	NA
Papua New Guinea	• Three academic institutions provide academic degrees and certificates in various forestry fields • Government has about 12 in-service training programmes	• About 60 graduates/yr from academic institutions • 440 trainees/yr
Thailand	• 12 courses for RFD staff • 2 courses and 1 study tour programme for foreign officer trainees	• Avg 4507 staff/yr in domestic training during 2017-2019 • Avg 15 foreign forest officers/yr and 2-30 foreign forest officer study tours
Vietnam	• No information on training courses • 10 training institutions under the Forestry Agency (MARD) provide in-service training	• Avg 1107 trainees during 2011-2015

Note — Most of the data are indicative data, drawn from the economy reports with certain adjustments by author.
The table should be used merely as an illustration and not as authoritative statistics.

Budget	Target groups	Additional notes
• NFP budget for 2015; $1.26 m, • part of that includes funding for in-service training	• FA professional staff • Nursery staff • Communities • Local authourities	Report includes historical information on training activities, conducted through FWTC, RUA, IRD and external organizations. However, it does not give a clear picture on current training programmes, trainees and budget.
NA	• Public servants, including management level staff and forestry professional & technical personnel • Forest farmers	In-service training is a regular programme in China's forest agencies at all levels.
$400,000/yr and increasing	• Ministry staff • Forest industry workforce	Fiji aims to build capacity of its staff to support and train resource owners and forest industry.
More than $10 m/yr for CEFET alone during 2010-2012).	• Government forestry staff • Private and community individuals in forestry and Environment sectors	
Avg $300,000-400,000/yr	• All civil servants for confirmation and promotion • Forest officers on technical topics • All staff for admin and management • Other civil servants, teachers, NGOs	No specific budget for training but the general rule is 1% of Forestry Department's annual emolument is allocated for training
Avg of $205,000/yr during 2014-2017	• All civil servants of CONAFOR	
Avg of $727,700/yr during 2014-2017	• Forestry staff of all levels (mid-level forestry officers to rangers, wildlife wardens, forest guards, etc.)	Judiciary training is provided by the Judiciary Service Training Center of the Ministry of Law, Justice and Federal Affairs
$15,300 for the implementation of its Personnel Development Plan.		SERFOR is very new; it was established in 2015. Hence, despite a strong policy framework for capacity building in the forestry agency, its actual achievement is limited.
$700,000/yr	• Government forestry staff • Private sector employees • NGOs • Landowners	97% of land in PNG are owned by private landowners so it is very important to train landowners about SFM.
• $726,334/yr avg for domestic training • $61,905/yr avg for foreign forest officers • Cost of study tours are borne by individual economies	• Forest officers • Other RFD employees • Officers from Local Authourities • Members of communities • NGOs • Foreign forest officers	Training programmes for domestic RFD and other staff The international training programme is supported by Thailand International Cooperation Agency (TICA).
NA	• MARD staff • High school graduates	In-service training encourages people, who cannot afford formal education; The qualification is normally ranked below an academic degree.

3.2 In-service training resources

Facilities

Most public forestry agencies in the reporting economies have their own training centers or utilize training centers of other public agencies such as agriculture or through academic institutions for their in-service training programmes. Depending on the political/administrative systems, such training centers are located at the center as well as in provincial and local government units. For example, Nepal has one central training center and five regional training centers under its Ministry of Forests and Soil Conservation. Similarly, others including China, Indonesia, Malaysia and Thailand have central and regional training centers under their forestry agencies. Peru has a very young forestry agency, "National Forestry and Wildlife Service (SERFOR)", established only in 2015. As such even though it has put a strong emphasis for capacity building and training in its constitution, law and policies, currently it does not have any training facility.

Support from several bilateral cooperation agencies and international organizations (such as APFNet, GIZ, JICA, AFoCo, FAO, ITTO, REFOFTC, and universities) are mentioned by economies for their In-service training activities. But most such support seems to be in ad hoc basis and often in conjunction with specific forestry projects.

Many of those forestry agency training centers are also furnished with lecture halls, laboratories, libraries, and boarding facilities. In addition, some forestry agencies, for example, Mexico has a central auditorium at its CONAFOR Headquarters with seating capacity for 300 and modern facilities, and Thailand with similar facilities at its RFD Headquarters, to run training and seminars. However, several economies underscored the declining conditions of their training facilities due to age and lack of funding for upkeep and improvements. Thailand noted that the selection of locations and facilities for training should go beyond physical structure and consideration should be given to attractive locations that provide ambiance and psychological/emotional stimulus to learning (e.g., scenic, greenery, sports/recreational facilities, etc.).

Budget

The majority of reporting economies indicated having dedicated budgets for in-service training programmes. Since each economy is different in terms of the size of the forestry agency, role of forests in the economy and thrust of the management, the absolute budget figures among the economies are not comparable. Nevertheless, the budget allocation signifies how each economy values enhancing the competence and skill levels of its personnel. Nevertheless, among the economies which provided specific estimated budget for their in-service training, the average annual budget ranges from around USD200,000 (Mexico) to USD700,000 (Thailand, Nepal), with Indonesia reporting the largest budget (USD 10 million). In the case of Malaysia, it does not have a specific budget for in-service training per se, but it has a general rule of allocating one percent of the department's annual emolument for training, and in most cases, training budget is embedded under the development budget of projects.

It is also noted that the limited budget and irregular release of budget for training are generally a challenge. Cambodia reported that in spite of a well-laid out plan, it has not been able to provide training due to lack of the budget for last several years. Training activities are either on an ad hoc basis or as a result of donor-funded projects. Only one economy, Fiji, reported that its current annual budget is about USD400,000 and is increasing every year.

3.3 Approaches of in-service training

Training Need Assessment

Most reporting economies conduct regular Training Needs Assessment (TNA) to plan and design new training programs. In several forestry agencies, the personnel performance appraisals and trainee feedbacks are also used as basis for planning training programme for the next fiscal years. However, having a TNA is no guarantee of improved training programme or its implementation. Consideration for any additional or modified training activities depend on several factors, including the availability of funding, experienced trainers, suitable/qualified candidates, good training modules, sufficient training facilities and equipment.

General emphasis of in-service training is obviously on technical aspects of forest management such as silviculture, use of modern theories and technologies in survey, inventory and forest development. However, some attention is also given to policy, planning, communication and general management.

Most training courses are conducted in traditional lecture and field practical modules. However, economies are trying innovative ways to transfer knowledge and skill using modern technologies, especially information and communication technology (ICT). For example, China has developed more than 400 online courses. Thailand saw a clear need to expand and popularize such modern technologies for continued in-service training to match the demand (need) for new skills, convenience of acquiring training in a flexible manner and keeping training materials cutting edge and relevant to the effective discharge of responsibilities of forestry personnel. Some economies noted that most in-service training courses in their agencies rely heavily on theory and lectures rather than right combination of theory and hands-on field exercises. Such a situation could have arisen due to several reasons, for example, budget and time limitation for training, availability of experienced trainers and equipment as well as the information gap (e.g., insufficient feedback, impact assessment, etc.). It must also be borne in mind that the needs and wishes for more and better in-service training programmes could be many from the perspectives of the employees and employers (public forestry agencies). However, not all such demands usually can be met with satisfaction to all those concerned. Prioritization must be made.

Target groups

Most reporting economies have been providing in-service training primarily to their technical personnel of different levels ranging from policy/decision-makers, professional foresters, technicians and forest labourers on their job-related specific topics. Some economies also reported providing in-service training to officials from other ministries and sectors such as agriculture, environment and other natural resources. Thailand reported another target group in its training programme – forestry professionals from other economies on certain specific fields (e.g., from North Korea, Indonesia, Cambodia, Viet Nam, Bhutan, China for training and field visits on forest management, eco-tourism, etc.).

Several economies also reported providing training to community forestry users, private forest landowners, forest industry personnel, local authourities, teachers, youth, women and NGOs. Such training to stakeholders beyond public servants is critical for sustainability of forest resources and forest-based economic growth in many developing economies. For example, in Papua New Guinea, landowners own 97 percent of its customary land (including forests) so providing them education and training on is crucial for sustainable forest management in their land. Many economies also have significant for community forest programmes where forest management responsibilities are devolved to local communities. For those communities to be able to manage their forests, proper and continuing education and training are as equally important as for the forestry agencies personnel.

However, a distinction must be made on the scope and purpose of an in-service training. While providing training and outreach/ extension services to individuals and groups outside of formal public forestry agencies is essential, valuable and commendable, by definition, it should not be labeled as an "in-service" training because, those groups and individuals are not the staff of the public forestry agencies.

3.4 Experiences/lessons learned

Economies provided several interesting experiences and lessons learned. They regard training programme as an important road map in building the capacity but strongly emphasized a need to support it with sufficient resources, particularly, funding. A unbudgeted training programme, regardless of how well it is designed, would most likely not be implemented.

While training programmes need to be well-planned and designed, they also should be dynamic and adaptive to changing needs quickly. Hence, both periodic TNA as well as institutional flexibility to modify training focus based on the changing current and future requirements, are keys to successful in-service training.

Most economies consider their training programmes generally relevant to the need of their agencies. The training areas include all core forestry biophysical subject areas (e.g., silviculture, nursery techniques, plantation techniques,

tending, harvesting, etc.); cutting edge technical areas (biodiversity conservation, climate change, Geographic Information System (GIS), remote sensing, environment impact assessment (EIA), value chain analysis, fire management, etc.); management and leadership areas (administration, planning, leadership, business development planning, etc.); and social, cultural and communication areas (community forestry, community development, conflict management, gender mainstreaming, occupational safety and health, etc.).

Commitment from trainers/organizers as well as from the trainees is needed to make the best of the training. Several economies have underscored the importance of having qualified trainers and resource persons to make the training meaningful. On the other hand, they also emphasized a need to match training and trainees so that the knowledge acquired through the training is put into use by the employees.

There is a constant challenge of being able to utilize the new skill acquired from training at work due to variety of reasons (e.g., sudden transfer to different jobs, promotion, indifferent trainee, moving out from current career to a different line of work because of higher remuneration, etc.). Hence, a follow-up system to monitor the usefulness and relevance of training programs (topics) is needed. Furthermore, the motivation of participating employees and incentive from the organization (forest agency) are also equally important attributes for a successful in-service training programme. Hence, communication between the organizers and trainees are important to serve the need of the organization and expectation of participating trainees. In this regard, the provision of adequate subsistence allowance, boarding facilities during the training, good mix of class room and field exercises and good location with scenic venue tend to contribute to meaningful training experience and outcome.

New learning techniques, such as online courses and distance learning at one's own pace should be developed in parallel with traditional training. Most young generation employees are more technology savvy and believe such modern medium of training are more attractive to their life styles.

Economies recognize the need to stay current with the international policy processes related to forest and environment and to gain expertise to effectively engage and contribute to those processes. Thus, many economies expressed a need to develop training programmes on topics such as climate change, REDD+ mechanism, biodiversity conservation, international negotiation techniques, communication, and public relation (Malaysia labels it as CEPA = communication, education and public awareness). In addition to providing in-service training to current employees of the forest agencies, the economies noted the high value of making induction/orientation training obligatory for all fresh recruits.

Vietnam provided a different kind of experience regarding its in-service training. According to its report, the in-service or on-the-job training in Vietnam is mainly for people who are currently working and wish to complete their degree in another area of expertise. The goal of the in-service training is to help and train people, who do not have opportunities to get the formal education. These courses are often held in the evenings and the quality is normally ranked below an academic degree. As such, the quality of in-service training is very low as students consider it more as a stepping-stone towards a degree leading to higher salary or promotion. The report concludes that people following this kind of training may or may not improve their work skills and knowledge, but merely aim to secure their positions. This kind of tendency or system may defeat the whole purpose of in-service training and capacity building policies and programmes of any public forestry agency

Last but not the least, several economies also highlighted the importance of providing training and outreach to stakeholders outside of the immediate domain of public forestry service employees, for example, community forest user groups, forest industry and business community, students and media. Although such training activities are not "in-service" training by definition, their impact on the overall mission of public forestry agencies should not be undermined.

3.5 Challenges

The experiences and lessons learned by economies in their in-service training are mostly also noted as challenges in their reports. The challenges commonly highlighted by economies include the following:

- Lack of adequate and predictable funding is a serious constraint, which has a profound implication on number of training, trainees, hiring of trainers and resource persons, and upkeep and upgrade of training facilities;
- Training need assessments are rarely done systematically or at regular frequency, and not always appropriately followed through;
- The utilization or application of the knowledge gained from the training is a persistent challenge. Economies experienced several cases where the skills gained by trainees were not applied because of a number of reasons (e.g., reassignment to different fields that are not relevant to the training they attended; retirement, moving to different and often high-paying or challenging jobs, or simple lack of motivation. Follow-up evaluation of training usefulness are rarely done;
- In exceptional cases such as institutional restructuring and/or change in political system of an economy creates bureaucratic coordination problems. For example, the recent change in the structure of the Ministry of Agriculture, Forestry and Fisheries (MAFF) in Cambodia, where the Forestry Administration Cantonment (FAC) is put under the supervision of the Provincial Governor, has an implication on the continuity of the training program from the national Forestry Administration (FA) to the subnational offices. The training activities have to pass through a separate bureaucracy. The coordination is not yet well established making it complicated in conducting cascading trainings from the national level down to the subnational level. Similarly, the ongoing transition to a new federal system of governance in Nepal brings some uncertainties in the structure, mandate and working procedures between central, provincial and local authourities. Furthermore, uneven development between different regions, different administrative levels and among different target groups creates a challenge for providing quality in-service training to all staff of forestry agencies in different government levels, as experience in China shows;
- Lack of proper planning of staff in-service training is also considered a challenge. For example, in China, most forestry in-service training are conducted by the general training agency of the local government. Many of the trainers are not forestry professionals, which reduces the effectiveness of the training. Forestry technical trainings are more one-off activities carried out by the forestry departments according to their immediate needs, without a long-term plan;
- Training agencies and facilities are not sufficient;
- Training approaches and quality are yet to be improved and opportunity provided by modern ICT has not been fully harnessed by any forestry agencies in the region; and
- Lack of proficiency in English language of training participants is also listed as a challenge by a few economies, especially from Latin America, who send their staff for in-service training abroad.

3.6 Future trends in skill requirements

Economies are aware of the rapidly changing nature of forest management due to the public perception and awareness about the role of forests on climate change, social justice and economic development; evolving technologies and the global policy processes. Regardless of the state of economic development status and/or traditional forest management practices, the reporting public forestry agencies are aware of these trends and showed consensus on the need to prepare their employees to remain competent and able to tackle new challenges. Some of the areas for skill development through in-service training (and other means such as MS, PhD) can be roughly grouped in the following categories (see Table 2 for details):

(a) Technical/professional

(b) Cutting-edge technologies especially ICT

(c) Management/leadership

(d) Policy

(e) Interpersonal/Social (Soft Skills)

The economy reports clearly demonstrate the urgency in staying abreast with new knowledge and technologies related to traditional forest management issues such as forest restoration/rehabilitation, resource assessment, harvesting and planning on one hand, and acquiring new knowledge and skills to manage forests with new technologies and according to the new demands of the societies such as climate change and other ecosystem services of forests, biological diversity, social and cultural values, etc. While enhanced capacity through in-service training and other avenues is desirable for all employees of the public forestry agencies, in practice, the agencies would have to prioritize training themes and levels of staff according to their needs and available resources. This is where the TIF Network can play an important role.

Table 2. Skills identified by economies for future forestry professionals in public forestry agencies

Technical/ professional	Cutting-edge technologies	Management/ Leadership	Policy	Interpersonal/social
• Silviculture • Forest restoration/ rehabilitation • Environmental Impact Assessment • Climate Change/ REDD+ • PES/Eco-tourism • Economic Analysis • Value-Chain Analysis • Landscape Planning • Forest Urbanization • Enterprise Development	• Computer/IT • Remote Sensing, GIS • Internet-of-Things (IOT) • Drones • Radio Frequency Identification (RFID) • monitoring and enforcement using Forest Monitoring Remote Sensing (FMRS).	• Personnel Management • Leadership • Forest Governance/ Transparency • Code of Conduct/ Public Ethics • Strategic Planning	• Public Administration Law • Policy development process • International negotiations	• Communication, education and public awareness (CEPA) • Conflict Management • Gender Mainstreaming • Teamwork

3.7 Cooperation and collaboration

Economies have a wide range of variance on cooperation and collaboration among the forestry agencies and other related domestic training providers, depending on their backgrounds, needs and cultures of partnership. Generally, the economies seem to show weak or loose cooperation and collaboration between different line ministries dealing with natural resources and land management and/or between training programmes of the forestry agencies and other sectoral agencies such as agriculture. In a few economies, some level of coordination is mandated between general public civil service in-service policies and programmes and those related to the public forestry administration. Fiji referred to the Civil Service Reform Programme as the framework for coordination for staff training in the forestry agencies. Nepal highlighted the coordination and cooperation with its Staff College for overall civil service training and development.

On topics of mutual interest and benefits, there seems to be good cases of cooperation and coordination among the public agencies as reported by Indonesia between the forestry and transportation ministries for training in air pollution measurement; by Nepal between forestry and agriculture ministries. In the case of Thailand such cooperation exists not only among the three departments under the Ministry of National Resources and Environment (MONRE), – Royal Forestry Department, Department of National Park, Wildlife and Plant Conservation, and Department of Marine and Coastal Resources but also that between RFD and Royal Police Department (Investigation techniques). Civil Service Institute (general administration) and King Prajadhipok Institute (political science). Thailand's RFD also collaborates with the Thailand International Cooperation Agency (TICA) to provide in-service training to forestry professionals of a few foreign economies.

The forestry agencies reported to have good cooperation and partnership with donor agencies and international organizations such as APFNet, FAO, UNDP, RECOFTC, ITTO, ICRAF, AFoCo for organizing in-service training programmes. Most often, such collaborative training activities take place in conjunction with projects funded by bilateral and multilateral organizations.

The forestry agencies generally have good working relationships with academic and research institutions which specialize in forest, land and environment sciences. Many economies organize their in-service training activities for their employees through public universities and colleges. Ministries responsible for forest management play the central role in cooperation, coordination and collaboration for such training programmes. Forestry officers are allowed to take leave and participate in short-term training or degree programmes in many economies.

In limited cases, forestry agencies partner with private industries and companies including forest and related companies such as electric power and petroleum companies in organizing training activities on topics such as reduced impact logging (RIL), timber legality system, plantation techniques and community forestry. All such collaborations are motivated by mutual benefits, sharing of resources and a growing sense of corporate social responsibility. Thailand seemed to have nurtured a good cooperation and collaboration between RFD and the private sector. It reported training of as many as 1,500 forestry staff and community members in 10 years on community forestry management in partnership with large Ratchaburi Electric Power Plant and with Petroleum Authourity of Thailand for training 400 participants per year on forest plantation techniques.

4. Conclusions and recommendations

4.1 Conclusions

As any other public or business organization, a public forestry agency cannot function without a well-trained workforce. Therefore, HRD strategy of a public forestry agency, which has an important mandate of ensuring sustainability of forest resources and meeting society's needs from forests, should provide its employees a systematic in-service training programme for continued enhancement of their skills, competencies and knowledge as well as opportunities for career advancements.

Obviously, each public forest agency, depending on its own mandate, and unique social, political, economic working environment, would need a workforce with certain set of skills, competencies and other qualifications/attributes. Moreover, within the agency, there will be several categories of HR (e.g., Professional foresters, field foresters, forest ecologists, wildlife managers, forest technicians, nursery technicians, etc.) and under each category, a number of levels (e.g., from entry- level through management-level). Hence, there is a risk of broad generalization of the requirements of HRD and in-service training. Nevertheless, based on the economy reports for this analysis, it can be stated that the public forestry agencies in the region have sound frameworks for in-service training of their staff as a way to build capacities, and improve efficiency and effectiveness of their work.

Execution of in-service training programmes seem to vary greatly among the economies. Some agencies have their own elaborate policies, programmes and infrastructure to provide in-service training whereas others conduct such training through partnerships with other academic and government training facilities. The availability of financial (predictable and adequate budget) and human resources (qualified trainers) seems to affect the programmes. Moreover, despite having good policy frameworks for capacity building, many in-service training activities often seem to be conducted in ad hoc basis, and in conjunction with the implementation of donor-funded projects. This raises the question of sustainability of training programmes.

Training on what topics? In theory, training will be needed in most every topic of forestry and related science and technology because there are changes and technological advancements happening all the time. However, each economy would need to prioritize its specific training needs based on its assessment of the tasks at present and in near future, the need assessment of their knowledge/skill level and skill required to perform those tasks. The economies have indicated numerous topics or themes for inclusion in the training modules for the future, depending on their specific circumstances. However, there is a clear convergence of certain priorities. They include the urgency of learning and updating knowledge and skills on new technologies; forest management practices; emerging globally and locally important issues relevant to forests (e.g., climate change and ecosystem dimensions of forests); policies, planning, negotiation techniques; and skills such as communication, community development, gender mainstreaming and ethics.

All those themes are extremely important for preparing a responsible, relevant and dynamic public forestry agency for the 21st century. Its human resources must be well educated and trained for not only traditional forestry but also other equally important, if not more influencing forces in setting societal demands and public policy priorities. Public forestry agencies and its staff must be people-oriented and responsive to public perceptions and trends.

In-service training and development has at least two different purposes: (1) to enhance knowledge and skill of a forestry staff to do her current job, e.g., regarding a new technology or procedure; and (2) to improve managerial/leadership skills and/or capacity to perform jobs at higher level (when she is promoted) as a part of HRD.

The value of cooperation and collaboration within the economy and beyond on in-service training to forestry staff is well recognized in principle. However, very few economies seem to have smoothly functioning cooperation and collaboration systems; and generally dependent on externally funded projects.

Lastly, the reality of limited resources and competing priorities for action should be borne in mind when advocating for more resources, infrastructure, courses, frequency, etc. More is always desirable but may not be feasible, and even where it is feasible, may result in marginal additional benefits. So, planning for HRD through in-service training programme should be contextual and balanced with the needs, constraints and priorities of each public forestry agency.

4.2 Recommendations

To economies

Each economy (and its forestry agency) adopts its own HRD and in-service training programmes based on its needs, aspiration, its overall economy-wide development policy context, and available resources. Nevertheless, based on the reports of the economies, the pubic forestry agencies in member economies may wish to:

- Appreciate the value of TNA and accordingly prioritize conducting systematic TNA at regular intervals for updating its in-service training programming
- Maintain a robust staff skill profile to select the right staff for the appropriate type of training (domestic or external)
- Enhance coordination and cooperation among the providers of training
- Seek support from all sources, including bilateral and international cooperation agencies, for upgrading and up keeping of training infrastructure and training intellectual resources.

To APFNet and TIF Network

The most appropriate action for APFNet and the TIF Network would be to nurture an enabling environment for collaborating and sharing the knowledge, resources and experiences among the member economies, without being too prescriptive.

- TIF Network should play a more advisory role and assist economies in formulating training programmes, identifying training resource persons for specific skills,

and linking such resource persons with the interested forestry agencies.

- TIF Network may also consider building a roster or creating a small network of trainers on priority training topics. After all, an in-service training will be good and useful if the trainer is knowledgeable and competent. It may even plan "training-for-trainers" opportunities.
- Make TIF Network participatory and inclusive so that its members (stakeholders) include not only traditional forestry agencies but also individuals from other public agencies dealing with natural resources, environment, information technology, education and general administration; corresponding faculties of the universities, colleges and research institutions; and related private sector and civil society organizations. This will truly reflect the values and perceptions of different sectors and stakeholders on how the public forests should be managed and to what end results.
- TIF Network may explore utilizing all types of communication, including the modern social media for networking among its network members.
- APFNet through the current members of the TIF Network may wish to organize a few brainstorming sessions in developing a roadmap to realistically define its role, scope and activities in the near and medium time frames. APFNet certainly will have to provide leadership and financial support for these activities, at least at the formative stage of TF Network. True to its namesake, the TIF Network must seek out the support from other donors, and make it a real partnership and networking endeavor.
- IF Network may also consider some analytical case studies of in-service training in public forestry agencies and related agencies to better understand unique circumstance, and factors contributing to successful capacity building of their human resources. In this regard, it could be an interesting case to explore Vietnam's assessment that its in-service training is being used just to get ahead in the career path, with little improvement in the skill and knowledge of the public forestry agency's human resources. It would be highly relevant information for the leadership of public forestry agencies as well as APFNet to know whether such a deviation is found in other economies.

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Appendix. Human Resource Development Definitions

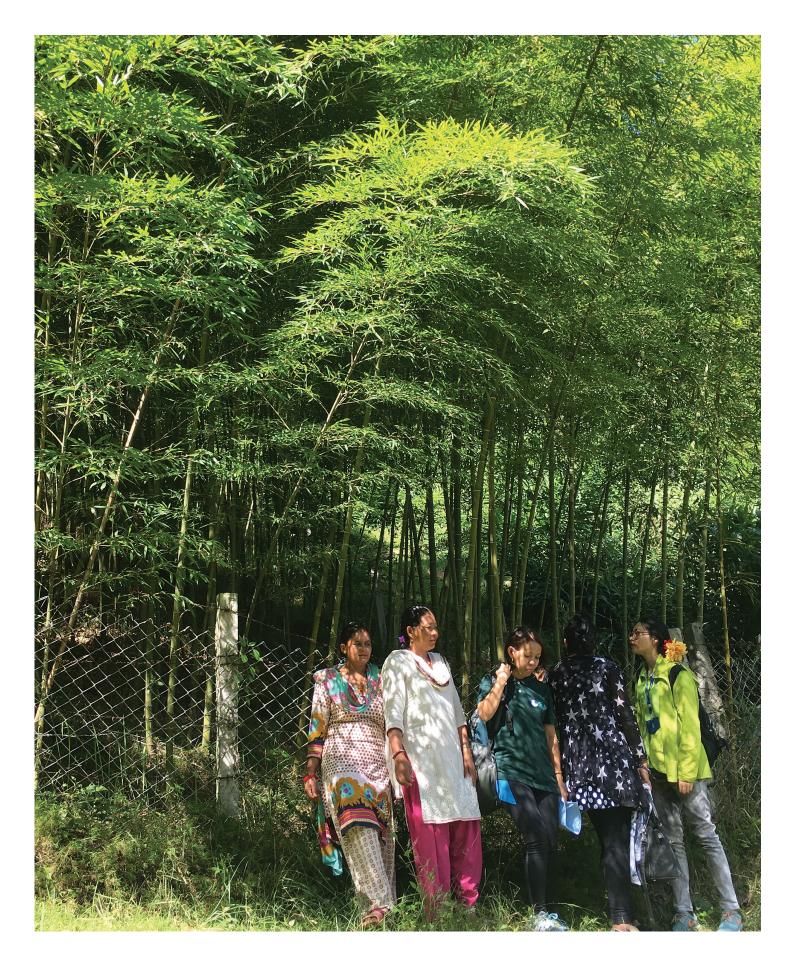| Author	Definition
Nadler, 1970	HRD is a series of organized activities conducted within a specified time and designed to produce behavioral change
Craig, 1976	HRD focus on the central goal of developing human potential in every aspect of lifelong learning
Jones, 1981	HRD is systematic expansion of people's work-related abilities. Focused on the attainment of both organization and personal goals
Chalosky & Lincoln, 1983	Discipline of HRD is the study of how individuals and groups in organizations change through learning
Nadler & Wiggs, 1986	HRD is a comprehensive system for the release of the organization's human potentials – a system that includes both vicarious learning experiences and experiential experiences that are keyed to the organization's reason for survival
Swanson, 1987	HRD is the process of improving an organization's performance through the capabilities of its personnel. HRD includes activities dealing with work design, aptitude, expertise and motivation
Smith, 1988	HRD consists of programs and activities, direct and indirect, instructional and/or individual that positively affect the development of the individual and the productivity and profit of the organization
McLagan, 1989	HRD is the integrated use of training and development, career development and organization development to improve individual and organizational effectiveness
Watkins, 1989	HRD is the field of study and practice responsible for the fostering of a long-term, work-related learning capacity at the individual, group and organizational level of organizations
Gilley & England, 1989	HRD is organized learning activities arranged within an organization to improve performance and or personal growth
Nadler & Nadler, 1989	HRD is organized learning experiences provided by employees within a specific period of time to bring about the possibility of performance improvement and or personal growth
Smith, 1990	HRD is the process of determining the optimum methods of developing and improving the human resources of an organization and the systematic improvement of the performance and productivity of employees through training, education and development and leadership for the mutual attainment of organizational and personal goals
Chalosfky, 1992	HRD is the study and practice of increasing the learning capacity of individuals, groups, collectives and organizations through the development and application of learning-based interventions for the purpose of optimizing human and organizational growth and effectiveness

Author	Definition
Marquardt & Engel, 1993	HER skills include developing a learning climate, designing training programs, transmitting information and experience, assessing results, providing career counseling, creating organizational change and adopting learning materials
Marsick & Watkins, 1994	HRD as a combination of training, career development and organizational development offers the theoretical integration needed to envision a learning organization, but it must also be positioned to act strategically throughout the organization
Swanson, 1995	HRD is a process of developing and unleashing human expertise through organization development and personal training and development for the purpose of improving performance
McLean & McLean, 2001	Human resource development is any process or activity that, either initially or over the long term, has the potential to develop adults' work-based knowledge, expertise, productivity, and satisfaction, whether for personal or group/team gain, or for the benefit of an organization, community, nation, or, ultimately, the whole of humanity
Texas A&M University, 2001	Human resource development is the process of improving learning and performance in individual, group, and organizational contexts through domains of expertise such as lifelong learning, career development, training and development, and organizational development

Source: Dooley (2002)

Additional definition:

Auburn University, 2017	The objective of HRD is to provide programs which orient, train, and develop the employees of the University by improving the skills, knowledge, abilities, and competencies necessary for individual and organizational efficiency and productivity as well as personal career growth.

Source: http://www.auburn.edu/administration/human_resources/hrd/

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