



Current status of social forestry in climate change mitigation and adaptation in the ASEAN region

Current status of social forestry in climate change mitigation and adaptation in the ASEAN region: Situational analysis 2013

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Swiss Agency for Development and Cooperation (SDC)
and the ASEAN Social Forestry Network (ASFN)
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RECOFTC – The Center for People and Forests
May 2014

Foreword

The ASEAN Social Forestry Network (ASFN) was established in 2005 to promote social forestry policy and practices in the region. Its drive is to contribute to the goal of food security through sustainable, efficient and effective use of land, forest, water and aquatic resources by minimizing impacts of climate change. The ASFN works with communities, local governments, civil society organizations and the private sector to strengthen ASEAN cooperation in social forestry and to promote good policy and practices by sharing knowledge and experiences.

As a partner in the ASEAN–Swiss Partnership on Social Forestry and Climate Change (ASFCC), RECOFTC – The Center for People and Forests contributes to strengthening the ASFN through various activities. In particular, it is helping to define ASEAN policy and strategic issues for social forestry. In 2011 and as part of that process, RECOFTC (with support from ASFN and ASEAN member States) developed an analytical study of social forestry and climate change in the region that has been widely used as a baseline of information for the member States and their partners.

Three years later, this publication updates that baseline assessment by incorporating new facts and figures related to social forestry and climate change at the national level across ASEAN countries. The study was prepared by Claudine Nagiah, independent consultant; David Gritten, Regan Suzuki, Ronnakorn Triraganon and Tomi Haryadi from RECOFTC provided guidance and overall supervision of the study. The funding for this study was provided by the Swiss Agency for Development and Cooperation's (SDC) Global Programme on Climate Change.

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Executive Director
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Abbreviations and acronyms

ADB	Asian Development Bank
AFCC	ASEAN Multisectoral Framework on Climate Change: Agriculture and Forestry towards Food Security
ASEAN	Association of Southeast Asian Nations
ASFCC	ASEAN–Swiss Partnership on Social Forestry and Climate Change
ASFN	ASEAN Social Forestry Network
ARCC	Adaptation and Resilience to Climate Change Project
BAPPENSA	National Action Plan on Climate Change Adaptation of the National Development Planning Agency (Indonesia)
BMZ	German Federal Ministry for Economic Cooperation and Development
CCC	Climate Change Commission (Philippines)
CDM	Clean Development Mechanism
CIFOR	Center for International Forestry Research
CLiPAD	Climate Protection through Avoided Deforestation
CO₂	carbon dioxide
CO₂-eq	carbon dioxide equivalent
DCA/CA	Dan Church Aid/Christian Aid
DENR	Department of Natural Resources (Philippines)
DFID	UK Department for International Development
DMH	Department of Meteorology and Hydrology
DOE	Department of Environment
DOF	Department of Forests
ENSO	El Niño–Southern Oscillation
EU	European Union
FA	Forestry Administration (Cambodia)
FAO	Food and Agriculture Organization of the United Nations
FFI	Fauna and Flora International
FMB	Forest Management Board (Philippines)
FOMACOP	Forest Management and Conservation Programme
FPP	Forest Peoples Programme
FRA	forest resources assessment
GDP	gross domestic product
GIZ	German International Cooperation
GOL	Government of Lao PDR
HH	households
HKm	Hutan Kemasyarakatan or community-based forest
HTR	Hutan Tanaman Rakyat or community-based forest estate
ICRAF	World Agroforestry Center
IGES	Institute for Global Environmental Strategies
IPCC	Intergovernmental Panel on Climate Change
ISPONRE	Institute of Strategy and Policy on Natural Resources and Environment
JICA	Japanese International Cooperation Agency
LEAF	Lowering Emission in Asia's Forests
LNSO	La Niña–Southern Oscillation
MAF	Ministry of Agriculture and Forestry (Lao PDR)
MAFF	Ministry of Agriculture, Forests and Fisheries (Cambodia)
MARD	Ministry of Agriculture and Rural Development (Viet Nam)
MMD	Malaysian Meteorology Department
MOECF	Ministry of Environmental Conservation and Forestry (Myanmar)

Executive summary

This report aims to update the initial Baseline Assessment on Social Forestry and Climate Change, published in 2010 by RECOFTC – The Center for People and Forests as part of its collaboration with the ASEAN Social Forestry Network. It also aims to facilitate information sharing within the region and the continued development of relevant policies and programmes by providing policy-makers, practitioners and other stakeholders with up-to-date information on social forestry and climate change.

This report covers eight ASEAN countries (Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia (particularly the state of Sabah), Myanmar, Philippines, Thailand and Viet Nam). The information in this report was collected through desk-based research and reviews of national laws and policies, technical reports and other relevant materials. The information on forest cover and social forestry is based primarily on the latest data from national governments, provided by the members of the ASEAN–Swiss Partnership on Social Forestry and Climate Change Learning Group.¹

The report finds that forest cover in the ASEAN region is slightly less than 200 million ha, or approximately 46 percent of the total land area (Table 1). Deforestation in the region as a whole is estimated to result in the loss of 1.2 million ha of forest per year on average, with Indonesia and Myanmar experiencing the highest rates of deforestation. On the other hand, Viet Nam and the Philippines report increases in forest cover. Officially recognized community forests in the region encompass an estimated 8.8 million ha.

Table 1: Area of forest land, forest cover and community forests in the ASEAN region

	Area (ha)	% total land area
Total forest land	252,535,074	58%
Forest cover	199,975,262	46%
Official community forest	8,806,470	2%

Source: National forest authorities and FAO, 2010a.

In terms of climate change trends in the region, distinct changes in average temperatures (up by an average of 0.76 °C), rainfall patterns, sea levels (rising by 1–3 mm every year) and extreme weather events are being observed throughout the region. Rising average temperatures have been recorded in all eight countries in recent decades. Changes in rainfall patterns are more complex and indicate a high level of regional variation, with some parts of the region receiving higher levels of rainfall and others receiving less. Seasonal patterns, particularly the onset and duration of the wet season, are becoming less predictable. While extreme weather events, such as severe storms, heavy rainfall, floods and droughts, are becoming more severe.

In 2013, 8.8 million ha of forest land were managed by local people through official community forestry agreements or land titles. This accounted for 3.5 percent of the region's total forest land. However, in the three years since the 2010 baseline assessment was published, social forestry programmes have continued to grow in the ASEAN region. The area of land allocated to local people through official community forestry agreements has increased by more than 2 million ha. The most notable expansions have taken place in Cambodia (61.8%), Philippines (38.3%), Thailand (154.2%) and Viet Nam (15.4%). Despite this expansion and with the exception of Viet Nam (95% achieved) and the Philippines (45%), the transfer of forest land allocated to local people is proceeding very slowly. Less than 10% of forest land allocated to local people has been transferred in Cambodia, Indonesia and Myanmar (data from Lao PDR and Malaysia was not available but is likely to be quite small areas), thus community forestry programmes must be scaled up if national targets are to be met.

¹ The ASEAN–Swiss Partnership on Social Forestry and Climate Change (ASFCC) Learning Group is a forum for brainstorming and exchanging learning among social forestry experts, practitioners and policy-makers from the ASEAN member States. The Learning Group provides a platform for ASFN members to develop an understanding of the common principles of social forestry and provides strategic guidance for ASFCC projects.

Comparison of forest area covered by community forestry agreements in 2010 and 2013

Country	2010 area (ha) with community forestry agreements	2013 area (ha) with community forestry agreements
Cambodia	113,544	183,725
Indonesia	3,300	143,065
Lao PDR	Not available	Not available
Malaysia	Not available	Not available
Myanmar	41,000	42,148
Philippines	2,985,000	4,128,212
Thailand	196,667	500,000
Viet Nam	3,300,000	3,809,320
Total	6,639,511	8,806,470

ASEAN countries have also made considerable progress in developing climate change adaptation and mitigation policies and programmes. The majority of countries now have a climate change strategy or action plan in place, along with a high-level body responsible for overseeing and coordinating national responses on climate change. Implementation of these policies and strategies now needs to be scaled up at the local and national levels, along with the integration of climate change considerations into all sectors.

A number of factors still impede the more rapid expansion of social forestry. These include inadequate legal frameworks, the inherently complex and time-consuming nature of land allocation (Soriaga and Mahanty, 2008), overly restrictive rules, complicated and bureaucratic procedures and limited financial resources and capacities at the local level. Additionally, data on the financial and livelihood benefits that social forestry provides to local communities are ambiguous. Limited profitability of social forestry reduces the incentives for local people to engage. As a result, forest tenure rights in much of the region remain insecure, and governments retain a high degree of control over the majority of forest resources (RRI, 2012; RECOFTC, 2013).

Moving forward, ASEAN governments must work to remove these barriers hindering the allocation of forest land to local communities, expand forest area officially managed by local people and meet national targets. This may include revising legal frameworks, simplifying land allocation processes and administrative procedures and building capacity at the local and national levels.

Allocating better-quality forests that can generate greater social and economic benefits will help create stronger incentives for local people to engage in sustainable forest management to address the limited profitability of social forestry. A greater focus on social forestry in support of climate change adaptation and building resilience may result in more immediate and tangible benefits for forest communities.

Measures to strengthen tenure security in ASEAN countries is important to incentivizing mitigation and adaptation measures at the community level. Rights, such as exclusion rights, will need to be strengthened if community forestry is to be effective in reducing deforestation and forest degradation, which this report still finds to be rampant in the region (1.2 million ha forest loss per year).

If progress can be made in these areas, enormous potential exists for social forestry to contribute to climate change mitigation and adaptation in the ASEAN region as well as to meeting the basic needs of local communities and sustainable forest management.



1. Introduction

1.1 Background

Atmospheric concentrations of carbon dioxide are now higher than at any time during the past 15 million years (World Bank, 2012). With global greenhouse gas emissions continuing to rise² (Herzog, 2009; UNEP, 2012) and existing international commitments on emissions reductions falling short of the level needed to limit global temperature increases within 2°C, temperature rise between 3° and 4°C is increasingly likely (World Bank, 2012; UNEP, 2012). Southeast Asia is expected not only to experience greater increases in temperatures but also increased incidence of tropical storms, sea-level rise, saltwater intrusion and water scarcity and excess than any other region (World Bank, 2013). Recent projections suggest that parts of the Mekong River Basin may endure average temperature increases of 3°–5°C by 2050 (Mekong ARCC, 2013).

Millions of people in Southeast Asia rely on forests for their livelihoods (Angelsen, 2011; Poffenberger, 2006). Forests are also important for climate change mitigation and provide goods and services that enable communities to increase their resilience to the impacts of climate change. The governments of ASEAN countries have recognized the importance of forests and the role of local people in sustainable forest management. Social or community forestry has become a feature of forest management policies and programmes in most ASEAN countries.

In 2010, RECOFTC – The Center for People and Forests, with support from the ASEAN Social Forestry Network, published a baseline assessment of the role of social forestry in climate change mitigation and adaptation in the ASEAN region.³ The assessment brought together national and regional data on forests and social forestry and proved to be of great value to decision-makers, donors and civil society organizations working on social forestry. Three years on, there is impetus to update that information to better benefit forthcoming decision-making processes and programme development.

This publication thus provides an overview of social forestry in the ASEAN region in 2013, focusing on climate change mitigation and adaptation. The report compiles the most recently available government data on forest area, forest cover and social (and community) forestry and describes the social forestry models and the main tenure arrangements across the region. It also brings together data and projected trends on climatic changes in the region, including sea-level rise, temperatures, changes in rainfall patterns and extreme weather events in each country covered. As with the 2010 baseline study, this assessment focuses on eight ASEAN countries: Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia (particularly Sabah state), Myanmar, Philippines, Thailand and Viet Nam.⁴

1.2 Report structure, methodology and data sources

The report is presented in four chapters. This first chapter introduces the concepts of social forestry and climate change mitigation and adaptation. Chapter 2 presents the 2013 data on forests and social forestry in ASEAN and an overview of the social forestry models across the region. Chapter 3 summarizes the current and projected climatic changes in the region, and chapter 4 details the social forestry and climate change dynamics by country.

The information presented in this assessment was gathered through desk-based research and review of national laws and policies, technical reports and other relevant materials. The national statistics and forest information are based on data from forestry departments in each country (unless otherwise noted), which were provided by members of the ASEAN–Swiss Partnership on Social Forestry and Climate Change (ASFCC) Learning Group on Social Forestry in early 2013.⁵ The report thus differs from the 2010 baseline assessment, which used data from the Food and Agriculture Organization of the United Nations (FAO) 2010 assessment of global forest resources.⁶ The approach used in 2010 baseline assessment, however, presents some difficulties for making comparisons:

1. Some governments use different definitions of forest and include different types of forest in their assessments of forest cover. The forest data provided by some governments is not always directly comparable.
2. Due to the different definitions of forest and minimum canopy thresholds used in the global assessment and by some governments, data presented in the 2010 baseline assessment is not always directly comparable with the data

² Total global emissions grew by 12.7 percent between 2000 and 2005, an average of 2.4 percent a year. In 2005 (the most recent year for which comprehensive emissions data are available for every major sector), total greenhouse gases were estimated at 44,153 million tonnes of CO₂ equivalent (Herzog, 2009).

³ The baseline assessment report is available at www.recoftc.org/site/resources/The-Role-of-Social-Forestry-in-Climate-Change-Mitigation-and-Adaptation-in-the-ASEAN-Region.php

⁴ Brunei Darussalam and Singapore do not have significant social forestry programmes.

⁵ The 2010 FAO global forest resource assessment data were used for Singapore. Data for Brunei Darussalam was extracted from the Brunei Forest Department website. Where recent national data is not available, such as rates of forest cover change and forest carbon stocks, the FAO 2010 data is also used.

⁶ Data from both the main report and country reports; see FAO, 2010a, b, c, d, e and f.

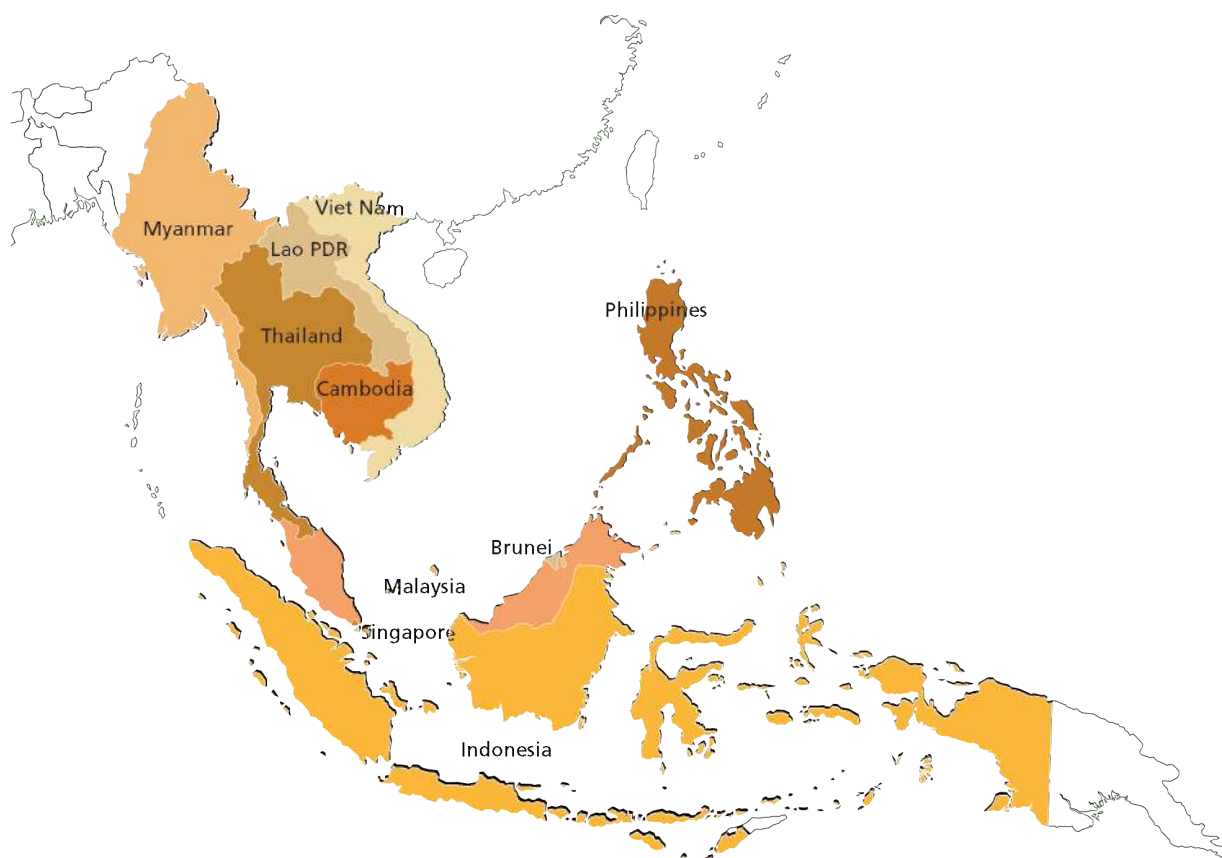
presented in this current assessment. Some variations in the 2010 and 2013 data reflect the different definitions and methods of data collection used rather than actual changes on the ground. These definitional challenges are discussed further in section 2.1 of this report.

Despite the difficulty for comparisons, the data presented in this report provides stakeholders with a current snapshot of social forestry in the region and highlights progress made in recent years. The report should be of value for policy-makers and practitioners engaged in social forestry programmes as well as climate change mitigation and adaptation initiatives at the local level.

1.3 The ASEAN region

ASEAN consists of ten countries: Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Viet Nam. The total land area of the ASEAN region covers 4.4 million km² (444 million ha) of land. In 2011, the collective population of the ten ASEAN countries was estimated at slightly fewer than 600 million people (ASEAN Secretariat, 2012).

Figure 1: Map of the ASEAN region



1.4 The ASEAN Social Forestry Network

The ASEAN Social Forestry Network (ASFN) was established in 2005 by the ASEAN Senior Officials on Forestry, who are responsible for policy coordination, decision-making and regional cooperation in the forest sector. The government-driven ASFN promotes cooperation and knowledge sharing on social forestry in the region. It links government forestry policy-makers with other stakeholders from civil society, research, academia, the private sector and elsewhere working to develop social forestry in ASEAN member countries, including its potential to address climate change mitigation and adaptation. Working under the auspices of ASEAN, the ASFN informs the Senior Officials on Forestry policy agenda and builds synergies with the ASEAN Regional Knowledge Network on Forests and Climate Change.

1.5 What is social forestry?

Both social forestry and community forestry refer to the involvement of local communities in the protection and/or management of public forests (Rath, 2010), with the intent to prevent degradation from overuse, promote sustainable forest management and respond to the basic social and economic needs of local people (Box 1). In theory, when the people who depend upon forest resources are jointly responsible for managing and protecting them, they tend to do so in a more sustainable manner by focusing on the long-term benefits rather than the immediate short-term gains. In contrast, where tenure rights are weak, unclear or insecure or offer limited benefits, people are provoked to extract immediate benefits, resulting in suboptimal forest management and the reduction of carbon stocks. The transfer of forest ownership, management and user rights to local people is therefore expected to lead to improvements in forest protection and conditions as well as improved livelihoods.

There is considerable evidence in the literature to suggest that when local people acquire secure tenure and forest management rights and receive adequate benefits from forest resources, this indeed leads to improved forest management, conservation of biodiversity and stronger local livelihoods (FAO, 2006; FAO, 2011; Robinson et al., 2011; Chhatre and Agrawal, 2011; Porter-Bolland et al., 2011; Persha et al., 2011; Sikor et al., 2013). Community management of forests has been shown to improve forest conditions and levels of forest biomass (Skutsch and Solis, 2010). Documented experiences in ASEAN countries demonstrate that community forestry has positive outcomes on both forest quality and local livelihoods. In Myanmar for example, community forest management has contributed to improvements in forest conditions and increased livelihood benefits for local people (Springate-Baginski et al., 2011).

The details of how forest land is transferred to local people, on what terms, with what combination of rights, benefits, responsibilities and security as well as the capacities of local communities and government officials are critical factors for ensuring sustainable forest management (Ostrom and Nagendra, 2006; FAO, 2006; Robinson et al., 2011; Helvetas and Rights and Resources Initiative, 2012; Lawry and Maclean, 2012). Well-defined and locally accepted rules governing the use of forest are also significant for achieving sustainable forest management (Patel et al., 2013). Where local people are genuinely engaged in formulating the rules on forest use – or at least consider the rules to be legitimate, they are more likely to follow them and monitor and sanction the actions of others (Ostrom and Nagendra, 2006). Forest user groups need to be able to enforce forest management regulations and protect their forests against external actors and drivers of land use change (Robinson et al., 2011). Although experience from the region suggests that in practice, this is extremely challenging (Springate-Baginski et al., 2011).

Box 1: The evolution of social forestry in Asia

Forest management in Asia has long been dominated by state actors, initially by European colonial powers and later by independent national governments. Forest communities are often regarded as “encroachers” on state land; their traditional land tenure and agriculture practices are blamed for deforestation (Poffenberger, 1999; Poffenberger et al., 2005; Poffenberger, 2006; Charnley and Poe, 2007). Towards the end of the twentieth century, it became increasingly clear that centralized systems of forest management and intensive timber extraction were leading to environmental degradation and failing to provide for the needs of local people. Governments began to recognize the need for increased participation of local stakeholders in the rehabilitation, management and protection of forest resources. New policies, laws and programmes emerged to strengthen the role of local governments and communities in sustainable forest management and devolve greater management rights and responsibilities to local people (Sands, 2005; Poffenberger, 2006; Soriaga and Mahanty, 2008).

Social forestry first emerged in India in the 1970s in response to fuel wood shortages and the failure of other forestry programmes to alleviate rural poverty (Arnold, 1992). Early programmes focused on the afforestation of communal lands to create alternative supplies of fuel wood, fodder and forest products to meet peoples’ basic needs, alleviate poverty and reduce pressure on commercially productive forests (Arnold, 1992; Hobley, 2005; Charnley and Poe, 2007). Over time, social forestry evolved into broader concepts covering a range of approaches to involve local people in governing, managing, using and benefiting from forest resources (RECOFTC, 2008). These approaches include participatory forest management, joint forest management, collaborative management, co-management and community-based forest management. The different models share similar principles, but the details of participation, decision-making autonomy, rights and benefits afforded to local people vary in each. Social forestry and community forestry are therefore regarded as “umbrella terms” for a range of activities that link local people to forests, trees and the products and benefits they provide (Arnold, 1992).

1.6 Definitions of social forestry and community forestry

There are many definitions and models of social forestry that emphasize different social, economic and ecological goals and levels of local participation and autonomy in forest management (Box 2). Although the term “social forestry” is sometimes used synonymously with community forestry, it is considered to have greater emphasis on social objectives, such as poverty reduction (Arnold, 1992; Poffenberger et al., 2005), and is often targeted at vulnerable or underprivileged groups. Although this publication singles out social forestry in its title, it uses the two terms somewhat interchangeably. Social forestry can also contribute to less tangible goals, such as social cohesion, social inclusion, learning and education, empowerment, emotional well-being and physical recreation. Social forestry activities can include people living within and around forests who depend on the forest for some or all of their basic needs. Social forestry takes place in both rural and urban areas and in industrialized and developing countries (Sands, 2005).

Box 2: Definitions of social forestry and community forestry

The following reflects the variance in definitions and the greater use of community forestry than social forestry.

FAO (1978): Community forestry is any situation that “intimately involves local people in a forestry activity. It embraces a spectrum of situations ranging from woodlots in areas which are short of wood and other forest products for local needs, through the growing of trees at the farm level to provide cash crops and the processing of forest products at the household, artisan or small industry level to generate income, to the activities of forest dwelling communities”.

Gilmour and Fisher (1991): Community forestry is “the control and management of forest resources by the rural people who use them, especially for domestic purposes and as an integral part of their farming systems”.

Martel and Whyte (1992): Community forestry is “a village-level forestry activity, decided on collectively and implemented on communal land, where local populations participate in the planning, establishing, managing and harvesting of forest crops and so receive a major proportion of the socio-economic and ecological benefits from the forest”.

Revington, Rainforest Information Centre (1992): “Community forestry has the following characteristics: the local community controls a clearly and legally defined area of forest; the local community is free from governmental and other outside pressure concerning the utilization of that forest; if the forestry involves commercial sale of timber or other products, then the community is free from economic exploitation of markets or other pressure from outside forces; the community has long-term security of tenure over the forest and sees its future as being tied to the forest.”

Nanang and Inoue (2000): Social forestry is “participatory forest-related activities for the purpose of sustaining and improving the economic and social welfare of people living in and around forests”.

Charnley and Poe (2007): “Community forestry refers to forest management that has ecological sustainability and local community benefits as central goals, with some degree of responsibility and authority for forest management formally vested in the community.”

Burley, Oxford Forestry Institute (2007): “Community forestry, social forestry and rural development forestry are more or less equivalent and reflect Abraham Lincoln’s view of democracy – government of the people, by the people, for the people.”

RECOFTC (2008): Community forestry “includes all aspects, initiatives, sciences, policies, institutions and processes that are intended to increase the role of local people in governing and managing forest resources. It consists of informal, customary and indigenous and formal or government-led initiatives. Community forestry covers social, economic and conservation dimensions in a range of activities, including indigenous management of sacred sites of cultural importance, small-scale forest-based enterprises, forestry out-grower schemes, company–community partnerships and decentralized and devolved forest management.”

Carter (2010): Community forestry is “an approach to forest management that actively promotes the rights of the people living in and around the forest to both participate in forest management decisions and to benefit (financially and in kind) from the results of the management”.

Each ASEAN country has developed its own definition of social or community forestry (Table 2).

Table 2: National definition of social and/or community forestry

Country	Definition
Cambodia	The 2003 Sub-Decree on Community Forestry Management defines a community forest as “the forest plantation of a community or state forest, where the right is granted to a local Community living in or near the forest to manage and utilize the forest in a sustainable manner between the Forestry Administration and a local community”.
Indonesia	Social forestry is a forest resource management system implemented in the state forest or private forest that gives the local community the opportunity to act as main partners in improving their welfare and keep the existence of the forest.
Lao PDR	“Village forestry” is the official term for community forestry, focusing on the management of natural forests. Village forestry is defined as a “partnership between the State and organized villagers for the management of designated forests in order to sustain the flow of benefits, which are fairly shared by the villagers and the rest of the national community”. Village forestry is understood as a process rather than a predetermined output and as a continuum of approaches to people-oriented forest management, with different intensities in the degree of participation.
Malaysia	Social forestry differs in each state. In Sabah, social forestry is defined as the “management and protection of forest and afforestation of degraded land with the purpose of contributing towards environment, social and rural development” (Sabah Forest Department). In Sarawak, social forestry takes the form of agro-forestry. In Peninsular Malaysia, it is mainly for recreation, education and the greening of urban areas.
Myanmar	Community forestry is forestry operations involving the local community. Community forestry means afforestation and the establishment of woodlots where there is a lack of fuelwood or other products for community use as well as the planting of trees and the extraction and use of forest products to obtain food supplies, consumer products and incomes at the farmer level (Community Forestry Instructions, Forest Department, 1995).
Philippines	The national strategy to ensure sustainable management of the country's forest land resources is community-based forest management. It promotes social justice and improved well-being of local communities and stronger partnerships between local communities and the Department of Environment and Natural Resources (FMB, 2004).
Thailand	The Royal Forest Department (1998) described community forests as forests that people, groups of people or community organizations care for and manage for their shared benefits. Community forest is land and/or forest land upon which it is legally permitted for communities, together with forestry officers, to manage forestry activities, under the relevant laws and regulations. They can also set up their own policies, which may be concerned with culture, beliefs, religious or other traditions. This management aims to provide sustainable forest use for the community (Wichawutipong, undated).
Viet Nam	Community forest management is “any managerial arrangement in which local people share collective responsibility and benefits from managing natural forests, inside their community boundaries, for which they have long-term customary and/or legal rights of entitlement” (Wode and BaoHuy, 2009).

1.7 Climate change

Southeast Asia is highly vulnerable to the impacts of climate change; in particular, storms, floods, water scarcity and sea-level rise. The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) in 2007 pointed out the changes taking place in Southeast Asia's climate, including rising temperatures, increases in the number of hot days and nights and decreases in the number of cold days and nights (Barker, 2007). Other studies indicate that precipitation is reducing and sea levels are rising by 1–3 mm every year (ADB, 2009).

These observations are supported by national data (presented in chapter 3) showing temperature increases over the past 50 years and notable changes in the numbers of hot and cold days and nights. Patterns of precipitation and the timing of the seasons are becoming more unpredictable, and there is a marked increase in the frequency and severity of floods, droughts and storms. The Philippines and Viet Nam are experiencing increasingly frequent and severe storms and typhoons. Flooding is a major risk in Cambodia, Lao PDR, Thailand and Viet Nam, while Indonesia, Myanmar and Viet Nam are highly vulnerable to the impacts of sea-level rise (World Bank, 2009). In a global study of 50 cities, five of the seven cities identified as at "extreme risk" to climate change are located in the ASEAN region⁷ (Maplecroft, 2013).

Climate change presents a major risk to economic development across the region. It is expected to reduce the availability of clean water, negatively impact agricultural yields, biodiversity and the availability of forest products and cause greater incidence of diseases, such as malaria and dengue fever. These impacts will endanger the livelihoods of millions of people, particularly rural populations who depend directly on forests, agriculture and other natural resources. Climate change is projected to cause economic losses of \$230 billion⁸ each year by 2100, equivalent to 6.7 percent of the region's gross domestic product (GDP). This is more than twice the projected global average loss of 2.6 percent, indicating that Southeast Asia will be more seriously impacted by climate change than other regions (ADB, 2011).

1.8 Forests and climate change mitigation and adaptation

Through the carbon cycle, carbon dioxide (CO₂) is exchanged between the atmosphere, the oceans and the terrestrial biosphere. Through the process of photosynthesis, trees and plants (and forest soils) withdraw CO₂ from the atmosphere and store it in their trunks, branches, leaves and roots. CO₂ is returned to the atmosphere through the respiration of vegetation and when trees, plants and soils decompose and burn. Reducing deforestation and forest degradation and increasing forest cover can help to reduce anthropogenic CO₂ emissions.

Estimates of CO₂ emissions from land use change and forestry vary widely, depending on the methodology used. In 2007, the Intergovernmental Panel on Climate Change estimated that emissions from deforestation in the 1990s made up 17.4 percent of total anthropogenic emissions (Barker et al., 2007) (Box 3). Recent estimates suggest that deforestation and forest degradation produce between 6 and 17 percent of total anthropogenic CO₂ emissions (van der Werf, 2009; Harris et al., 2012). In Southeast Asia, land use change and forestry produce an estimated 75 percent of the region's total greenhouse gas emissions, compared with 15 percent from the energy sector and 8 percent from agriculture (ADB, 2009)⁹, which highlights the considerable potential for forest-based mitigation in the ASEAN region.

Forests are important in terms of climate change adaptation. They provide a range of ecosystem services, such as the provision of forest products, soil and nutrient cycling, the regulating of water quality and flow and coastal protection in the case of mangrove forests. These services underpin the health and well-being of forest communities and human society in general and increase people's resilience and ability to cope with the negative impacts of climate change. Forests serve as a natural safety net, providing essential products and services, such as food, water, shelter and building materials, that help people to cope and recover from weather-related disasters, such as floods, droughts or storms.

⁷ Of the seven cities cited as facing extreme risks from climate change, Dhaka (Bangladesh) was found to be at greatest risk, followed by Manila (Philippines), Bangkok (Thailand), Yangon (Myanmar), Jakarta (Indonesia), Ho Chi Minh City (Viet Nam) and Kolkata (India).

⁸ All \$ figures are US\$.

⁹ This is similar to other developing regions, such as Africa, where deforestation is estimated to account for almost 70 percent of total emissions (FAO, 2005)

Box 3: Estimations of CO₂ emissions from deforestation, forest degradation and land use change

Deforestation and forest degradation generate between 12 and 18 percent of anthropogenic emissions. In 2007, the Intergovernmental Panel on Climate Change estimated that 17.4 percent of manmade emissions in the 1990s were caused by deforestation (Barker, 2007). More recent studies suggest that emissions from deforestation and forest degradation make a smaller contribution to total global emissions, although this is partially due to the increase in the emissions produced by burning fossil fuels. CO₂ emissions from deforestation and forest degradation (excluding peatland emissions) were estimated at 1.2 petagrams of carbon per year in 2008, approximately 12 percent of the total CO₂ emissions (van der Werf et al., 2009). Winrock International researchers estimated gross CO₂ emissions from tropical deforestation from 2000 to 2005 at 0.81 petagrams of carbon per year and between 7 and 14 percent of total anthropogenic CO₂ emissions. This figure does not include emissions from forest degradation and peat soil drainage and fire, which is estimated to produce an additional 0.6 petagrams of carbon per year (Harris et al., 2012). In a study by the Woods Hole Research Centre, the researchers estimated that net carbon emissions from tropical deforestation and land use at 1 petagram of carbon per year between 2000 and 2010 (Baccini et al., 2012).

1.9 Social forestry and climate change mitigation and adaptation

In addition to promoting sustainable forest management and providing social and economic benefits for local communities, social forestry has considerable potential to contribute to both climate change mitigation activities and community-level adaptation strategies. As noted, secure tenure and access to forest resources generally lead to improved forest management, reduced deforestation and forest degradation and increased forest carbon stocks. Social forestry programmes can support the implementation of climate change mitigation efforts under the Reducing Emissions from Deforestation and Forest Degradation Plus (REDD+) framework by involving local communities in carbon measuring and monitoring activities (Box 4).

Box 4: Reducing Emissions from Deforestation and Forest Degradation (REDD) and REDD+

Reducing Emissions from Deforestation and Forest Degradation (REDD) is a framework for providing compensation, in the form of financial payments, for the long-term benefits associated with forest protection, specifically reduced carbon emissions. It is a scheme to provide payment for ecosystem services (PES). The basic principle is that developing countries would be financially compensated by industrialized countries for reducing deforestation and forest degradation through either voluntary or compulsory funding mechanisms that incentivize forest protection. The + in REDD+ represents the expanded principle of sustainable forest management, forest conservation and the enhancement of forest carbon stocks. In addition to climate change mitigation, REDD+ has the potential to contribute to other ecological and developmental goals through so-called "co-benefits", such as biodiversity conservation, maintaining ecosystem services, recognition of the rights of forest peoples and building up their capacity at the local level to manage their forest.

Forest ecosystems can reduce the exposure of local people to climate risks (Box 5). For example, mangrove forests can protect coastal communities from damage caused by storms and cyclones. Community-managed mangrove forests in Myanmar's Ayeyarwady Delta are credited with reducing the impact of Cyclone Nargis in 2008 and saving many lives. Social forestry activities can reduce the vulnerability of forest communities to the impacts of climate change and its associated risks (Locatelli et al., 2008; FAO, 2012; RECOFTC, 2012). For example, community-maintained fire breaks and the clearing of leaf litter can reduce the spread of forest fires, and reforestation on sloping lands can help to reduce the risks of flash flooding and landslides.

Secure access to forest land and forest products and services provides a means of subsistence, creates more diverse livelihood options and increases food security. This helps to reduce people's sensitivity to climate change, such as crop damage caused by climate variation, drought, flood or storm. Tenure security is also more likely to lead to local-level investments in adaptation, such as water harvesting or irrigation systems, improved agricultural practices and climate-resilient crops. In some cases, forest land can be leased or used as collateral for loans to generate income that can increase opportunities for adaptation.

The social dimensions of climate change and vulnerability are becoming more widely understood. Social factors, such as social structures, norms, governance systems, institutions and power relations, can create, increase or reduce vulnerability to climate change. The most vulnerable, poor or socially excluded groups in society have higher levels of vulnerability to climate change. For example, men and women are affected differently by environmental or climate stresses and disasters due to gender roles and responsibilities and traditional resource use patterns. By engaging groups who are frequently marginalized – such as indigenous people, forest-dependent communities, the rural poor and women – in local participatory processes and building individual skills and collective capacities in planning, decision-making and problem solving, social forestry can contribute to social inclusion and empowerment and help to address the social dimensions of vulnerability.

Box 5: Traditional land use systems sequester carbon and enhance adaptive capacity

Ban Mae Nam Kham is a Karen village situated near a national reserve forest in Thailand's Chiang Mai Province. Land is communally held, with individual plots allocated to each family on a yearly basis. The community uses a traditional system of rotational farming within a seven-year cycle, meaning that fallow lands are reused periodically and no additional forest areas are cleared. For every plot of land that is cleared in a particular year in this system, six fallow plots are sequestering carbon and thus producing a net carbon sink.

The rotational farming system protects critical ecosystem services by maintaining soil quality and protecting watershed functions. The community produces a range of crops throughout the year, including rice, fruits and vegetables. They also collect non-timber forest products, raise buffaloes and weave cloth to generate additional income. The diverse range of crops and income-generating options makes the community resilient to the negative impacts of climate change.

The village is a member of a local natural resource management network covering three districts in the Mae Sai River Basin. As part of this network, villagers take part in forest fire prevention activities that involve maintaining a firebreak that is 126 km long and 5–10 m wide and clearing leaf litter from the forest floor. The network has been successful in reducing the incidence of forest fires, particularly when compared with neighbouring districts that have experienced increased forest fires in the past five years.

Social capital within the village is very strong. Families share labour and support each other in different tasks, such as land clearance, weeding, planting and maintaining firebreaks. Collaboration with other villages through the fire prevention network and other development activities also increases social capital and develops skills in natural resource planning and management that help strengthen the community's adaptive capacity.





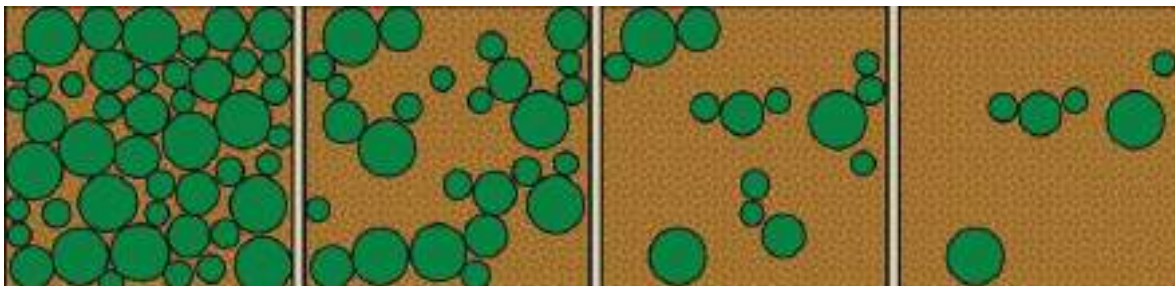
2. Forests and social forestry in the ASEAN region

2.1 Differing definitions of forest, forest land and forest cover

International organizations and various relevant conventions rely on different definitions and classifications of “forest” and “forest land”. For example, FAO defines forest as a land area of more than 0.5 ha, with trees higher than 5 m and a canopy cover of more than 10 percent. The United Nations Framework Convention on Climate Change (UNFCCC) defines forest as a land area that is 0.01–1 ha in size, with trees higher than 2–5 m and a crown cover of 10–30 percent. The United Nations Environment Programme (2001) distinguishes between “forest cover” (as a canopy density greater than 10 percent) and “closed forest” (as a canopy density of 40 percent). Greater harmonization of the definitions used would be beneficial in reducing errors, reducing the burden and costs of reporting and minimizing confusion in communicating with stakeholders, the media and the public (FAO, 2002).

There are also differences at the national level. For example, Lao PDR uses a minimum canopy density of 20 percent to define “forest”, while other ASEAN countries use a minimum of 10 percent canopy cover. The use of the 10 percent threshold for areas defined as forests means that significant changes in forest cover above this threshold go unrecorded – considerable forest degradation may occur without being reflected in official statistics (Figure 2), leading to “hidden deforestation” (FAO, 2011; Sasaki and Putz, 2009).

Figure 2: Representations of 70 percent, 40 percent, 20 percent and 10 percent canopy cover



Source: FAO, 2011.

Additionally, the term “forest land” is used as a legal or administrative term rather than the presence of forest of trees. For example, in Indonesia, a “forest area” refers to an area of land that has been designated as permanent forest land by the Government, regardless of whether trees are present. Bare or degraded forest land that has been set aside for regeneration and fallow land used in shifting cultivation also may be classed as forest land even though the land does not have permanent tree cover. And there may be considerable areas of forest that exist outside the area officially designated as forest land.¹⁰

Statistics on total forest cover frequently include both natural and planted forests and can mask the conversion of natural forests to plantations. A detailed assessment of changes in the types of forest cover is needed to identify and understand trends.

Many experts do not consider plantations to be “forest” because they are monocultures, often consisting of non-native species and not performing the full functions of a healthy natural forest ecosystem (FAO, 2002). As well, natural forests contain an estimated five to ten times more carbon stocks than tree plantations (VNFOREST, 2013). The ability to distinguish between natural forests and plantations is of particular importance in calculating forest carbon stocks and the emissions associated with the conversion of natural forests to planted forests.

National definitions of forest and forest cover types also vary (Table 3). For example, bamboo forests and unstocked forests are included in forest cover assessments in the Philippines but not in Lao PDR. Forest definitions, classifications, survey methods and technologies used to calculate forest cover also change and develop over time, so historical forest data may

¹⁰ In Indonesia, there is reportedly around 15 million ha of forest outside the designated forest estate. See the CIFOR Forests news blog at <http://blog.cifor.org/3753/land-tenure-reform-starting-to-gain-momentum-in-indonesia/#.UigikmmkdMs> [5 Sept. 2013].

not be comparable. And the reported increases or decreases in forest cover may be a result of the different definitions, methodologies and technologies used rather than a reflection of actual changes on the ground.

Table 3: National forest definitions

Country	Definitions used in national forest cover assessments
Cambodia	The 2006 forest assessment used the FAO definition of forest: 10 percent or more canopy coverage, minimum area of 0.5 ha and minimum 5 m tree height (RGC, 2010). The 2010 forest classification included evergreen forest, semi-evergreen forest, deciduous forest, other forest, wood shrub dry, wood shrub evergreen, bamboo, mangrove forest and rubber plantation (mangrove forest and rubber plantations were added in 2010).
Indonesia	Forest area is any particular area designated by the Government to be permanent forest. Forest cover includes primary dryland forest, secondary dryland forest, primary swamp forest, secondary swamp forest, primary mangrove forest, secondary mangrove forest and plantation forest (MOF, 2012).
Lao PDR	“Current forest” is defined as natural forest or tree plantation with a canopy density greater than 20 percent, a minimum area of 0.5 ha and average tree height above 5 m. Bamboo forest, fallow forest and unstocked forest with less than 20 percent canopy density are not included as current forest (GOL, 2005).
Malaysia	The Government uses the FAO definition of land area greater than 0.5 ha, with trees higher than 5 m and a minimum 10 percent canopy cover or trees able to reach these thresholds in situ. Data on forest cover include permanent reserved forest, state land forest, national parks, wildlife and bird sanctuaries and rubber plantations (FAO, 2010b).
Myanmar	Forest area is land with tree crown cover (or equivalent stocking level) of more than 10 percent and an area of more than 0.5 ha. The trees should reach a minimum height of 5 m at maturity in situ (MOF, 2005).
Philippines	The Department of Environment and Natural Resources uses the following definition of forest: land areas greater than 0.5 ha, with a tree crown of more than 10 percent and trees capable of reaching a height of 5 m at maturity. Young natural stands and forestry plantations in which trees have yet to reach 10 percent crown and 5 m in height are included as forests as well as temporarily unstocked areas that are expected to revert to forest. The definition includes rubber plantations, bamboo, palm and fern formations, forest nurseries, seed orchards, forest roads and firebreaks. Coconut and oil palm plantations are not included (DENR, 2005).
Thailand	The existing forest area is defined as land spanning more than 0.6 ha that can be classified using Landsat data, at 30m resolution. It does not include land predominantly under agricultural or urban land use (FAO, 2010c). Forest cover assessments include natural forests, secondary and planted forests and the following forest types: tropical evergreen, mixed deciduous, dry dipterocarp, swamp forest, inundated forest, beach forest, pine forest, bamboo forest and mangrove forest.
Viet Nam	The national definition of forest is an area of at least 0.5 ha, with trees higher than 3 m and a canopy cover of 0.3 ha or growing stock over 30 m ³ per ha (FAO, 2010d). Assessments of forest cover include natural forests of timber, bamboo, mangrove, mixed and rocky mountain forest and plantations of timber, bamboo, mangrove and other specialty species (VNFOREST, 2013).

The use of different definitions by each ASEAN country makes uniform reporting on forests and forest cover in the region extremely challenging. Additionally, many forestry issues are cross-border in nature and require collaboration between countries to tackle them effectively. The different definitions and understandings of terms and the different methodologies used makes reporting and coordination more difficult.

2.2 Status of forests

The total land area in the ASEAN region is 444 million ha (ASEAN Secretariat, 2012). Land designated as forest land by governments currently stands at 253 million ha¹¹, approximately 57 percent of the total land area. Based on data provided by the forestry department in each country, forest cover is estimated at 200 million ha, or 46 percent of the total land area. Table 4 shows the extent of forest land, forest cover and rates of forest cover change in the ten ASEAN member countries, based on data provided by each national forest department.¹²

¹¹ The national forest reserve in Cambodia has not yet been officially demarcated and is therefore not included in this figure.

¹² With the exception of Singapore, for which the 2010 FAO forest resources assessment data were used.

Table 4: Forest land, forest cover and forest cover change in ASEAN countries

Country	Total (land) Area		Designated Forest Area		Actual Forest Cover		Average Annual Rates of Forest Cover Change		
	ha		ha	% land area	ha	% land area	ha per year	period	% forest cover
¹ Brunei Darussalam	527,000		235,520	45%	322,195	61%	-2,000	2005-2010	-0.47
² Cambodia	17,652,000		n/a	n/a	10,363,789	59%	-91,748	2006-2010	-0.85
³ Indonesia	181,157,000		130,680,000	72%	89,630,000	49%	-832,127	2006-2010	-0.89
⁴ Lao PDR	23,080,000		16,000,000	69%	9,550,000	41%	-34,650	2002-2010	-0.35
⁵ Malaysia	32,855,000		20,450,514	62%	20,450,514	62%	-87,000	2005-2010	-0.42
⁶ Myanmar	65,755,000		31,773,000	48%	31,773,000	48%	-310,000	2005-2010	-0.91
⁷ Philippines	29,817,000		15,805,000	53%	7,168,400	24%	52,000	2000-2005	0.77
⁸ Singapore	69,000		2,300	3%	2,300	3%	0	n/a	0.00
⁹ Thailand	51,089,000		22,400,000	44%	17,200,000	34%	not available	not available	-0.57
¹⁰ Viet Nam	33,019,000		15,188,740	46%	13,515,064	41%	149,727	2005-2010	1.19
Total	435,020,000		252,535,074	58%	199,975,262	46%	-1,155,798	--	-0.58

Sources:

¹ Brunei Forest Department. Current gazetted forest area is 235,520 ha. Plus 86,675 ha of forest is proposed for gazettment. http://www.forestry.gov.bn/frst_forest.htm Accessed 18 April 2013. Cover change data from FAO 2010.

² Data from Cambodia Forest Cover 2010. Change rate calculated by the author based on FA 2006 and FA 2010.

³ National Level Forestry Plan 2011-2030, Ministerial Regulation No. P.49/Menhut-II/2011, DG of Forestry Planning; and Directorate of Social Forestry Development, MoF, presented at 2nd ASFN Learning Group Workshop, February 2013. Change rate for 2005/6 to 2009/10 from MoF Forest Statistics 2012.

⁴ Government Sector Lao PDR 2010, presented at 2nd ASFN Learning Group Workshop, February 2013. Data presented by government presents forest cover change as a percentage of total land (-0.15%). In this study it is presented as a % of forest cover to enable comparison with other countries.

⁵ Forest cover data presented at 2nd ASFN Learning Group Workshop, February 2013. Forest cover change data from FAO 2010.

⁶ Myanmar Forest Department, presented at 2nd ASFN Learning Group Workshop, February 2013

⁷ Forest cover data is based on data from the 2003 inventory, presented at ASFN Learning Group Workshop in February 2013. Cover change rate was provided by DENR in July 2013. Philippines Land Cover Mapping for 2010 is taking place in 2013 and should be available in 2014.

⁸ FAO 2010a

⁹ Data provided by the Thai Royal Forest Department in May 2013.

¹⁰ Vietnam Forest Administration, 2013. Change rate calculated by the author based on VNFOREST data from 2005 and 2011.

Based on the data provided by each forest department (Table 5), total forest cover is more than 13 million ha – smaller than the figure reported in the 2010 baseline assessment (RECOFTC, ASFN and SDC, 2010) and the 2010 forest resources assessment (FAO, 2010a). A significant part of this change is due to the different parameters used to measure forest cover in the FAO forest resources assessment and by each state forest department, particularly in the case of Lao PDR.¹³

Table 5: Comparison of forest cover data from the 2010 FAO forest resources assessment and national forest departments, 2013

Country	Forest resource assessment 2010		Forest department 2013		Variance
	ha	% land area	ha	% land area	ha
Brunei Darussalam	380,000	72%	322,195	61%	-57,805
Cambodia	10,094,000	57%	10,363,789	59%	+269,789
Indonesia	94,432,000	52%	89,630,000	49%	-4,802,000
Lao PDR	15,751,000	68%	9,550,000	41%	-6,201,000
Malaysia	20,456,000	62%	20,450,514	62%	+5,486
Myanmar	31,773,000	48%	31,773,000	48%	0
Singapore	2,300	3%	2,300	3%	0
Philippines	7,665,000	26%	7,168,400	24%	-496,600
Thailand	18,972,000	37%	17,200,000	34%	-1,772,000
Viet Nam	13,797,000	42%	13,515,064	41%	-281,936
Total	213,322,300	49%	199,975,262	46%	-13,347,038

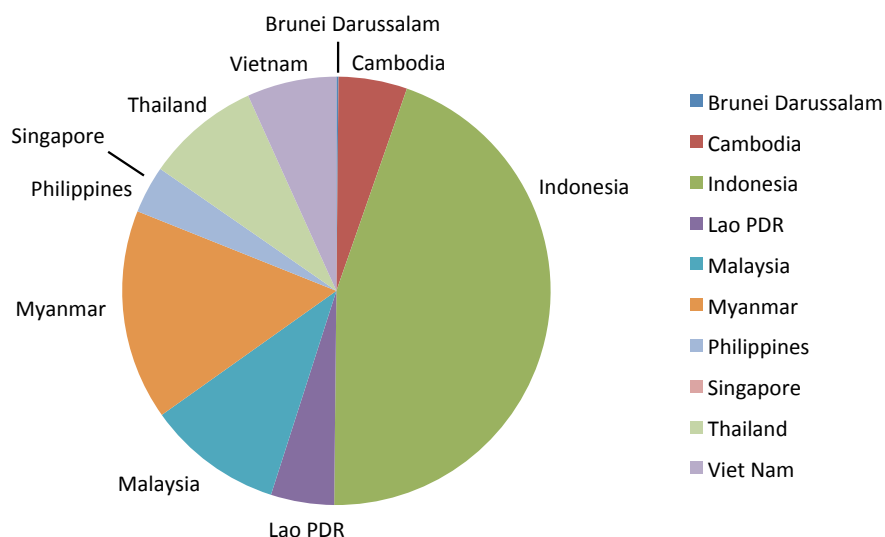
Figure 3: Map of forest cover in Southeast Asia in 2005



¹³ The 2010 baseline assessment used the 2010 FAO forest resources assessment data, based on 10 percent canopy cover resulting in 15.8 million ha of forest cover. The Lao PDR Department of Forestry used a 20 percent canopy cover threshold to produce the current figure of 9.6 million ha.

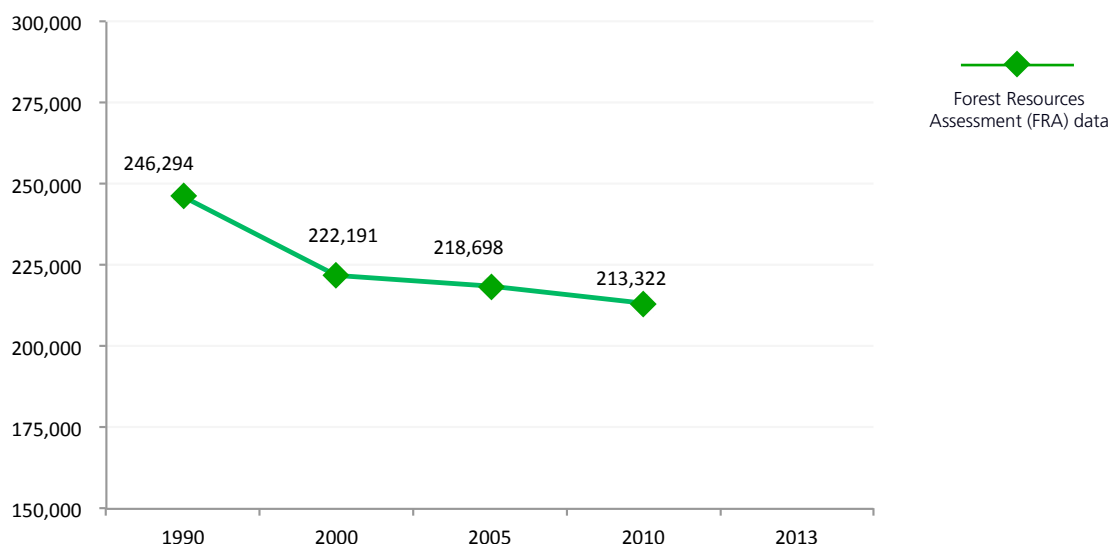
Among the ASEAN countries, Indonesia has the largest amount of forest cover, at almost 90 million ha, covering 49 percent of its land area (MOF, 2011).¹⁴ Brunei Darussalam, Cambodia and Malaysia have more than 50 percent of their land covered with forest.¹⁵ With the exception of Singapore, the Philippines has the smallest proportion of forest cover, at only 24 percent of the total land area, making it one of the most heavily deforested countries in the tropics (DENR, 2002). Figure 4 reflects the distribution of forest cover in the eight ASEAN countries covered in this study.

Figure 4: Distribution of forest cover in the ASEAN region, 2013



Forests in the ASEAN region are under pressure from a complex range of direct and indirect anthropogenic pressures. Based on the 2010 FAO data, forest cover in Southeast Asia is estimated to have declined by an average of 1.2 million ha per year between 2005 and 2010 (FAO, 2010a). Figure 5 shows the decline in forest cover in the ASEAN region since 1990 (based on the 2010 forest resources assessment data) and the current area of forest cover.

Figure 5: Forest cover in ASEAN countries 1990–2010 (in thousands of ha)



¹⁴ National Level Forestry Plan 2011–2030, Ministerial Regulation No. P. 49/Menhut-II/2011, Directorate-General of Forestry Planning, Ministry of Forestry, presented at the second ASFCC Learning Group Workshop, February 2013.

¹⁵ Cambodia and Malaysia include some tree plantations as forest cover.

Many factors contribute to deforestation, including the direct causes of forest loss as well as underlying economic, socio-political, demographic and cultural factors (Table 6). Direct drivers of deforestation include clearance for agricultural production, wood extraction, forest fires, infrastructure development, increasing urbanization and human settlements. Indirect drivers include consumer demand for timber and agricultural products, weak local governance and corruption, weak land tenure, population growth, migration and poverty (Zurek et al., 2013).

Table 6: Drivers of deforestation in ASEAN countries

Direct drivers	Indirect drivers
Agriculture – commercial and subsistence Wood extraction – logging, fuelwood Infrastructure development – road building Mining Hydropower development Forest fires Urbanization, settlements Military camps	<i>Economic drivers:</i> Demand for agricultural products Demand for timber products Poverty Land speculation
	<i>Socio-political drivers:</i> Weak (local) governance systems Corruption Competing policies Weak land tenure Weak incentives for sustainable forest management and forest protection Weak land use planning
	<i>Demographic drivers:</i> Population growth Migration
	<i>Science and technology drivers:</i> Logging practices
	<i>Cultural and religious drivers:</i> Low value given to forests

Source: Zurek et al., 2013.

Forest cover in most ASEAN countries is in decline. Indonesia has the largest annual reduction in forest area, with 832,127 ha (0.89 percent) lost each year between 2006 and 2009 (MOF, 2012). Myanmar has the highest rate of deforestation, with forest cover falling by 0.91 percent (310,000 ha) per year. The deforestation rate increased from 0.87 percent in 2006 to 0.91 percent in 2010 (MOECAP, 2013). Lao PDR currently has the lowest deforestation rate, at 34,650 ha per year, with the exception of Singapore, where the small area of remaining forest is protected. Other countries report an increase in forest cover. In Viet Nam, forest cover increased by 1.7 million ha between 2002 and 2011 due to large-scale reforestation programmes and currently stands at 41 percent of the total land area (VNFOREST, 2013). In the Philippines, inventory data indicates that forest cover increased from 5.4 million ha in 1988 to 7.2 million ha in 2003.¹⁶

2.3 Forest area managed by local people in the ASEAN region

In 2013, 8.8 million ha of forest land were managed by local people through official community forestry agreements or land titles.¹⁷ This accounted for 3.5 percent of the region's total forest land. Since 2010, more than 2.2 million ha of forest land have been officially placed under the management of local people (Table 7).

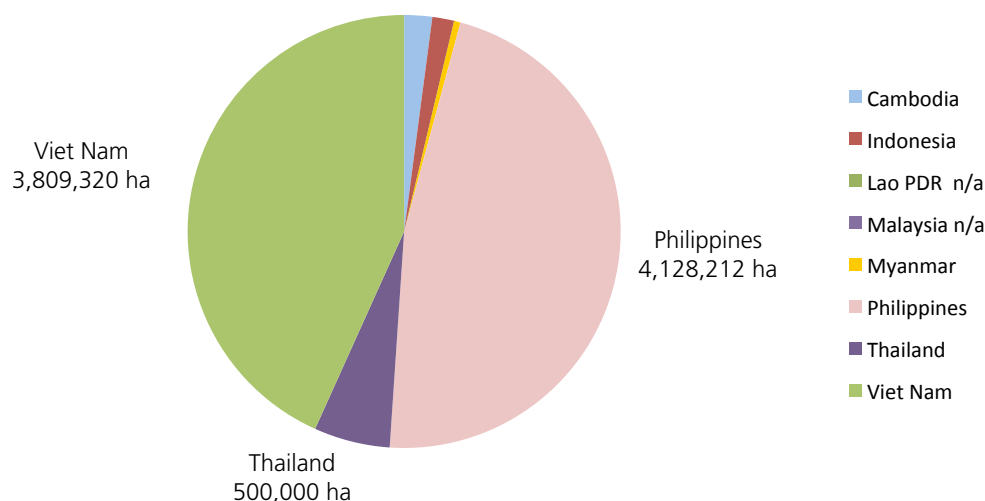
¹⁶ The forest inventories of 1988 and 2003 used different methodologies to estimate forest cover (FAO, 2005), which may account for some of the reported increase.

¹⁷ Data is based on formal community forestry agreements issued to communities or households. It does not include agreements that are currently being processed, unrecognized claims to forest lands, community forestry activities taking place on land managed by the State or commercial license holders or forest lands that local people are entitled to access and use that are not covered by official community forest agreements or titles.

Table 7: Comparison of forest area covered by community forestry agreements in 2010 and 2013

Country	2010 area (ha) with community forestry agreements	2013 area (ha) with community forestry agreements
Cambodia	113,544	183,725
Indonesia	3,300 ¹⁸	143,065 ¹⁹
Lao PDR	Not available	Not available ²⁰
Malaysia	Not available	Not available ²¹
Myanmar	41,000	42,148
Philippines	2,985,000 ²²	4,128,212
Thailand	196,667	500,000
Viet Nam	3,300,000	3,809,320
Total	6,639,511	8,806,470

The vast majority (90 percent) of this land is in the Philippines and Viet Nam, where around 25 percent of forest land is managed by local people (Figure 6). In Cambodia, Indonesia, Myanmar and Thailand, the area managed by local people is between 0.1 and 2 percent of total forest land. Official data on land area managed under approved community forestry agreements in Lao PDR and Malaysia were not available at the time of writing but is likely to be quite small areas. According to the Lao PDR Forest Sector Strategy to 2020, 8.2 million ha of forest land was allocated to villages and households through the Land and Forest Allocation Programme (MAF, 2005). However, village forests only exist as a land use category; few community forest lands are covered by formal land use titles (RECOFTC, 2013). In Malaysia, social forestry takes the form of agro-forestry and village development projects target state forestland.

Figure 6: Land area managed by local people under official community forestry agreements, 2013

Cambodia, Indonesia, Myanmar, Philippines and Viet Nam have set national targets on the area of forest land to be transferred to local communities for community forestry. Collectively, these targets would place 15.9 million ha, or 6 percent of total forest land, under the management of local people by 2030 (Table 8). In 2006, Viet Nam set a target of transferring 4 million ha of land to local people. By 2013, 95 percent of this target area had been allocated. In other countries, the

¹⁸ Community held management rights over public forests in 2005 (FAO, 2010).

¹⁹ Land under HKm (community-based forest) and hutan desa (village forest).

²⁰ The Forest Sector Strategy to 2020 reports that 8.2 million ha of forest land was allocated to villages and households through the Land and Forest Allocation Programme (MAF, 2005). However, village forests only exist as a land use category; few community forest lands have received formal land use titles to date (RECOFTC, 2013).

²¹ Data on social forestry in Malaysia is limited. A 2006 report estimates that 40,654 ha (1.5 percent of forest management units of land) had been set aside for social forestry projects in Sabah, of which 7,000 ha was managed by the Sabah Forest Department and 33,654 ha by sustainable forest management license holders (Toh and Grace, 2006). There were no recent data on active social forestry projects in Sabah state or for Malaysia as a whole.

²² Community-held management rights over public forests in 2005 (FAO, 2010).

transfer of forest land to local people is proceeding more slowly. In 1997, the Philippines set a target of allocating 9 million ha of land to local communities by 2008. By 2013, only 45 percent of this target area had been allocated (DENR, 2013). Community forestry programmes in Cambodia, Indonesia and Myanmar will need to be scaled up if national targets are to be met.

Table 8: Forest area managed by local people with official community forestry agreements, 2013

Country	Area covered by official agreements		Target area	Target period	% achieved in 2013
	ha	% forest land	ha		
Cambodia	183,725	1.8%	2 million	2010–2029	9%
Indonesia	143,065 ²³	0.11%	2.5 million ²⁴	2011–2016	5%
Lao PDR	Not available ²⁵	Not available	n/a	n/a	n/a
Malaysia	Not available ²⁶	Not available	n/a	n/a	n/a
Myanmar	42,148	0.13%	919,000	2001–2030/31	4%
Philippines	4,128,212	26.12%	9 million	1997–2008	45%
Thailand	500,000	2.23%	n/a	n/a	n/a
Viet Nam	3,809,320	25.08%	4 million	2006–2020	95%
Total	8,806,470	3.5%	15,919,000	-	69%

2.4 Social forestry models

The ASFN considers social forestry to be an integral part of sustainable forest management because it aims to improve the standard of living and well-being of local people.²⁷ The ASFN recognizes that social forestry is a cost-effective way to: support sustainable local livelihoods through income generation;

- balance economic use and ecological conservation of forests;
- build the capacity of forest communities to practise land stewardship and reduce forest degradation and destruction;
- combat illegal logging;
- share the benefits from forests among local communities;
- build upon the potential of local communities to manage forests sustainably; and
- promote democratic and transparent governance practice.

The participation of local people in forest management has become a feature of national forest policy in most ASEAN countries over the past 20 years. Social forestry models share similar objectives of encouraging sustainable forest management, improving forest condition, governing local use of forest resources and improving the social and economic conditions of forest-dependent people. Despite shared common objectives, social forestry models in the ASEAN region have notable differences. Some models prioritize community management, while other models are based on local partnerships between communities and local councils or business license holders. Different social forestry models also exist depending on the type of forest (such as production forest, protection or conservation forest) and purpose (commercial activities, reforestation or conservation).

²³ Land under HKM (community-based forest) and hutan desa (village forest).

²⁴ Statement by Indonesia's Director of Social Forestry Development at the Asia REDD+ Regional Working Group, January 2013 (CFI, 2013).

²⁵ The Forest Sector Strategy to 2020 reports that 8.2 million ha of forest land was allocated to villages and households through the Land and Forest Allocation Programme (MAF, 2005). However, village forests only exist as a land use category; few community forest lands have received formal land use titles to date (RECOFTC, 2013).

²⁶ Data on social forestry in Malaysia is limited. A 2006 report estimates that 40,654 ha (1.5 percent of forest management units of land) had been set aside for social forestry projects in Sabah, of which 7,000 ha was managed by the Sabah Forest Department and 33,654 ha by sustainable forest management license holders (Toh and Grace, 2006). There were no recent data on active social forestry projects in Sabah state or for Malaysia as a whole.

²⁷ Consolidation of the working group discussion in the ASEAN Workshop on Social Forestry, in Madiun, East Java, Indonesia, 28–30 March 2005 (available at www.dephut.go.id/informasi/Umum/KLN/Consolidation.htm).

The majority of the land allocated under social forestry programmes has been degraded forest. For example, in Viet Nam, 75 percent of the forestland allocated to local people under the Community Forestry Management Pilot Programme was bare land or poor-quality forest (RECOFTC, 2010). Most community forests are designated for the purpose of production and the protection of soils and water resources. The transfer of management and use rights in conservation forests and protected areas has been less common, even when permitted under national law. Recently, Cambodia began to develop mechanisms to engage local people in the management of protected forest areas (RGC, 2010; Oberndorf, 2010). Indonesia and Viet Nam are exploring co-management or collaborative options to improve the management of protected forests under pressure from human activity (Mulyana et al., 2010; Swan, 2008; Nguyen et al., 2012).

2.5 Forest tenure

The specific bundles of rights, duties and responsibilities (Box 6) that are transferred and the length of tenure vary with the different models (Table 9). The length of tenure ranges from 15 years in Cambodia to 50 years in Viet Nam and as much as 70 years in Lao PDR under specific circumstances.

Box 6: Land and forest tenure and bundles of rights

Tenure arrangements consist of a package or “bundle” of assigned rights, responsibilities and benefits. In many cases, the details of the tenure rights transferred to local people depends upon the type of land or forest and the model of social (or community) forestry being applied. Different types of rights relating to forest land include:

- access rights – right to enter an area of forest;
- use or withdrawal rights – to use timber and non-timber forest products;
- management rights – to make decisions about forest use patterns and improvements;
- exclusion rights – right to decide who can and cannot use the forest resources;
- alienation rights – rights to lease, sell, exchange, transfer, inherit, mortgage or use the land as financial collateral;
- carbon rights – a newly emerged right, likened to property and intellectual property rights, to “commoditize” carbon and allow it to be traded in voluntary and regulatory markets. ASEAN governments have yet to develop legislation on carbon rights, but this will presumably be based upon established systems of forest ownership and use rights (Suzuki, 2011; Felicani-Robles, 2012).

Tenure agreements are generally renewable if conditions have been met, although tenure rights can be withdrawn by the government in the public interest; guidelines governing compensation are often unclear or insufficient. In Malaysia, social forestry does not include transfer of tenure rights but instead focuses on the development of basic village infrastructure and alternative livelihood projects on state forestland. In almost all cases, rights include both access and management rights. In the Philippines, the State retains significant control over community-based forest management through regulations on resource use; community-based forest management is vulnerable to changes in government policies, although indigenous communities are granted substantially more autonomy through ancestral domain titles than in most other countries.

In the majority of cases, rights cannot be alienated. The exceptions are Myanmar, where rights can be inherited, and Viet Nam, where they can be inherited, rented, transferred and mortgaged. Exclusion rights are granted under many social forestry models but appear very difficult to enforce in practice. Experiences from Oddar Meanchey Province in Cambodia and some community forests in Myanmar are demonstrating that although forest communities hold exclusion rights in principle, in practice their ability to exclude other, often more powerful, forest users from their community forests is limited. This weakens their ability to protect the community forest from encroachment by outsiders, prevent deforestation and degradation and maintain forest carbon stocks (Tint et al., 2011; CIFOR, 2013).

Ownership of forest carbon rights has yet to be clarified by ASEAN governments. Ownership of these rights at the community level could be instrumental towards incentivizing carbon sequestration and storage and ensuring the fair distribution of potential future benefits from carbon financing mechanisms. Ideally, carbon rights should be closely associated with forest use rights to incentivize activities to increase carbon stocks. If the ownership of carbon rights is unclear or vested in state or private entities, the incentives for communities to invest in forest protection and forgo immediate benefits from forest resources will be weakened.

Secure tenure also appears important for adaptation because local people are unlikely to invest in adaptation responses on their lands (such as reforestation, improved infrastructure, water harvesting, irrigation systems or climate-resilient crops) unless their land tenure status is secure (Barnett, 2013).

Table 9: Overview of legal rights and forest tenure arrangements in Southeast Asia

Country	Social forestry model	Forest type	Bundle of rights					Length of tenure
			Access	Use	Management	Exclusion	Alienation	
Cambodia	Community-based forest management	Production forest (MAFF)	Yes	Timber and non-timber forest products (NTFPs) for domestic use Permits and royalties for commercial use	Yes	Yes	No	15 years – renewable State can reclaim
	Community protected area	Protected forest (MOE)	Yes	NTFPs from sustainable use zone Commercial use of timber prohibited	Yes	No	No	15 years
Indonesia	Community-based forest (HKm)	Protection and production	Yes	Protection forest – NTFPs Production forest – timber and NTFPs	Participate in management board	Yes	No	35 years and can be extended, based on evaluation
	Village forest (hutan desa)	Protection and production	Yes	Protection forest – NTFPs Production forest – timber and NTFPs	Yes	unclear	No	35 years and can be extended, based on evaluation
Lao PDR	Village forest	Any state forest	Yes	Collection and sale of some NTFPs Small amounts of timber for domestic use in production forest	Yes	No	No	Degraded forest 30–40 years Barren forest 40–60 years Remote areas 40–70 years
Sabah, Malaysia	Social forestry projects	Forest management units in commercial reserve	Yes	Alternative livelihoods projects and development of basic infrastructure	Local communities consulted	unclear	No	No tenure
Myanmar	Community forestry	All state forest	Yes	Collection and sale of forest products for domestic use without taxes	Yes	Yes, but in practice it is weak	Can be inherited	30 years – renewable
Philippines	Community-based forest management	All state forest	Yes	Limited use rights in protected areas and watershed reserves	Yes	Yes	Community-based forest management agreements are non-transferable Certificate of Stewardship Contract is transferable	25 years – renewable Department of Environment and Natural Resources retains significant authority
Thailand	Community forestry	State forest land except protected areas	Yes	Collection of dead wood and NTFPs Felling timber is prohibited in natural forests	Yes	Unclear	No	Unclear
	Community land use permit	State forest land except protected areas	Yes	Collection of dead wood and NTFPs Felling timber is prohibited in natural forests	Co-management	Yes	No	Renewable Duration set by government committee
Viet Nam	Community forestry management – Land use rights certificate	Production and non-critical protection	Yes	Plantation forest – all products can be sold without restrictions	Yes	Yes	Rent, transfer, mortgage and inherit	50 years
	Community forestry management – Forest protection contract	Protection	Yes	Dry fuel wood and some NTFPs May be limited, depending on protection function	Unclear	Yes	Not permitted for communities	1-year contracts – extendable up to 5 years



3. Climate change in the ASEAN region

As previously noted Southeast Asia is one of the world's most vulnerable regions and is likely to suffer more from climate change than other parts of the world (ADB, 2009). Many human settlements are situated along coastlines, riverbanks and river deltas and are exposed to the impacts of rising sea levels and more severe storms. The impacts of climate change will have far-reaching social and economic consequences, affecting agriculture, food security, water availability, economic development, health and security and are likely to hinder efforts towards poverty reduction and widen economic disparities between and within nations.

3.1 Potential impacts of climate change

3.1.1 Observed trends

Climate change is already impacting seasonal weather patterns in ASEAN countries (Table 10). There is a notable trend of increasing temperatures, with all countries recording a marked increase in temperature over the past few decades, along with increasing frequency of hot days and nights and decreasing frequency of cold days and nights (DMH, 2012; Hadley Centre, 2011; RIMES, 2011; Thai Metrological Department, 2013; PAGASA, 2011; McSweeney et al., 2008; Schafer, 2003). Trends in precipitation are more difficult to distinguish. There has been a high level of intra-seasonal and inter-annual variability in regional rainfall patterns over the past few decades (McSweeney et al., 2008), with an overall trend up to 2000 towards decreasing rainfall and fewer rainy days (ADB, 2009). Communities throughout the region have reported that rainfall patterns are increasingly erratic and difficult to predict (Jennings and Magrath, 2009; RECOFTC, 2012).

The behaviour of the monsoon in the region is influenced by the El Niño–Southern Oscillation (ENSO) and La Niña–Southern Oscillation (LNSO) events. The ENSO generally brings warmer and drier conditions than average, while the LNSO produces cooler than average conditions and increased rainfall (McSweeney et al., 2008; Hadley Centre, 2011). Delayed onset of the wet season has been observed in many countries (RIMES, 2011), including Lao PDR (Lefroy, 2010; RECOFTC, 2013), Myanmar (DMH, 2012) and Cambodia, where communities in the eastern province have observed a two-month delay in the arrival of the wet season, from April to June, since 1997 (RECOFTC, 2012). In Indonesia, the onset of the wet season in parts of Sumatra and Java was delayed by up to 20 days from 1991 to 2003, compared with the situation from 1960 to 1990.²⁸ In contrast, Viet Nam's rainy season, although unpredictable, appears to be starting earlier than usual (Jennings and Magrath, 2009).

This high level of unpredictability has serious implications for agricultural production, food prices and food security in the region.

²⁸ See <http://weadapt.org/knowledge-base/small-islands-and-climate-change/indonesia>.

Table 10: Reported changes in the climate in the ASEAN region

Country	Temperature	Hot and cold days and nights	Precipitation	Extreme weather events
Cambodia	Mean annual temperature increased by 0.8°C since 1960. Greater extremes between maximum and minimum temperatures in the past decade.	Increased frequency of hot days (13%) and nights (17%) from 1960 to 2003. Decrease in cold days (5%) and nights (13%) over the same period.	No significant change in mean rainfall or amount of rain falling in heavy events since 1960. High level of year-to-year variability. The wet season in eastern regions starts later than when it did before 1960.	More frequent flooding and drought.
Indonesia	Mean annual temperature increased by about 0.3°C. Dry season increase of 1°C. Wet season increase of 0.5°C over the past 50 years.	Increase in warm days (15%) and nights (18%) and decrease in cool nights (15%) between 1960 and 2003.	Overall annual precipitation has decreased by 2–3%. Decline in annual rainfall in southern regions and an increase in northern regions. Wet season rainfall in southern region has increased, and dry season rainfall in the northern region has decreased.	Increasing incidence of forest fires.
Lao PDR	Temperatures increased on average by 0.1–0.3°C each decade from 1951 to 2000. The highest average temperature increased by 1°C from 1996 to 2003.	No data.	Annual rainfall decreased by 160 mm over the last 50 years. Rainfall patterns erratic. North and central regions had low rainfall in 1998 and high rainfall in 2003. Central provinces have higher rainfall. Delay in onset of wet season, but rains start earlier in some northern provinces and later in some southern provinces.	Extreme rainfall events have increased. The severity and frequency of floods and droughts increased over the past 30 years.
Malaysia	Average temperature increase of 0.5–1.5°C in Peninsular Malaysia and 0.5–1°C in East Malaysia.	No data.	Peninsular Malaysia: decrease in rainfall in 1998–2007, compared with 1961–1990. Dry years more frequent and intense. Malaysian Borneo: increased rainfall for 1998–2007, compared with 1961–1990.	Rainfall intensity increasing. More frequent flash floods and strong winds. Increase in frequency of extreme weather.
Myanmar	Increasing temperatures; highest temperatures were recorded in March, April and May 2010.	Significant increase in warm nights.	Reduced duration of wet season and decrease in monsoon intensity from 1960 to 2009.	Monsoon season became shorter and arrived later after 1977. Increase in forest fires.
Philippines	Mean temperature increase of 0.65°C between 1951 and 2010. Maximum temperature rose by 0.36°C and minimum temperature rose by 1°C.	Increasing number of hot days. Decreasing number of cool nights.	Mean annual rainfall and the number of rainy days have increased since 1960. Intensity and frequency of extreme rainfall appears to be increasing in many parts of the country.	Recorded floods and storms have risen, from fewer than 20 during 1960–1969 to nearly 120 in 2000–2008. Typhoon Hainan in 2013
Thailand	Mean minimum temperature increase of 1.1°C since 1961. Mean maximum temperature increased by 0.7°C since 1961.	Increase in hot days and nights. Decrease in cool days and nights.	No clear trends in rainfall patterns but appears to have increased over the past decade.	Increasing incidence of forest fires.
Viet Nam	Mean annual temperature rise of 0.4–0.7°C since 1960. Rate of increase is most rapid in the dry season and in the South.	Increase in frequency of hot days (8%) and hot nights (13%) since 1960. Decreased frequency of cold days (3%) and nights (10%) since 1960.	Increasing rainfall trends noted in Mekong Delta since 1976. Decreasing trends of annual rainfall noted in Red River Delta from 1961 to 2000.	Typhoons becoming stronger and tracking further south.

Sources: McSweeney et al., 2008; UNDP country profiles for Cambodia and Viet Nam. RIMES Technical Reports for Cambodia, Lao and Myanmar. Lao PDR NAPA, 2009. WWF, 2007; Hadley Centre, 2011 for Indonesia. Myanmar DMH, 2012. TMD, 2013; PAGASA, 2011; Schafer, 2003; Vu, 2011 for Viet Nam. ADB, 2009; RECOFTC, 2012.

The frequency and intensity of tropical cyclones originating in the Pacific Ocean is increasing, affecting the Philippines and Viet Nam in particular (MMD, 2009). The frequency of typhoons increased more than fourfold between 1990 and 2003 (ADB, 2009). In Viet Nam, communities have reported that storms are more violent, bringing heavier rainfall and flooding (Jennings and Magrath, 2009). Typhoons are occurring later in the year and now occur in southern regions, where they were previously uncommon (ADB, 2009; MONRE, 2003; Vu, 2011). Coastal communities are reporting stronger and higher tides that bring seawater further upriver than before (Jennings and Magrath, 2009). Communities in eastern Cambodia have also experienced more frequent and severe storms (RECOFTC, 2012).

Climate-related hazards have increased over the past five decades, most commonly flooding, landslides and water- or vector-borne diseases (Boer and Perdinan, 2008). Severe droughts and floods are regularly affecting the region, with conditions becoming more variable and frequent. For example, record-high water levels recorded in the Mekong River in 2008 were followed shortly after by record lows (RECOFTC, 2013). Indonesia experienced a severe drought in 1997–1998, influenced by the ENSO, followed by severe flooding associated with the LNSO in 2001. Lao PDR has seen the number of severe floods and droughts increase in the past three decades (GOL, 2009).

Sea levels are currently rising by 1–3 mm every year. Forest fires have also increased over the past 20 years. These are attributed to the rise in temperatures and a decline in rainfall, in combination with changing land use patterns. Peat fires in Indonesia in the 1997–1998 El Niño dry seasons affected more than 2 million ha of land and may have emitted up to 2.57 petagrams of carbon²⁹ into the atmosphere (MMD, 2009).

3.1.2 Projected trends

Future climate scenarios indicate that, without concerted action to reduce greenhouse gas emissions, annual mean temperatures will continue to rise. The latest climate projections suggest a 2°–4°C increase by the end of this century (ADB, 2009; World Bank, 2012). Temperature increases in Southeast Asia are expected to be more extreme than the global average, with possible increases of up to 6°C by 2050 in certain parts of the Mekong River Basin (Mekong ARCC, 2013). In general, wet seasons are expected to become wetter, dry seasons will become drier (RIMES, 2011). The dry season will also become longer, leading to more frequent drought conditions. Greater variations in river flows are expected; for example, water levels in the Mekong River are expected to be higher in the wet season and lower in the dry season, suggesting increased risks of both flooding and water shortages. Rainfall patterns will become increasingly unpredictable, with more rain falling in shorter periods of time, increased surface run-off and risk of flooding (Hoanh et al., 2004). Heavy rains, floods and storms will damage crops, farmland, livestock, fisheries and forests and, combined with land use changes, may result in greater soil erosion and more frequent landslides.

Sea levels in Cambodia and Myanmar are projected to rise by 15 cm by 2030 and up to 45 cm by 2070. Sea level in Viet Nam is expected to rise by 33 cm by 2050 and by as much as 1 m by 2100 (ISPONRE, 2011). In Malaysia, sea levels have been rising by 1.3 mm per year and are projected to rise by 50 cm by 2050 (NRE, 2011). Sea-level rise, combined with stronger storms and storm surges, present a serious threat to coastal settlements.

These impacts will have considerable adverse impacts on a range of natural and human systems, such as food production, water supply, infrastructure, property, economic activity, human health and security. Without greater effort on mitigation and adaptation, the costs associated with future climate change in the region could be as high as 6.7 percent of GDP per year (ADB, 2009). The impact of climate change will be disproportionately felt by poor people in rural areas because their incomes, livelihoods and survival are more dependent upon natural resources and agriculture.

3.1.3 Projected impacts of climate change on forests and forest-dependent people

Climate change has the potential to tremendously change forest ecosystems, but the effects are extremely complex and not yet fully understood (Broadhead et al., 2009). Forests are sensitive to changes in temperature, precipitation and seasons. Climate change is likely to affect such natural processes as seed dispersal and pollination, reproduction, growth, regeneration and productivity and reduce resistance to pests, invasive species and disease, leading to changes in forest composition, species distribution and biological diversity. In the tropics, climate change may lead to a reduction in forest cover (Fischlin et al., 2007) or the replacement of forest areas with tropical savannah and shrub (ADB, 2009). The “comfort zones” of plants

²⁹ 1 Pt of carbon is equal to 1 billion metric tonnes, or 1 gigatonnes of carbon.

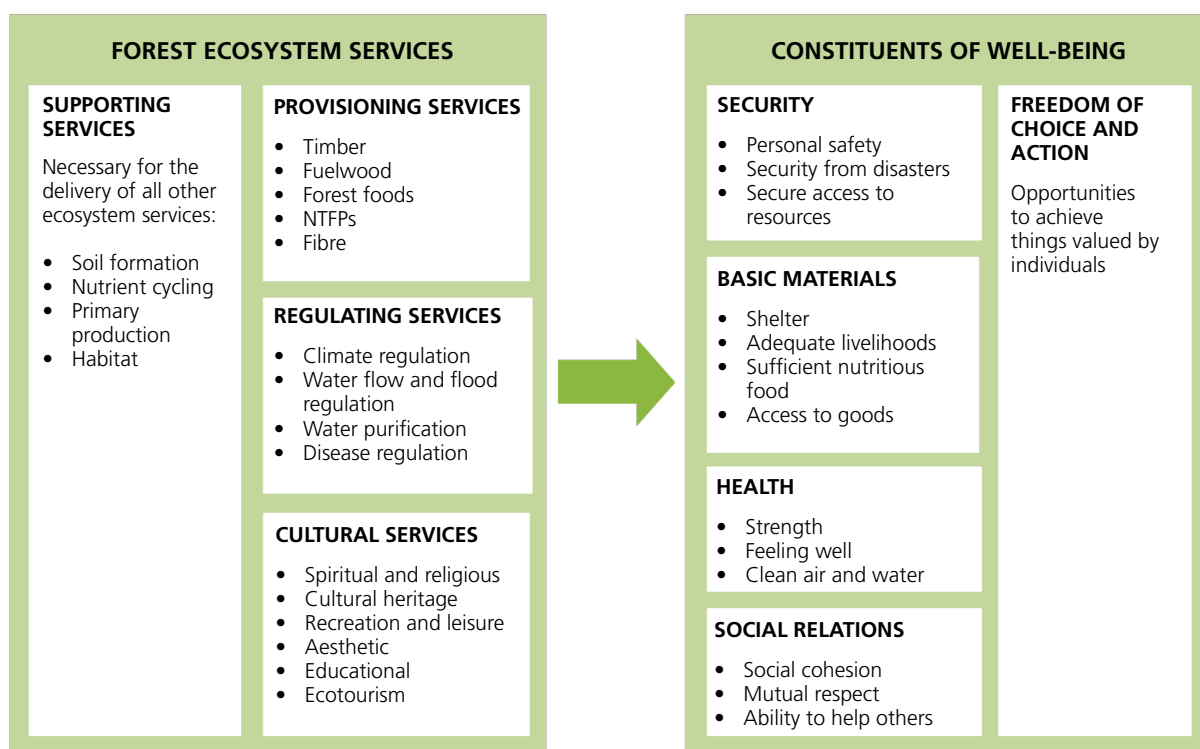
and crops, including rubber and coffee, may change, as may the availability of forest products (Mekong ARRC, 2013). The incidence of forest dieback, pests, pathogens and invasive species is likely to increase (Broadhead et al., 2009; FAO, 2012). Forests are also exposed to such risks as sea-level rise, storms and forest fires. In Myanmar in 2008, Cyclone Nargis damaged 35,000 ha of mangrove forests in the Ayeyarwady Delta; forest fires already threaten the health and security of forest communities (Htwe Nyo Nyo, 2012). In the future, the frequency and intensity of forest fires and storms and the damage caused by them are expected to increase.

Different forest types and forests in different regions are vulnerable to different climate change risks. Coastal forests and mangrove forests are more exposed to sea-level rise, increased salinity, storm damage and coastal erosion. Tropical rainforests are sensitive to warming and changes in rainfall, and dry forests are at increased risk from drought and forest fires (Locatelli et al., 2008). Forests dominated by a small number of species, such as plantations, are considered more vulnerable to outbreaks of disease and pests than forests with high levels of species diversity (FAO, 2001). Many forest ecosystems are also under pressure from human activities, such as overlogging, conversion and degradation (Broadhead et al., 2009). Climate change will exacerbate the existing pressures that forests are facing. Forest management and conservation practices will need to respond to climate change threats and reduce the vulnerabilities of forests to the negative impacts of climate change (Locatelli et al., 2008).

Healthy forests provide a range of benefits or services that underpin the well-being of forest- dependent people and human society in general (Figure 7). These services fall into four categories:

- Provisioning services: food, fibre, fuel, raw materials, medicinal plants and genetic resources.
- Regulating services: regulating hydrological cycles, micro-climates, carbon sequestration and storage, reducing erosion and maintaining soil fertility and moderating extreme weather events.
- Cultural services: recreational, educational, spiritual or religious benefits.
- Supporting services: such as soil formation, nutrient cycling, primary production and habitat that underpin all other services.

Figure 7: Ecosystem services and the constituents of well-being



Source: Adapted from the Millennium Ecosystem Assessment, 2005; Locatelli et al., 2008.

Climate change is expected to alter the capacity of forests and woodlands to deliver ecosystem services (Osman-Elasha et al., 2009; FAO, 2012). A number of studies suggest that rising temperatures, longer dry seasons and increasing concentrations of CO₂ in the atmosphere could reduce the ability of forests to store and sequester carbon, potentially converting forests from carbon sinks to carbon sources (FAO, 2012; Locatelli et al., 2008).

Any changes in forest ecosystems will inevitably impact the livelihoods of forest-dependent people who use forest products for subsistence, income generation and as safety nets in the event of damage to other livelihood assets (Osman-Elasha et al., 2009). In Lao PDR for example, forest resources contribute directly to the livelihoods of 85 percent of the population (ADB, 2000 in AIT, 2001). In Cambodia, more than five million people – almost 50 percent of the rural population – depend on forests for 20–50 percent of their livelihood needs (Vong and Dutschke, 2009). Changing climatic conditions will alter the growth rates, yields and availability of timber and non-timber forest products (NTFPs), with a mix of positive and negative implications for income generation, food security and the health of these people.

The level of vulnerability of forest-dependent people varies as a result of their particular circumstances. Depending on their location, they may be more exposed to storms and typhoons, heavy rainfall, tidal surges, sea-level rise or drought. People who rely heavily on forest products and natural resources for subsistence and household income will be more sensitive to crop damage, forest fire and the disruption to markets caused by climate change. Communities with secure tenure are likely to have higher levels of adaptive capacity because they are more likely to invest in adapting their natural resources, homes and villages to respond to the impacts of climate change. The most vulnerable people in society, including the poor, indigenous communities, forest-dependent people, landless and stateless people, women, children and other marginalized groups, are more vulnerable to the risks and stresses caused by climate change. Even within individual communities, some people are more vulnerable than others due to a complex mix of social, cultural, economic and political factors.

3.2 Climate change policies and strategies

The ASEAN community has issued various declarations and statements on climate change (Box 7).

Box 7: ASEAN declarations on climate change

- The **2007 Singapore Declaration on Climate Change, Energy and the Environment** outlined ASEAN countries' commitments to:
 - deepen the understanding of vulnerability to climate change in the region;
 - implement appropriate mitigation and adaptation measures;
 - carry out individual and collective actions in multiple sectors to address climate change;
 - acknowledge the importance of adaptation in the region;
 - reduce deforestation, forest degradation and forest fires by promoting sustainable forest management and biodiversity protection, tackle illegal logging and address underlying economic and social drivers; and
 - promote conservation and the sustainable management of coastal and marine ecosystems.
- The **2008 ASEAN Common Position Paper on REDD** for submission to UNFCCC Conference of Parties 14.
- The **2009 Singapore Resolution on Environmental Sustainability and Climate Change** included resolutions on environmental protection, biodiversity conservation, natural resource management and climate change, such as:
 - greater cooperation in understanding, responding and adapting to climate change;
 - increasing the extent of forest cover in the ASEAN region by 10 million ha by 2020; and
 - focusing on biodiversity conservation as a key part of climate change mitigation and adaptation.
- The **2010 Statement on a Joint Response to Climate Change** recognized the need to incorporate mitigation and adaptation into national development strategies, in line with sustainable development. It highlighted the importance of sustainable forest management for environmental sustainability and climate change mitigation and the need for effective implementation of REDD+ to enable ASEAN countries to contribute to global efforts to reduce emissions, conserve biodiversity and promote sustainable livelihoods and natural resource management.

The ASEAN policy on climate change is developed through a multisector framework that considers different areas and issues, such as natural resource management, extreme events, energy and transport and sustainable cities (Trevisan et al., 2013). The ASEAN Climate Change Initiative was established in 2010 to strengthen regional cooperation on climate change and give the region a single voice in climate change negotiations. The Climate Change Initiative promotes coordination among ASEAN countries in policy and strategy formulation, capacity building, information sharing and technology transfer. Internationally, the Climate Change Initiative encourages the work of the IPCC and the UNFCCC process, according to the principle of “common but differentiated responsibility and respective capability”.

At regional level, as a response to impact of climate change in all sectors, the region has developed the ASEAN Multi-Sectoral Framework on Climate Change and Food Security (AFCC). The AFCC provides ASEAN a platform for regional cross-sectoral response to interlinked issues of climate change and food security. AFCC, endorsed by the ASEAN Ministers on Agriculture and Forestry (AMAF) Meeting in November 2009, addresses elements of the Blueprints for the ASEAN Economic Community.

At the national level, ASEAN governments are integrating climate change policies and strategies into national and sector development planning to protect and sustain development progress (Letchumanan, undated). Climate change impacts will vary according to location, meaning that each region or province will require an individual response tailored to its particular risks and vulnerabilities. The integration of climate change responses into subnational planning, particularly in the context of forests, appears to be somewhat limited at the present time.

Most governments have established a high-level coordinating body to oversee the coordination of climate change responses across government ministries, departments and sectors; they have developed a national climate change policy to address mitigation and adaptation and are working to mainstream these policies into development planning.³⁰ Strategies and action plans have been developed that cover emissions reduction, energy conservation, low-carbon development and disaster risk reduction, but implementation of these policies appears to be proceeding more slowly.

Many ASEAN governments have yet to fully integrate climate change considerations into their forest policies, laws and development strategies (Vickers et al., 2010) or into related policy areas, such as agriculture. In addition, explicit links between the National Adaptation Programmes of Action (NAPAs) and adaptation strategies and national strategies and programmes on deforestation and forest degradation appear limited at the present time.

3.3 Climate change mitigation and forests

According to the Asian Development Bank, Southeast Asia's greenhouse gas emissions were 5,187 million tonnes of CO₂ equivalent³¹ in 2000. This is thought to be approximately 12 percent of the total global emissions. Given the region's expanding population and rapid economic development, its contribution to global emissions is likely to increase in the future. In 2000, as much as 75 percent of Southeast Asia's carbon emissions were generated by land use change and forestry, with 15 percent from the energy sector and 8 percent from agriculture (ADB, 2009). Emissions from deforestation in the ASEAN region were estimated at an average of 225 million tonnes of carbon per year between 1990 and 2005 (CIFOR, 2008).

All ten ASEAN countries are non-Annex I Parties to the UNFCCC and thus are not required to undertake compulsory reductions of greenhouse gas emissions. Nonetheless, many governments are undertaking action on mitigation appropriate to their national circumstances. Some have made voluntary pledges to reduce their emission levels. Indonesia intends to reduce its greenhouse gas emissions by 26 percent by 2020 through business-as-usual practices and by up to 41 percent if additional support is received from the international community (MOE, 2010). Malaysia has pledged to reduce greenhouse gas emission intensity by 40 percent by 2020, compared with its 2005 levels. Many countries are developing national strategies on low-carbon development and renewable energy.

³⁰ The main exception is Myanmar, which has yet to develop a specific policy addressing climate change.

³¹ Million tonnes of CO₂ equivalent.

3.3.1 Forest carbon stocks

In the 2010 FAO forest resources assessment, the researchers estimated there are 22,028 million tonnes of carbon stored in ASEAN forests. This is approximately 60 percent of the total carbon in all Asian forests and 8 percent of the global total (FAO, 2010a). Gibbs et al. (2007) estimated that carbon stored in above- and below-ground biomass in ASEAN forests was between 20,000 and 46,000 million tonnes of carbon – 14 percent of the total in the countries they studied. However, current methods of data collection have varying degrees of accuracy, and estimates of forest carbon stocks vary considerably (Gibbs et al., 2007). National data on forest carbon stocks are not yet available for all countries.

Table 11: Estimates of forest carbon in ASEAN countries and other regions

Country	National data MtC	FAO forest resources assessment 2010 ³² MtC	Gibbs et al., 2007 MtC
Brunei Darussalam	-	72	40–115
Cambodia	2,960	464	957–1,914
Indonesia	-	13,017	10,252–25,547
Lao PDR	-	1,074	718–1,870
Malaysia	-	3,212	2,405–4,821
Myanmar	-	1,654	2,377–5,182
Philippines	1,942	663	765–2,503
Thailand	1,897	-	1,346–2,489
Singapore	-	880	-
Viet Nam	-	992	774–1,642
ASEAN total	-	22,028	19,634–46,083
Asia	-	34,891	-
Africa	-	55,736	-
South America	-	93,270	-
North and Central America	-	37,457	-
Europe	-	45,009	-
Oceania	-	3,902	-
Global total	-	270,265	-

3.3.2 Current status of REDD+

At the regional level, the ASEAN countries have issued a Common Position declaring their preferred approach to REDD (Box 8). At the national level, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Thailand and Viet Nam have all initiated some form of REDD+ activities for reducing CO₂ emissions produced by deforestation and forest degradation. REDD+ readiness activities in some countries, such as Cambodia and Viet Nam, are well advanced, with legal frameworks and national strategies in place and demonstration projects underway. In other countries, such as Myanmar and Thailand, REDD+ activities are still at a relatively early stage.

³² Adapted from the 2010 forest resources assessment global tables: carbon stock in living forest biomass (FAO, 2010).

Box 8: ASEAN's Common Position on REDD

In 2008, ASEAN nations issued a Common Position declaration on REDD that encompasses five points:

1. Due to lack of historical data, reference emission levels should be left open to approaches that are most suitable and effective based on the national capacity of member States.
2. Policy approaches and readiness activities should be open to a range of mitigation activities, including reducing deforestation and forest degradation, sustainable forest management, conservation and enhancement of carbon stocks, depending on the circumstances and capacity and the circumstances of the country.
3. Market-based, fund-based and other positive incentives should be used, depending on country readiness.
4. Readiness activities under other related financial support, such as the Climate Investment Fund and the Forest Investment Programme, should be expanded to include improved forest management, conservation and enhancement of carbon stock through sustainable forest management.
5. Annex 1 countries should support capacity building, technology transfer, improvement of infrastructure and exchange of knowledge in developing countries.

In May 2013, Indonesia renewed its moratorium on the conversion of forests and peatlands to concessions. The moratorium is estimated to temporarily protect 25.3 gigatonnes of carbon (Austin et al., 2012). A number of other forestry programmes are also contributing to mitigation (Box 9); such as the Lao–German Protection through Avoided Deforestation Project and Myanmar's Dry Zone Greening Programme. The latter was first initiated in 1994 and aims to plant 1.5 billion trees on 1.5 million ha of land in 13 districts by 2016. The Myanmar Government reported that 117,414 ha of land in the dry zone were reforested from 1994 to 2006, the most recent year that data was submitted to the United Nations Convention to Combat Desertification (IRIN, 2011).³³

Box 9: Peat forests and climate change

Peat forests are an ancient and unique ecosystem, characterized by waterlogged forests growing on a layer of dead plant material up to 20 m thick, with low levels of nutrients and acidic soils. This harsh environment has led to the evolution of many species of flora uniquely adapted to these conditions. Peat soils provide a range of ecosystem services, such as regulating water flow, reducing the impact of floods, hydrating soils during droughts and are an important carbon sink (UNDP, 2006).

The conversion and degradation of peatlands for agriculture development is a major concern for climate change mitigation because peat soils contain large amounts of stored carbon (Murdiyarso et al., 2009). Peat forests depend on a naturally high water level that prevents the soil from drying out. Drainage of the soil exposes peat matter to the air, causing it to decompose and release CO₂ into the atmosphere. The drained peat is highly flammable. Peat fires are a recurrent problem, and once started, are extremely difficult to extinguish. Smoke and smog from peat fires causes serious health problems, transport disruption and economic losses.

In the past ten years, approximately 9 million ha of peatlands in the region have been burned or drained, releasing between 4 and 7 petagrams of carbon into the atmosphere (Page et al., 2002). Peat forests are estimated to account for 25 percent of deforestation in Southeast Asia (Hooijer et al., 2006). As much as 20 percent of all Malaysian palm oil is produced on drained peat soils; in Sarawak, the figure may be as high as 44 percent. From 2000 to 2010, peat forests decreased by 55 percent in Sarawak and by 40 percent in Riau and Jambi (Miettinen et al., 2011). An estimated 20 million tonnes of CO₂ is released into the atmosphere from the 510,000 ha of peat soils drained for palm oil production in Malaysia each year (SarVision, 2011).

³³ See www.irinnews.org/report/94201/myanmar-deforestation-threatens-breadbasket.

3.3.3 Social forestry and climate change mitigation

Social forestry has a valuable role in climate change mitigation. By regulating forest use and reducing the excessive and uncontrolled exploitation of forest resources by local people, social forestry can reduce forest degradation and thus the amount of CO₂ emitted from forests. Moreover, community forest management has been found to result in positive improvements in the amount of forest biomass and carbon stocks. It has been estimated that the average accumulation rate of CO₂ in community forests is around 5.5 tonnes per ha per year in dry savannah forest, 7.5 tonnes in temperate mountain forests and 21 tonnes in tropical rainforests, subtropical forests and lowland forests (Skutsch and Solis, 2010). Social forestry is unlikely to be effective in reducing forest degradation caused by commercial exploitation of timber resources or large-scale deforestation and forest clearance by external actors. The economic drivers behind these activities are very powerful and require different responses.

Social forestry can also support the implementation of large-scale reforestation programmes, such as in the case of Viet Nam's 5 million ha reforestation programme. At present, there are an estimated 52 million ha of forest land without forest cover in the ASEAN region. Social forestry could be used as a strategy to promote reforestation and sustainable management of this land and help to increase the rates of carbon sequestration and storage.

Social forestry programmes also can be a tool for measuring changes in forest carbon stocks. With the provision of basic training and equipment, local communities can measure and monitor forest carbon stocks in a cost-effective way. This has the potential for the collection of large amounts of data that could feed into national carbon data sets (Skutsch et al., 2008).

3.4 Climate change adaptation and forests

As least developed countries, Cambodia and Lao PDR have developed NAPAs to determine their urgent adaptation needs and prioritize areas for action. Development of Myanmar's NAPA is ongoing. The NAPAs and the National Communications to the UNFCCC outline the likely impacts of climate change on forest ecosystems and adaptation options in the forest sector. The NAPAs declare forests as a priority area for climate change adaptation and specify projects to improve sustainable forest management through reforestation, agro-forestry or community-based mangrove restoration as priority areas for funding. However, financial support for these initiatives and implementation of NAPA projects has been slow to materialize. In Cambodia, there are at least five subnational projects and one national adaptation project that include elements of community forestry components.

The countries not considered least developed also have developed adaptation strategies. Viet Nam developed an Action Plan Framework for Adaptation to Climate Change (2008); the Philippines developed a Strategy for Climate Change Adaptation for 2010–2022; and Indonesia is finalizing its National Adaptation Implementation Plan. So far, these national adaptation strategies tend to deal with forestry in a piecemeal and uncoordinated manner; the need for adaptation of forests and forest management practices has been largely overlooked (RECOFTC, 2012).

3.4.1 Roles of social forestry in climate change adaptation

Social forestry can contribute to local climate change adaptation strategies in a number of ways. First, the presence of community forests can help reduce the exposure of villages and people to climate change risks, such as cyclones, typhoons, storm surges and coastal erosion. In some circumstances, the maintenance of healthy community forests may also reduce the risks of soil erosion and landslides that may result from increasingly heavy rainfall. Second, when community forests are well managed, community members are likely to have more secure access to a range of forest products that contribute to household income, food security, health and shelter. Forest products provide alternative sources of food and cash income if crops are damaged by storms, floods or droughts, and they provide materials to rebuild and repair homes, boats and other assets. Finally, social forestry helps to strengthen local institutions, build management capacities and increase the level of social capital within communities, better equipping them to deal with the challenges of climate change.

Forest communities possess in-depth knowledge about the forests they manage and use. This traditional knowledge and local wisdom often provides the basis for appropriate and cost-effective climate change adaptation strategies. Throughout the region, local communities are using their forest resources to strengthen their resilience to climate change. Interesting examples are emerging of forest communities taking innovative steps to protect their forests and villages from the impacts of climate change (Box 10).

Box 10: Bamboo wall in Samut Sakhon, Thailand

Samut Sakhon Province is located in the inner Gulf of Thailand, where sea-level rise and coastal erosion are impacting upon traditional coastal livelihoods. In response to these challenges, one community has developed its own “bamboo wall” to reduce the impacts from coastal erosion and strong sea waves. The bamboo wall promotes soil sedimentation along the coastline, and this in turn helps to expand the potential area for growing mangroves. This remarkable adaptive strategy has been taken up by other local communities and has even been mainstreamed into government action plans to address coastal erosion.

3.5 Opportunities, gaps and challenges

Forests have been widely recognized, nationally and regionally, as a key part of mitigation and adaptation responses. Social forestry in particular offers a unique opportunity to contribute to climate change mitigation, improve local livelihoods and enhance the resilience of forest communities to climate change at the same time. However, climate change is likely to place greater demands on social forestry systems and communities. Forest management systems may need to become more innovative and develop new ways of managing forest resources sustainably under more challenging climatic conditions. Community forest managers will need to manage and adapt to the impacts of climate variability and change on their forests. This may include enhancing landscape connectivity, reducing forest fragmentation, restoring forests on sloping land (Broadhead et al., 2009) and modifying or developing new forest management practices to respond to changing risks, such as increased risk of forest fires, pests, insects and diseases.

As mentioned earlier, many of the forests allocated to local people through community or social forestry programmes are degraded forests. As they regenerate, they have the potential to sequester large amounts of carbon and make a valuable contribution to climate change mitigation. However, degraded forests also have low levels of productivity in the early stages of regeneration, and the economic or livelihood benefits they provide may be limited. The incentives for local people to participate in social forestry activities in the absence of immediate financial returns may be low (Poffenberger, 2006; Nguyen et al., 2009a, Broadhead and Izquierdo, 2010; Tint et al., 2011; Blomley et al., 2010; Dahal et al., 2010). Moreover, the extent that degraded forests are able to contribute to building local people's resilience to climate change is also likely to be limited – until the forests attain higher levels of health and productivity.

In the context of forests, global climate change mitigation goals may not always be compatible with adaptation goals and the basic needs of local communities. Stringent restrictions on forest access and use rights of local communities in the interests of mitigation could impact negatively on local livelihoods and climate change resilience. Without the provision of viable alternatives for forest users, such strategies are likely to be largely ineffective and may lead to “leakage”. In the future, an important challenge for social forestry in the ASEAN region will be balancing these various – and sometimes conflicting – goals of sustainable forest management: sequestering and storing carbon and conserving forest resources and ecosystem services in the face of more challenging conditions while at the same time meeting local livelihood needs and enhancing local resilience to climate change.





4. Country summaries



This chapter presents a detailed overview of each of the eight focus countries, summarizing data and trends relating to social forestry and climate change mitigation and adaptation.

4.1 Cambodia

Updated national data: Cambodia	
Total population	14,701,717 in 2011
Rural population	11,521,529 in 2009 78% of total population
Total country area	18,160,674 ha
Total land area (excluding inland water)	17,652,000 ha
Total designated forest area	10,363,789 ha in 2010 57% of total land area
Actual forest cover	10,363,789 ha in 2010 57% of total land area
Production forest	3,374,000 ha 33% of total forest area
Protected forest – soil and water	1,539,416 ha 14.85% of total forest area
Protected forest – biodiversity	3,134,471 ha 30.24% of total forest area
Forest area with official community forestry agreements	Community forests with official agreements: 229 sites covering 183,725 ha Community forests approved by MAFF: 288 sites covering 250,106 ha Community forests initiated: 451 sites covering 397,745 ha
Carbon stocks	In above- and below-ground living biomass: 464 Mt In litter: data not available In soil: 384 Mt
Deforestation (total forest)	-91,748 ha per year (2006–2010) -0.85% of total forest area per year (2006–2010)
Social/community forestry programmes and activities	Community forestry under the Ministry of Agriculture, Forests and Fisheries Community forestry for REDD+ Community-based production forest Community commercial forestry Partnership forestry Community fisheries under the MAFF Fisheries Administration Community protected areas under the Ministry of Environment Community conservation forestry in protected forests in protected forest reserves
Climate change programmes and activities	UN-REDD partner country 2 REDD pilot projects 4 CDM projects (non-forestry) CAM-REDD 5 pilots of Forest Administration–Cambodia Climate Change Alliance project RECOFTC Cambodia projects

Source: Cambodia forest cover from RGC, 2010; Cambodia forest area from RECOFTC, 2013.

Forest data: Key changes and emerging trends

The Royal Government of Cambodia carried out a forest cover assessment in 2010. Total forest cover was estimated at 10.4 million ha, or 57 percent of total land area.³⁴ Total forest cover declined between 2006 and 2010, from 59 percent to 57 percent of the total land area. Forest cover is falling by an estimated 91,748 ha each year (-0.85 percent of total forest cover).³⁵ Despite the high rates of deforestation, Cambodia still has one of the highest levels of forest cover in Southeast Asia.

Of the total forest area, 24 percent is deciduous forest, 19 percent is evergreen forest, 7 percent is semi-evergreen forest and 1 percent (about 169,000 ha) is planted forest (FA, 2011). Approximately 40 percent of the forests have some level of protection. Cambodia's forests contain an estimated 464 million tonnes of carbon in living forest biomass (FAO, 2010e). Around 55 percent of the forests, including 45 percent of forests in protected areas, are considered to be degraded. Encroachment and pressure on forest land from large-scale operators and households are reportedly increasing (Johnsen and Munford, 2012).

Community forestry data

By December 2012, 451 community forestry sites had been initiated, covering 397,745 ha, or 3.8 percent of the total forest area (RECOFTC, 2013). Approximately half the sites are covered by official community forestry agreements, representing 183,725 ha (1.8 percent of total forest area).

Figure 8: Cambodia community forestry statistics as of December 2012

Cambodia	Cambodia Community forests under development			Community forests approved by MAFF			Community forests with agreements		
	No.	HHs	ha	No.	HHs	ha	No.	HHs	ha
Total	451	106,694	397,745	288	67,454	250,106	229	54,354	183,725

Note: MAFF = Ministry of Agriculture, Forestry and Fisheries; HH = households.

Source: Stephenson, 2013.

Since 2010, the number of sites covered by community forestry agreements has risen, from 94 to 229. However, the area of land these agreements represent is increasing more slowly, from 113,544 ha to 183,725 ha over the past three years (Blomley et al., 2010; RECOFTC, 2013).

Policies and laws on forests and social forestry

Forest land in Cambodia is classified into the permanent forest reserves, protected areas and private forests. Forest policy is based upon the Forestry Law (2002). The law provides the legal basis for community management and customary use of production forests in the protected forest reserves. There is no provision to enable community forestry within protected forests in the protected forest reserves, although local people have customary rights to collect various forest products for domestic use, traditional customs and construction (RGC, 2002; Oberndorf, 2010).

The sub-decree on Community Forestry Management (2003) recognized community forestry as an official government strategy, and the Community Forestry Guidelines, issued by the Ministry of Agriculture, Forestry and Fisheries (MAFF) in 2006, established the processes for determining, legalizing and managing community forests. Community forests can be established for the purposes of sustainable forest management, protection and development, customary use, extraction of forest and non-timber forest products and poverty reduction (MAFF, 2006). A range of decentralized forest management approaches have been developed, of which the main approach is community forestry, as per the 2003 subdecree and under MAFF jurisdiction (Blomley et al., 2010).

³⁴ The forest reserve in Cambodia has not yet been officially demarcated. Thus, the figure for total forest land is given as the same as total forest cover.

³⁵ Other Forest Administration reports suggest a higher rate of forest loss, at an average of 142,500 ha (-1.1 percent) of forest cover each year between 1990 and 2010 (RGC, 2012).

The National Forest Programme, 2010–2029 focuses on achieving nine strategic objectives through six priority programmes, including forest demarcation, classification and registration, and community forestry. The National Forest Programme recognizes that climate change will impact upon forests and that mitigation and adaptation will be needed to sustain natural forests for the purposes of production, livelihoods and provision of environmental services. The Programme also recognizes the need to expand the legal framework to enable community forestry in a wider range of situations, including community conservation forestry in protected forests, partnership forestry and community-based production forestry; by 2030, it aims to have allocated 2 million of hectares of forest land to approximately 1,000 communities through the community forestry agreements (MAFF, 2010).

The Protected Area Management Law (2008) recognizes the traditional forest uses of local communities and permits the establishment of community-protected areas in special zones within protected areas under the Ministry of Environment (RGC, 2012). The Ministry wants to establish 140 community forestry agreements by 2015 (Johnsen and Munford, 2012), but as of 2011, the legal framework had not yet been completed (Bradley, 2011).

The right to indigenous communal land titles was first provided by the Land Law (2001), and the enabling sub-decree was eventually passed in 2009 (Evans, 2011). The first communal land titles were issued in December 2011, with a second issued to a village within the Seima Biodiversity Conservation Area in March 2012 (WCS, 2012).

Tenure arrangements and bundles of rights

Community forestry agreements hold for 15 years and cannot be sold or transferred. Agreements can be renewed for a further 15 years if a community has followed the terms, but renewal is not guaranteed. The short tenure period does little to incentivize long-term investment in sustainable forest management. The forest lands allocated for community forestry are often highly degraded and the short tenure period means that rights and benefits may be withdrawn shortly after the forest has regenerated to a productive level (Broadhead and Izquierdo, 2010). Additionally, community forestry agreements can be terminated with six months' notice if the Government deems the land capable of providing a "higher social and public benefit" through other uses (MAFF, 2006; Blomley et al., 2010), which creates a degree of insecurity that further undermines incentives for sustainable community-based forest management (RGC, 2010). Nonetheless, formal approval and registration of community forests does appear to increase tenure rights and reduce the risk of forests being converted to alternate uses or appropriated by external interests (Blomley et al., 2010).

The bundle of rights granted to communities varies, depending on the type of forest. In community forests, the Community Forest Management Plan provides guidelines for harvesting of forest products and by-products (RGC, 2002). Permits and the payment of royalties and premiums are required to harvest forest products for commercial or non-customary purposes (Prakas, 2006; Orbendorf, 2010). In community protected areas, local communities are permitted to collect timber and NTFPs for household use inside the sustainable-use zone, in accordance with a management plan, but commercial activities are prohibited. No land titles or transferable rights are granted. In Oddar Meanchey Province, the community forestry agreements in the REDD pilot sites have been modified to include rights to carbon benefits (Bradley, 2011), and a minimum of 50 percent of net income is supposed to flow to local communities. It is not yet clear whether the same approach will be taken in other REDD demonstration sites.

National climate change policies, strategies and programmes

Cambodia's Initial National Communication to the UNFCCC was submitted in 2002 and the Second National Communication is being finalized. The latter is expected to focus on the sectors with the highest greenhouse gas emissions and those most vulnerable to climate change, including energy, agriculture, industrial processes, waste, land use and forestry, water resources, human health and the coastal zone (UNDP, 2010).

There is a need to mainstream climate change into relevant national and subnational policies, budgetary and planning processes. Cambodia is preparing a Strategic Plan on Climate Change as a framework for mitigation, adaptation and sustainable development (DCA/CA, 2011). Consultation on the first draft of that plan is ongoing.

The Government has developed a National Green Growth Roadmap to reduce greenhouse gas emissions and maintain sustainable, low-carbon and socially inclusive economic growth. It outlines various strategies to mainstream green development practices into a range of sectors for adaptation and mitigation.

The Cambodia Climate Change Alliance is a multi-donor initiative funded by the European Union, the Swedish International Development Cooperation Agency, the Danish International Development Agency and the United Nations Development Programme (UNDP), anchored in the National Climate Change Committee, which is the government body for coordinating all aspects of climate change. The Climate Change Alliance addresses climate change and disaster risks at the national and subnational levels by building up capacity and strengthening institutions so that they can prepare for and mitigate climate change risks and by supporting vulnerable communities to increase their resilience to climate change and other natural hazards. It provides a point of engagement for development partners and a multi-donor financing facility for capacity building at the national and local government levels. So far, two rounds of grant allocations have taken place, and 19 grants were given to various line ministries, local governments and civil society organizations for efforts to enhance community resilience in the priority sectors. The Climate Change Alliance supports the development of a National Climate Change Strategy and Action Plan and the mainstreaming of climate change responses in priority sectors (Johnsen and Munford, 2012).

Adaptation

Climate change adaptation is a national priority (RGC, 2006). Cambodia's NAPA (2006) cites priority interventions to address the urgent needs for adaptation in key sectors: primarily agriculture, forestry, water resources management, public health and coastal resources management. Of the 39 projects listed for urgent action, four are being implemented under the Least Developed Country Fund as of August 2013.³⁶ The NAPA points out several barriers to implementation, including inadequate technical, financial and institutional resources of both the national and local governments, lack of awareness on climate change and limited integration of climate change into national development plans. According to a statement by the Director of the Climate Change Department (Ministry of Environment) during the Second National Forum on Climate Change in 2011, Cambodia would need \$200 million to fully implement the urgent and immediate adaptation actions that the NAPA proposes.³⁷

There are several projects ongoing to help communities build resilience to climate change adaptation and resilience, managed by various international and national NGOs. Many of them incorporate elements of social forestry, such as the Adaptation Fund Project in Protected Areas.

Mitigation

The Greenhouse Gas Inventory Report (2000) found that the biggest contributor to emissions in 2000 was land use change and forestry (49 percent), followed by agriculture (44 percent), energy (7 percent) and waste (less than 1 percent) (UNDP, 2010).³⁸ Land use changes, forest clearance, hydropower dams and water-intensive irrigation threaten to increase Cambodia's greenhouse gas emissions dramatically. However, adoption of large-scale biomass energy practices, sustainable agriculture and tree planting in open landscapes present considerable potential for carbon sequestration (Johnsen and Munford, 2012).

Ongoing mitigation initiatives in Cambodia include REDD+ readiness activities, an energy efficiency project in Siem Reap Province and a programme to build capacity to participate in the Clean Development Mechanism (CDM).

Progress on REDD+

The National REDD+ Task Force was established in August 2012, with a formal ministerial decree issued in February 2013. The Task Force is responsible for guiding all REDD+ readiness activities and consists of senior officials from the Forest Administration, Ministry of Environment, Fisheries Administration, the Ministry of Interior, the Ministry of Economy and Finance, the Ministry of Industry, Mines and Energy, the Ministry of Land Management, Urban Planning and Construction and the Ministry of Rural Development.

The 2010 REDD+ Roadmap (or Readiness Plan) is the first step towards creating a national REDD+ strategy. It outlines how Cambodia will prepare for and manage the REDD+ process and helps to harmonize support from development partners. Implementation of the Roadmap (step 2) is expected to continue until 2014, with implementation of REDD+ (step 3) expected to commence in 2015 (Lao, 2012).

³⁶ See http://unfccc.int/adaptation/knowledge_resources/IDC_portal/items/5632.php

³⁷ See www.akp.gov.kh/?p=10814 [2 Sept. 2013].

³⁸ Cambodia's Initial National Communication reported that the land use and forestry sector produced 79 percent of greenhouse gas emissions, while agriculture added 18 percent and energy added 3 percent, based on 1994 data (MOE, 2002).

The REDD+ readiness process in Cambodia is supported by the UN-REDD Programme and the Forest Conservation Partnership Facility, while CAM-REDD is supported by the Japanese International Cooperation Agency (JICA). The REDD national programme is focusing on developing necessary policies and institutions and capacity building. CAM-REDD supports various REDD readiness initiatives in the REDD+ Roadmap, including pilot projects, protected forests for REDD+, development of a national monitoring, reporting and verification system and transition from a project-based to a subnational approach.

The Forest Conservation Partnership Facility support is implemented through UNDP; it covers national bodies, such as the REDD+ Task Force, the Task Force Secretariat and the Consultation Group. It also initiates pilot REDD+ strategies in all major forest types, integrates projects with subnational and national implementation and operationalize a national monitoring, reporting and verification (MRV) system. Cambodia's REDD+ Readiness Preparation Proposal and its National Programme Document (UN-REDD) were both approved in 2011.

Several REDD+ readiness activities are taking place at the subnational level. REDD+ demonstration projects are ongoing in the Seima Protection Forest in Mondulakiri Province and Oddar Meanchey Province. In October 2012, the Oddar Meanchey project achieved dual voluntary carbon standards and the climate community and biodiversity gold validation, making it the first community-based REDD+ project in Asia to be validated by both standards. Despite considerable progress, these projects are experiencing problems with illegal logging, "leakage" and attracting potential buyers for carbon credits (Johnsen and Munford, 2012). Fauna and Flora International (FFI) is implementing the Siem Reap Community Forestry REDD+ project in partnership with the Forest Administration and the Non-Timber Forest Products Exchange Programme. The project covers 15,649 ha and involves 34 community forests and 59 villages. The project is implemented as part of FFI's REDD+ Community Carbon Pools programme, which is a regional initiative to strengthen REDD+-related forest governance, institutionalize tenure rights for indigenous peoples and forest-dependent communities and create community carbon pools.

Table 12: REDD+ projects in Cambodia

Project	Province	Hectares	Supporting agencies
Seima Biodiversity Conservation Area	Mondulakiri	180,000 (core area)	Wildlife Conservation Society
Reducing Emissions from Deforestation and Forest Degradation in Community Forests	Oddar Meanchey	67,783	PACT, Terra Global Capital, Forest Administration, Community Forestry International, Buddhist Monk's Association and local communities
Siem Reap Community Forestry REDD+	Siem Reap	15,649	Fauna and Flora International
Kulen Promtep Wildlife Sanctuary	Preah Vihear	409,922 (total area)	Wildlife Conservation Society
Southern Cardamom Mountains	Koh Kong	465,839	Wildlife Alliance, Ministry of Agriculture, Forests and Fisheries
Prey Long	Kompong Thom, Stung Treng, Kratie, Preah Vihear	400,000 (total area)	Conservation International, Blue Moon Fund
Western Siem Pang Proposed Protected Forest	Stung Treng	152,822 (proposed area)	BirdLife International
Eastern Plains	Ratanakiri, Mondulakiri, Kratie, Stung Treng	Feasibility study	World Wildlife Fund

A number of REDD+ feasibility studies are being undertaken in other community forestry and conservation areas, including the Kulen Promtep Wildlife Sanctuary in Preah Vihear Province (Wildlife Conservation Society), the Southern Cardamom Mountains (Wildlife Alliance), Prey Long in the central Cambodian lowland forests (Conservation International), the Western Siem Pang proposed protected forest (BirdLife International) and the Eastern Plains (World Wildlife Fund).

Other relevant projects include the Sustainable Forest Management and Rural Livelihood Enhancement through Community Forestry and the REDD Initiatives in Cambodia (European Union, RECOFTC and OXFAM-GB), which intends to increase the reach and impact of community forestry.

Social forestry in national climate change strategies and programmes

Community forestry features strongly in the three ongoing REDD+ projects, and REDD+ is seen as a mechanism to help strengthen communal tenure and land rights in Cambodia. The Oddar Meanchey demonstration project has helped 13 community forestry groups in the project area to formalize land tenure through community forestry agreements. In the Seima Protection Forest, REDD+ is helping to strengthen the rights of local communities to own and use their traditional lands. As of March 2012, three villages had received collective land titles, including one village situated inside the protected area, and at least 12 more villages had applied for collective land titles (WCS, 2012). It is not yet clear whether these communal titles will allow for community ownership of forest carbon (Evans et al., 2011).

The 39 priority projects in Cambodia's NAPA include three projects related to community forestry approaches: i) Community Agro-Forestry in Deforested Watersheds, ii) Community Mangrove Restoration and Sustainable Use of Natural Resources and iii) Community Agro-forestry in Coastal Areas.

The Cambodia Climate Change Alliance Trust Fund supports two projects on community forestry: i) promotion of adaptation through alternative livelihoods, sustainable management of community forests, effective participation in community forestry planning and coordination committees and the use of bio-digesters to provide clean energy for household use and reduce dependency on firewood (Box 11); and ii) an ecosystem-based adaptation project to reduce the vulnerability of communities along the Mekong River by building their capacity to restore and protect their community forests.

Other projects include:

- United Nations Environment Programme/Ministry of Environment project financed through the Adaptation Fund, to enhance the resilience of communities living in five community-protected areas. The goal is to restore 2,500 ha of degraded forest as well as diversifying home gardens of at least 2,500 families using an "eco-agricultural approach" for increasing food supply and reducing soil erosion.
- participatory management of mangrove resources to promote the community-based management of coastal resources in Koh Kong Province
- capacity strengthening for community-protected areas communities in Boeung Per Wildlife Sanctuary to adapt to the impacts of climate change, targeting 19 such areas in three provinces.

Box 11: Bio-digesters contribute to climate change mitigation and adaptation

Svay Rieng Province is situated in the lowlands of southern Cambodia. Most households use fuelwood for cooking due to a lack of alternative fuel sources. Demand for timber and NTFPs has increased in recent years, and many children skip school to collect fuelwood. Communities are dependent on unsustainable forest management practices and lack alternative income-generating options, putting them at high risk to the impacts of climate change. The current understanding of sustainable forest management and climate change is limited.

Bio-digester technology is promoted in Cambodia to reduce the dependency of poor households on forest resources. Bio-digesters offer mitigation benefits in the form of forest conservation and cleaner energy production and adoption benefits in the form of improved health, diversified income opportunities and energy security. After installing the bio-digesters, households have reported improved access to cleaner energy for cooking, reduced spending on electricity and chemical fertilizers, increased income from selling natural fertilizer and more time available for children to attend school. These benefits will help to increase the capacity of local people to adapt the negative impacts of climate change. Improved incomes have reduced local demand for timber and NTFPs, reducing pressure on local forest resources. The project also successfully supported the registration of the Prey Chomka Kon Koki community forest that covers five villages.

Source: CCCA Trust Fund, 2013.

Trends, issues and challenges

Due to previous conflict and incomplete data collection, there are few long-term climate observations, making it difficult to determine trends, identify signs of climate change and develop accurate climate change projections (Johnsen and Munford, 2012). The effect of climate change on the monsoon system and precipitation patterns is highly complex and

difficult to predict. The impacts from climate change will vary in different parts of the country, such as coastal areas, upland areas and the Tonle Sap area, and adaptation responses need to be locally appropriate.

Community forestry projects have been initiated on around 20 percent of the national forest programme target area, but only 9 percent of that area is currently covered by a community forestry agreement (RECOFTC, 2013). Efforts to establish community forests have been hampered by an overly complicated and restrictive legal framework, the lengthy process for gaining legal recognition and the high costs involved (Blomley et al., 2010). The process for registering community forests needs to be simplified and expedited to achieve the national forest programme target. A lack of financial resources and limited institutional and human resources mean that development of community forestry is dependent on support from external agencies (MAFF, 2010).

Once established, community forests are not always clearly demarcated, leading to illegal activities and encroachment by neighbouring communities, companies and the military.³⁹ Communities have limited power to defend their forests against powerful outside interests. The short tenure period and degraded condition of many community forests reduce incentives for communities to engage in sustainable forest management. Degraded forests also have less ability to support long-term improvements in communities' capacity to adapt to climate change. The role that community forestry has in building adaptive capacity may depend upon the particular model of community forestry used (such as community forests, commercial community forests, community-protected areas, protected forests, community-based protected forest and community fisheries).

Despite progress in improving tenure security, developing alternative livelihoods and strengthening participatory processes, REDD+ demonstration projects are encountering many challenges (RECOFTC, 2012). Carbon prices remain low and demand is weak, particularly when compared with the high price for certain cash crops and hard wood timber. Strong drivers of deforestation exist in the form of illegal logging, encroachment and land clearance for agricultural expansion and economic land concessions (Box 12). It is not clear whether REDD+ can compete successfully with the economic drivers of deforestation (Evans et al., 2011). The Oddar Meanchey project has so far been unable to secure buyers for its carbon credits, and a major deal worth \$911,000 reportedly fell through in May 2013 as a result of a missed deadline.⁴⁰ Without funding, forest protection activities may be scaled back, leaving the community forests vulnerable to encroachment because of the increased military presence and resettlement resulting from tensions along the border with Thailand. Major challenges exist for Cambodia's REDD+ programme, including the strong economic and social drivers of deforestation, the lack of financial investment and the limited ability of communities to protect their community forests from encroachment and deforestation by outsiders.

Box 12: Economic land concessions

Economic land concessions are long-term land leases that permit land clearance for the development of such activities as plantations, raising animals and building factories to process agricultural products for increasing revenues, creating rural employment and improving food security. The 2001 Land Law and a 2005 economic land concession subdecree provide the legal framework that governs the economic land concessions.

A number of economic land concessions appear to have been granted within national parks and wildlife sanctuaries. Other concessions allegedly violate the law by exceeding the maximum concession size, including land inside protected areas, and by infringing upon the traditional rights of indigenous peoples. Many concessions overlap existing and proposed community forest lands, threatening traditional land use rights, livelihoods and the protection of forest resources (OHCHR, 2007; Blomley et al., 2010; Broadhead and Izquierdo, 2010). This has stalled the community forest legalization process for many communities and led to conflict and human rights abuses in some cases. The situation is exacerbated by the slow process of recognizing community forests and the lack of policy coordination among the branches of government (Blomley et al., 2010).

The system for granting economic land concession slacks transparency. It is hard to verify information on the number of economic land concessions and the land area covered. According to the MAFF website (no longer available) as of April 2010, 85 economic land concessions had been issued, covering an area of 956,690 ha (Johnsen and Munford, 2012; RECOFTC, ASFN and SDC, 2010). Dahal et al. (2011) reported that 80 economic land concessions had been established by the end of 2010, covering nearly 1.3 million ha, while Colchester and Chao (2013) estimated 2.6 million ha of land, or 14 percent of the total land area, under concession by the end of 2012. The prime minister is reported to have issued a moratorium on new economic land concessions in May 2012, but concessions established before then are moving forward.

³⁹ See www.phnompenhpost.com/national/redd-forest-clearing-unabated-community

⁴⁰ See www.cambodiadaily.com/archive/a-troubled-start-for-cambodias-carbon-credits-31277/



4.2 Indonesia

Updated national data: Republic of Indonesia	
Total population	237,641,326 in 2010 (National Census 2010, Central Bureau of Statistics)
Rural population	119,321,070 in 2010, or 50% of total population (National Census 2010, Central Bureau of Statistics)
Total area	190,457,000 ha
Total land area (excluding inland water bodies)	181,157,000 ha
Area classified as forest	130,680,000 ha 72.1% of total land
Forest cover	89,630,000 ha ⁴¹ (Ministerial Regulation No P.49/Menhut-II/2011 on National Level Forestry Plan 2011–2030) 86.6% of area defined as forest 49.5% of total land area
Production forest	57,060,000 ha (production forest and limited production forest) 43.6% of area defined as forest 63.6% of actual forest cover
Protected forest – soil and water	22,667,000 ha 24% of total forest area
Protected forest – biodiversity conservation	15,144,000 ha 16% of total forest area
Forest area with official community forestry agreements	143,065 ha (HKm and hutan desa) 0.109% of total forest area ⁴²
Carbon stocks	In above-and below-ground living biomass: 13,017 Mt In litter: data not available In soil: data not available
Rates of deforestation	-832,127 ha per year from 2006–2009 -0.89%
Social/community forestry programmes and activities	<i>Hutan kemasyarakatan/HKm</i> (community-based forest) <i>Hutan desa</i> (village forest) <i>Hutan tanaman rakyat/HTR</i> (community-based forest estate) <i>Kemitraan</i> (partnership) <i>Kawasan dengan tujuan istimewa/KDTI</i> (special purpose zones) <i>Pengelolaan hutan bersama masyarakat/PHBM</i> (managing forests with local communities) <i>Model desa konservasi</i> (conservation village model) <i>Hutan rakyat</i> (private community-forestry income generation) <i>Hutan adat</i> (customary forest) <i>Sistem hutan kerakyatan/SHK</i> (community-based forest system)

⁴¹ Data from Ministerial Regulation No P.49/Menhut-II/2011 on National Level Forestry Plan 2011–2030; see Directorate-General of Forestry Planning, Ministry of Forestry.

⁴² Up to October 2012, based on the Ministerial Regulation on Community Forest and Village Forest, provincial and district governments had obtained licences for certain communities and villages to manage 143,065 ha of state forest; see Directorate of Social Forestry Development, Ministry of Forestry.

Climate change mitigation programmes and activities	Partner country for UN-REDD Programme, Forest Carbon Partnership Facility and Forest Investment Programme 63 CDM projects (none in the afforestation and reforestation projects) registered by the Executive Board of the CDM with a potential to produce 13 Mt CO ₂ -eq More than a dozen bilateral and multilateral partnerships for REDD readiness, including USAID, Norwegian Government, GIZ, KOICA Examples of ongoing projects include: Kalimantan Forests and Climate Partnership; the Indonesia-Norway letter of intent on reducing greenhouse gasses from deforestation and degradation; and the Berau Forest Carbon Programme
Climate change adaptation programmes and activities	National Action Plan Addressing Climate Change, 2007 Indonesia Climate Change Sectoral Roadmap, 2010 National Development Planning: Indonesia Responses to Climate Change, 2010

Forest data: Key changes and emerging trends

Indonesia has 130 million ha of land classified as state forest land, or 72 percent of its total land area. Actual forest cover in 2011 was 89.6 million ha (Ministerial Regulation No P.49/Menhut-II/2011 National Level Forestry Plan 2011–2030), or around 49 percent of the total land area. Around 41 million ha of forest land is without forest cover (Figure 9). Of the total forest cover, 86.8 million ha is natural forest, and 2.8 million ha is plantation forest (MOF, 2012).

Figure 9: Forest area in Indonesia

Forest Area			
No.	Forest Status	Hectares	%
1	Conservation Forest	26,820,000	20.52
2	Protected Forest	28,860,000	22.08
3	Production Forest	32,600,000	24.95
4	Limited Production Forest	24,460,000	18.72
5	Convertible Production Forest	17,940,000	13.73
	Total	130,680,000	100.00

Forest coverage/ Forest Area/			
No.	Forest Status	Hectares	%
1	Primary Forest	41,260,000	31.57
2	Secondary Forest	45,550,000	34.86
3	Plantation Forest	2,820,000	2.16
4	Less coverage/non forested area	41,050,000	31.41
	Total	130,680,000	100.00
	Forest Area	89,630,000	68.59

Source: National Level Forestry Plan 2011–2030, Ministerial Regulation No. P.49/Menhut-II/2011, Directorate-General of Forestry Planning, Ministry of Forestry.

The rate of deforestation for 2009–2010 was estimated at 832,127 ha per year (MOF, 2012), or approximately -0.89 percent of forest cover. Deforestation is primarily driven by agricultural expansion, legal and illegal logging, forest fires, shifting cultivation, subsistence agriculture, mining and aquaculture. Underlying drivers of deforestation include:

- low productivity of estate crops, such as oil palm, requiring additional forest areas to be converted to increase yields;
- under-investment in industrial tree plantations and the reliance of the pulp and paper industry on clearing natural forests; and
- dependence of the economy on exploitation of natural resources and the lack of investment in other areas, such as people and manufacturing (Royo and Wells, 2012).

Community forestry data

According to the Ministry of Forestry's Directorate of Social Forestry Development, 143,065 ha of forest area have been placed under local community management, as verified HKm or (community forest) or hutan desa (village forest) (Figure 10).

Figure 10: Indonesia community forestry statistics

Forest Under Community Management			
No.	Type	Hectares	%
1	Community Forest	58,099	40.61
2	Village Forest	84,966	59.39
	Total	143,065	100.00

Source: Directorate of Social Forestry Development, Ministry of Forestry.

Although more than 100,000 ha of land have been officially allocated to local communities through these mechanisms since December 2010⁴⁴ (RECOFTC, ASFN and SDC, 2010), the scale of community forestry remains limited and represents less than 1 percent of national forest land. Transfer of forest management rights to communities is proceeding slowly, particularly in areas where there is interest in land for development of oil palm and other commercial projects. Less than 6 percent of the 2.5 million ha of forest land targeted for allocation to communities through KHM and hutan desa by 2016 has been achieved so far.

Policies and laws on forests and social forestry

Under the Indonesia Constitution, the State has control over all lands and resources. All forests are subject to the jurisdiction of the Ministry of Forestry as per the Basic Forest Law (1999). The Ministry of Forestry is responsible for defining, zoning and gazettement forest areas and for leasing state forest areas to other stakeholders, such as individuals, private companies, cooperatives and state-owned enterprises (Colchester, 2004 in Deschamps and Hartman, 2006). The State recognizes customary forests (hutan adat). In May 2013, a landmark ruling by the Constitutional Court made a distinction between customary forests and state forests controlled by the Ministry of Forestry and clarified that state forest no longer includes customary forests (Kahurani, 2013).⁴⁵

Community forestry mainly takes place in production and protection forests of the state forest reserve.⁴⁶ A large number of legal regulations relate to involvement of local people in forest management (Deschamps and Hartman, 2006), and at least ten modalities for engaging local communities in forest management have been identified (Siscawati and Zakaria, 2010).

Tenure arrangements and bundles of rights

Land and forest tenure is characterized by formal control by the State, with weak tenure security for local communities and indigenous peoples. Although customary rights to use the forests are recognized in principle, in practice, tenure rights for local communities and indigenous peoples remain weak (USAID, 2010). The main forms of community forestry are:

- Hutan kamasyarakatan (HKM), or community-based or social forest
- Hutan desa, or village forest
- Hutan tanaman rakyat (HTR), or community-based plantations for timber production
- Kemitraan in which local communities are granted access to forest resources through agreements with business license holders (Royo and Wells, 2012).

The specific rights transferred to a community depend on the model of community forestry being applied. The prime features of KHM, HTR and hutan desa are explained in Table 13.

⁴⁴ In December 2010, 30,331.55 ha of land had been allocated as HKM and 10,310 ha through hutandesas, making 40,641 ha in total.

⁴⁵ See www.asb.cgiar.org/story/category/indonesia-upholds-indigenous-people-rights-forest.GTDGRMzr.dpuf

⁴⁶ According to research carried out by the DFID Multi-Stakeholder Forestry Programme, there may be up to 6 million ha of forest managed by communities and families, spanning both state and non-state forest lands, such as household woodlots and agro-forestry plots outside the forest estate known as hutanrakyat, or peoples' forest, covering 1.5 million ha on Java alone (Royo and Wells, 2012).

Table 13: Tenure rights under KHm, HTR and hutan desa

Model	Rights and benefits	Restrictions	Responsibilities	Duration
KHm	Use rights to timber from planted trees in production forest areas and access to NTFPs and environmental services.	Rights cannot be transferred or used as collateral for credit.	Plantation and protection of designated forest area.	35 years; can be extended, based on official evaluations
HTR	Individual or cooperative access and use rights in production forests and use of NTFPs in planted forests.		Plantation and protection of forest land.	60 years
Hutan desa	Specially established village institutions are granted management rights to use timber from natural and planted forest in the production forests and to access NTFPs and environmental services.	Rights cannot be transferred or used as collateral for credit.	Protection and management of forest areas.	35 years; can be extended, based on official evaluations

Sources: Royo and Wells, 2012; Safitri, 2010; Dahal et al., 2011.

HTR and hutan desa are designed to support reforestation and rehabilitation of land through community plantations (Dahal et al., 2011) and provide long-term use rights rather than forest ownership (Box 13). Rights cannot be transferred or used as collateral for credit. Commercial exploitation of timber and NTFPs requires a special business license and is only permitted in production forests (Safitri, 2010; Rights and Resources Institute, 2012). Extensions of forest use rights are dependent upon periodic evaluations by the forest authorities and/or local officials and can be withdrawn if forest areas are not well managed. The regulations do not provide for any mechanism for communities to appeal against decisions to withdraw their rights. Under kemitraan, community rights to access and use of the forest resources depend on the terms of the individual agreement.

Box 13: Importance of legal recognition of Indonesian social forests

The Labbo village forest in Sulawesi Province covers 343 ha of protected forest. Harvesting of timber is not permitted, but the community is allowed to collect NTFPs and engage in agro-forestry activities, such as growing coffee, cacao and cloves. They also engage in other livelihood activities, such as ecotourism and honey production. The community forest has legal recognition, and the local communities' rights to the forest are secure. The village forest is providing a range of benefits, including improved water supply, NTFPs for income generation, a sense of ownership and belonging, enhanced capacities for forest management planning and reduced encroachment and illegal activity.

The village of Setulang is situated in Malinau, East Kalimantan Province. The villagers have set aside 5,000 ha of their forest as a community-protected forest and have established a management body responsible for developing and enforcing rules on forest use. The Setulang people consider the forest to be an asset for future generations. In addition to ecological functions, they wisely use the forest resources for subsistence purposes, such as timber for constructing houses, medicinal plants and for hunting animals and have consistently refused all offers from logging companies. The villagers can make a good living from dryland rice farming, supplemented with hunting, fishing and the collection of NTFPs. However, Tane Olen (protected forest) is not legally recognized by the Government, either as customary forest or protected state forest. The area is disputed by some neighbouring communities, leading to insecurity and conflict over access to resources. So far, the united strength of the Setulang community has enabled them to maintain their protected forest; but without legal recognition, it is unclear how long this can continue. Population growth, the delineation of village territories, logging operations, reforestation programmes and plans to establish oil palm plantations have led to a land shortage, while few alternatives to making a living exist. Basic needs are increasing, cash income is becoming more important and the younger generation has different ideas for the future. In an attempt to gain legal tenure, the village is applying for a license for hutan desa, or village forest, with help from the German International Cooperation (GIZ) agency.

National climate change policies, strategies and programmes

Indonesia makes a significant contribution to global greenhouse gas emissions, at around 6 percent of the total worldwide emissions in 2005⁴⁷ (Yusef, 2010). Land use change, including peat fires, produces between 63 percent (MOE, 2010) and 85 percent (National Council on Climate Change, 2010) of the national greenhouse gas emissions. Around 37 percent of emissions are due to deforestation and 27 percent to peat fires (ibid.). Emissions from land use change and forestry are estimated to make up 27 percent of global land use change and forestry emissions and 4.7 percent of total global emissions from all sources (Yusef, 2010). Thus, controlling logging and the conversion of natural forests for plantations is a major priority.

In 2007, Indonesia's National Action Plan for Mitigation outlined principles and priorities for addressing climate change, including sustainable forest management, biodiversity conservation and forest rehabilitation. The Government has taken steps to integrate climate change responses into its development planning (Yusef, 2010) through the National Action Plan Addressing Climate Change (RAN-PI, 2007), the National Development Planning: Indonesia Responses to Climate Change (2008); and the Indonesian Climate Change Sectoral Roadmap (2010).

Other initiatives include:

- Climate Change Trust Fund, which was created in September 2010 to attract and manage funds to support mitigation and adaptation. The fund focuses on land-based mitigation, reduced emissions in the energy sector and adaptation and resilience. Contributions to the fund have been made by the Australian, Swedish and British governments.
- Indonesia Climate Change Centre, which was created in October 2011 under the United States–Indonesia Comprehensive Partnership. The Centre is a platform to engage scientific communities, international organizations, Indonesian ministries and academics and encourage links between climate change science and policy.
- Indonesian–German Cooperation Programme on the Policy and Advice for Environment and Climate Change, which has supported the national and local governments, industry and civil society to implement and disseminate climate-friendly measures and raise awareness of climate change.

Adaptation

Indonesia's early climate change responses focused mainly on mitigation. More recently, attention is being directed to adaptation as well. The Second National Communication (MOE, 2010) considered adaptation in the high priority sectors of agriculture, water resources, forestry, coastal and marine, and health, and the Indonesia Climate Change Sectoral Roadmap highlights priority sectors for adaptation (mainly water, marine and fisheries, agriculture and public health). For the most part, Indonesia's approach is to integrate adaptation into its national development planning processes. The National Action Plan on Climate Change Adaptation of the National Development Planning Agency (BAPPENAS) was due to be finalized during 2012 and 2013 and will support the mainstreaming of adaptation into the next Mid-Term Development Plan.

Mitigation

The Indonesian Government has committed to reducing its carbon emissions by 26 percent by 2020 under a business-as-usual scenario and by 41 percent with international assistance. According to preliminary indications in the Climate Change Sectoral Roadmap, 89 percent of the emissions reductions are expected to be achieved in the land use change and forestry sector, through the improved management of peatlands (41 percent), sustainable forest management (34 percent), avoiding deforestation (18 percent) and forest plantations (8 percent) (Yusef, 2010).

In May 2011, the Government introduced a two-year moratorium on the award of new concessions in primary forests and peatlands in an effort to reduce deforestation. In May 2013, the moratorium was extended until 2015. The moratorium covers an approximate total of 68 million ha, including 28 million ha of primary forest, 15 million ha of peatlands and 15 million ha of secondary forests and protects an estimated 25.3 gigatonnes of carbon (Austin et al., 2012). The moratorium provides an opportunity for the Government to reduce forest conversion, decrease emissions and strengthen forest governance. However, the moratorium has a number of weaknesses, including the unclear status of secondary forests, exemptions for existing concessions and poor enforcement, leading to forest conversion in areas covered by the ban. The long-term impacts of the moratorium will depend on whether the Government takes the required steps to ensure forest governance reforms are implemented (ibid.).

⁴⁷ According to data presented in the Climate Analysis Indicator Tool database; 2005 is the most recent year for which comprehensive emissions data are available for every major energy sector.

Other policies relating to mitigation include the Policy on Renewable Energy Development and Energy Conservation (2004), the National Energy Management Blueprint (2006–2025), the National Energy Policy (2006) and the Energy Law (2007), which aims to improve energy efficiency and promote clean and renewable forms of energy production.

Progress on REDD+

Indonesia is a partner country in the UN-REDD Programme, the Forest Carbon Partnership Facility and the Forest Investment Programme. Bilateral partnerships have also been established with Australia, Germany, Norway and the Republic of Korea. A REDD Task Force was created in September 2011 with responsibility for implementing the moratorium and developing REDD+ financing mechanisms and the monitoring, reporting and verification system. The National REDD+ Strategy was launched in September 2012 to guide implementation of REDD+. A recently established ministerial-level REDD+ agency will coordinate the national strategy among the ministries that influence land-use policy as well as oversee the monitoring, reporting and verification of emissions reductions required under the Norwegian REDD+ Partnership agreement. The National REDD+ Action Plan was completed in December 2012 to guide the elaboration of the strategy into actionable steps at the national level.

At the subnational level, 11 priority provinces have been targeted for REDD+ activities. Provincial Strategy and Action Plans are being prepared for each province. As of February 2013, five provinces (East Kalimantan, West Papua, Jambi, West Sumatra and Riau) had completed and submitted their plan to the National REDD+ Task Force. The remaining plans (Central Kalimantan, Central Sulawesi, Papua, South Sumatra, Aceh and West Kalimantan) are at different stages of development. More than 60 REDD+ activities are in either the preparatory or implementation phase (FCPF, 2012). These activities range from national policy development and large-scale provincial demonstration projects to local capacity-building initiatives. One of the most notable is the Rimba Raya project in Central Kalimantan, covering 64,000 ha⁴⁸ of lowland tropical peat forest adjacent to the Tanjung Puting National Park, previously earmarked for oil palm development. The project was approved by the Government in May 2013 and has been certified under the verified carbon standard and has received the Climate, Community and Biodiversity Alliance standard's Triple Gold Validation. The project is expected to reduce CO₂ emissions by 119 million tonnes over 30 years as well as protect vital habitat for the Borneo orang-utans and other endangered species.

Social forestry in national climate change strategies and programmes

The prevalence of social forestry in national climate change mitigation and adaptation strategies is somewhat limited. This is not surprising, given the small scale of officially sanctioned community forestry in Indonesia.

At the local level, there are several examples of how forest resources are supporting the resilience of communities to changing climatic conditions (Box 14).

Box 14: Meru Betiri National Park, Java

Villagers living near the Meru Betiri National Park in Java were instrumental in the regeneration of the degraded buffer zone in the early 2000s. As a result, they now enjoy informal access to the rehabilitated areas in those zones. These activities have generated both social and livelihood benefits and helped to increase the adaptive capacity of the local people. Forest rehabilitation and agro-forestry have provided landless villagers with access to productive land and forest resources and increased income-generating opportunities, which have in turn helped to reduce forest exploitation. Participating in these activities has also helped to develop social capital within the community, contributed to capacity building and skills development and have improved relationships between the park authorities and villagers. The villagers report that extreme weather events and natural disasters have intensified since the rehabilitation efforts began. However, they consider the impact of such events on their livelihoods to be less severe because of the perceived role of the forest as a buffer.

Source: RECOFTC, 2012.

⁴⁸ The project was originally intended to cover 90,000 ha but was controversially reduced to 64,000 ha by the Government to allocate land for oil palm plantations. Of the final 64,000 ha, 36,000 ha is covered by a ministerial decree, 18,000 ha is under a cooperation agreement with the Tanjung Puting National Park and 8,000 ha are part of a commercial agreement with an oil palm developer.

The national REDD+ strategy cites weak land rights and tenure, lack of formal rights and alternative livelihood options for forest communities, ongoing land conflicts and unclear forest status and boundaries as concerns for deforestation. A review of 23 Indonesian REDD+ projects found that communities do not generally have legal rights to land in the project areas (Morgan, 2010). Only one project, Danau Sentarum, is trying to secure legal land rights for communities as part of its activities. Only two of the projects reviewed were engaging local communities in their decision-making processes and formulating the rules governing forest access and had based their project approach on participatory forest management, traditional land rights and management patterns (ibid.).

In the majority of REDD+ projects, community engagement is nothing more than passive consultation, with benefits provided in the form of education and healthcare services, cash payments for forest protection, gifts, employment opportunities or alternative livelihoods projects to reduce dependency on forest resources (Morgan, 2010). The focus on indirect benefits from REDD+ enables local communities to receive initial benefits from REDD+ project development against a background of uncertainty, where the manifestation of financial payments for forest protection is not yet certain.

Trends, issues and challenges

The recent distinction between customary forest and state forest is a major step forwards in strengthening the rights of customary forest users. However, it is not yet clear how permits and concessions previously awarded to private sector actors in customary lands will be addressed (Kahurani, 2013).

In general, Indonesia's conservation policies have aimed to conserve protected areas by excluding human activities and settlements. In practice this has proved challenging. Protected areas have been gazetted without sufficient local consultation and reference to patterns of resource use. As a result, local people and governments are asserting their rights to use, control and own land within national park boundaries, resulting in the deterioration of natural resources inside protected areas (Mulyana et al., 2010). The Government recently began considering collaborative management as a new approach to the protection of such areas, and ministerial decrees have been issued to allow for the designation of special use zones inside the national parks and thus enable other parties to be involved in protected-area management.

Forest fires continue to be a major problem in Indonesia and a major contributor to greenhouse gas emissions. Extensive fires in Borneo and Sumatra in 1997–1998 are estimated to have released between 1.4 and 2 gigatonnes of carbon into the atmosphere.⁴⁹ In June 2013, major fires caused air pollution problems in Malaysia and Singapore. The problem persists, despite national legislation to prevent the practice of burning to clear land, and may reduce Indonesia's ability to meet its emissions reduction targets. The ASEAN Agreement on Transboundary Haze Pollution is the main regional framework on monitoring and prevention of transboundary haze pollution caused by land and forest fires. Indonesia is the only ASEAN country that has not yet ratified the agreement, but it may do so in the near future.

Despite considerable financial investment and high-level political support, forest protection measures (such as the moratorium on new concessions and REDD+) face huge challenges and opposition from a range of parties and interests. To date, only one REDD+ project has been officially approved while the others have run into substantial difficulties. Rights to carbon and benefit-sharing arrangements have not yet been clarified, and issues relating to land and forest tenure, institutional coordination and instituting safeguards remain to be clarified. Additionally, the legal framework for REDD+ exists primarily in the form of presidential decrees or ministerial regulations. The absence of a high-level legal framework for REDD+ in national law has produced concern regarding Indonesia's long-term commitment.

⁴⁹ See <http://news.mongabay.com/2013/0617-haze-returns-to-singapore-2013.html>



4.3 Lao PDR

Updated national data: Lao People's Democratic Republic	
Total population	6,580,000 in 2013 (based on 2005 census)
Rural population	4,803,400 in 2013 73% (based on 2005 census)
Total area	23,680,000 ha
Total land area (excluding inland water)	23,080,000 ha
Total forest area	15,751,000 ha 69% of total land area
Total forest cover	9,550,000 ha (in 2010) 40% of total land 60% total forest area
Production forest	3,100,000 ha 20% of total forest area 13% of total land area
Protected forest – soil and water	8,200,000 ha (proposed area ⁵⁰) 52% of total forest area 34% of total land area
Protected forest – biodiversity conservation	4,700,000 ha (proposed area) 30% of total forest area 20% of total land
Unclassified forest area	2,300,000 ha 14% of total forest area
Forest area with official community forestry agreements	Unknown ⁵¹
Carbon stocks	In above- and below-ground living biomass: 1,107 Mt In litter: data not available In soil: data not available
Rates of deforestation (total forest cover)	Forest decrease during 2002–2010: 277,200 ha Average annual change: -34,650 ha per year Annual change rate: -0.36% of total forest cover, or -0.15% of total land
Social/community forestry programmes and activities	Participatory sustainable forest management Village forestry Collaborative forest management Traditional forest management Community-based forest management for ecotourism Smallholder plantations and industrial plantations

⁵⁰ Lao PDR's Second National Communication to the UNFCCC reports that as of 2010 there was a total of 13.5 million ha of forest area, consisting of approximately 6.9 million ha of protected forest, 3.6 million ha of conservation forests and 3.1 million ha of production forest (Department of Environment, 2013).

⁵¹ See the explanatory notes in the following section on community forestry data.

Climate change mitigation programmes and activities	Natural regeneration of 6 million ha and planting of 500,000 ha Climate Protection Through Avoided Deforestation Programme Sustainable Forestry and Rural Development project– production forests and carbon financing Wildlife Conservation Society project in Bolikhamxay Province to reduce deforestation and degradation, conserve biodiversity, improve local livelihoods and assess options for carbon financing Reductions in illegal logging through improved forest law enforcement Reductions in shifting cultivation and improved agro-forestry Reduction in burning and forest clearance
Climate change adaptation programmes and activities	NAPA – 45 proposals in agriculture, forestry, water and public health.

Sources: Demographic data from Lao Department of Statistics (available at www.nsc.gov.la/Selected_Statistics.htm). Forest data based on the results of the forest cover assessment carried out by the Lao Government in 2002, presented at the second ASFN Learning Group Workshop in Chiang Mai, Thailand in February 2013.

Forest data: Key changes and emerging trends

Lao PDR has 15.8 million ha of forest land, which is 69 percent of the total land area. In 2010, forest cover⁵² was reported at 9.6 million ha, or 40 percent of total land area (DOF, 2013). Forest cover is reducing at 34,650 ha per year, or -0.36 percent of total forest cover. Deforestation in Lao PDR is largely driven by the conversion of forest to agricultural land and plantation crops, including rubber and timber, mining, hydropower and infrastructure development. The drivers of degradation are primarily illegal logging and rotational agriculture.

Community forestry data and models

Several models of community-based forest management have been piloted through donor-supported projects, such as Forest Management and Conservation Programme (FOMACOP), and Sustainable Forestry and Rural Development (SUFORD). Village forestry, as developed and piloted by FOMACOP, has been adopted as the official term for “community forestry”. Village forestry focuses on the management of natural forests and is considered to be a process rather than a fixed forest management concept and represents a range of approaches to people-oriented forest management, with different levels of participation.

The area of forest land covered by official communal land use agreements is not clear. In 2012, five villages in Vientiane Province reportedly received the first communal land titles, covering an area of 2,189 ha of bamboo-producing forest.⁵³ It is not clear whether this land is classed as forest land or village land. According to the Ministry of Agriculture and Forestry’s Forestry Strategy to 2020, bamboo is not included in the category of current forest.

Policies and laws on forests and social forestry

In Lao PDR, natural resources, such as land and natural forests, are considered national heritage and are owned by the national community and centrally managed by the State. The legal framework for collective land tenure and use rights is spread over a number of legal documents, including the Constitution (revised 2003), the Property Law (1990), the State Assets Law (2002), the Land Law (2003), the Forestry Law (2007) and the Law on Local Administration (2007). As a result, confusion can arise due to inconsistencies and differing definitions relating to the type of land that can qualify as communal, who can be included in a community user group and the communal land rights that can be granted to a village (RECOFTC, 2013).

The State Assets Law (2002) enables access, use and management of natural assets to be granted to organizations and individuals through a lease or concession. The Land Law (2003) allows for long-term use rights to degraded forest lands to be granted to individuals and households. Production forest areas may be allocated through a lease or concession from the Government. The Forestry Law (2007) classifies forests into three types: protected, conserved and production and outlines the rights and obligations of public sector forest management agencies and the users of natural forests, forest land and plantations (GOL, 2007).

The main policy document for the forest sector is the Forest Strategy to 2020. Participation of local people in sustainable forest management activities in production forests is a strategy for forest sector development (MAF, 2005). Although access,

⁵² Based on 20 percent canopy cover.

⁵³ See www.irinnews.org/report/95295/laos-communal-land-titles-could-save-more-than-forests

use and management rights are recognized under the various laws, enforcement of the laws and recognition of local peoples' rights have been slow to materialize in practice.

Shifting cultivation is considered to be a major cause of deforestation. Stabilizing and eventually eliminating shifting cultivation has been a priority government policy for many years.⁵⁴ The Land Use Planning and Land Allocation Programme aims to designate areas of village lands for specific uses and provide tenure security for rural households to encourage private investment, reduce shifting cultivation and conserve forest resources (Braeutigam, 2003). Through the process, local people can be granted rights to access, use and manage (but not to own) natural resources. Land allocation at one time was considered to be one of the most progressive forest management policies in Southeast Asia due to the Government's recognition of communities' right to manage forest lands and the potential for allocation of degraded forest and agricultural lands to rural people (Poffenberger, 1999). A total of 9.1 million ha of land had been allocated to 6,830 villages by 2005, including 8.2 million ha of forest land and small areas for paddy fields, pastures, commercial crops, fruit trees and tree plantations (MAF, 2005). In seeking to reduce shifting cultivation, however, the overzealous allocation of land for forest preservation significantly reduced the area available for agriculture and collection of forest products. This appears to have had negative impacts on villagers' livelihoods and increased the pressure to exploit other forest areas (MAF, 2005). The process of land allocation is inherently complicated and time consuming, involving mapping, demarcation, consultation and legal registration, and district authorities have limited resources for managing the process. Due to the lack of coordination and unclear responsibilities within the Government, the land allocation process has not been adequately carried out. Consequently, the Government has not yet fully defined the forest boundaries and use rights (IGES, 2012), and few villages appear to have received official land use titles (RECOFTC, 2013). In 2010, the Government issued a manual, Participatory Land Use Planning, to help define land boundaries, improve land allocation and communal land titling and thus increase land security. Unfortunately, the prescriptions in the Land Law on the amount of land that can be allocated for agricultural purposes and restrictions on the types of village land that can be covered by communal titles may limit the effectiveness of the participatory land use planning (Moore et al., 2011).

Tenure arrangements and bundles of rights

The Forestry Law outlines the details of leases and concessions for degraded and barren land forest, planted forest, industrial tree species and NTFPs. Degraded and barren forest lands can be allocated to individuals, households and organizations for natural regeneration, planting trees or harvesting NTFPs. Trees planted on allocated lands become the property of the tenure holders, but the law is silent regarding ownership of naturally regenerated trees. The length of tenure depends on the type of forest and the size of the land: Degraded forests can be assigned for a term of 30–40 years; barren forest land for 40–60 years; and remote forest areas for 40–70 years (GOL, 2007). Rights can be extended, depending on the specific case. Villagers are allowed to collect and sell NTFPs and to harvest timber for domestic use, in line with the rules on forest classification (NAFRI, 2005; MAF, 2005). The Law recognizes customary forest use rights in non-prohibited forests for household purposes, in accordance with relevant laws and regulations and a designed plan and as long as there are no adverse impacts on the forest resources (GOL, 2007). Customary use of NTFPs is permitted in production forest areas. Villagers are allowed to harvest timber in designated forest areas for village use, subject to approval and quotas. In village lands in the conservation and protected forest areas, villagers have customary rights to collect timber and NTFPs in controlled use zones and in buffer zones (IGES, 2012).

National climate change policies, strategies and programmes

The National Strategy on Climate Change was approved in March 2010 and subsequently integrated into the National Social and Economic Development Plan for 2011–2015. It aims to enable Lao PDR to mitigate and adapt to climate change in a way that promotes sustainable economic development, reduces poverty, enhances the natural environment, protects public health and safety and promotes quality of life. It prioritizes adaptation and mitigation strategies in agriculture, food security, forestry and land use change, water resources, energy, transport, industry, urban development and public health (DOE, 2013).

Adaptation

As a least developed country, Lao PDR is highly vulnerable to the impacts of climate change; 75 percent of all disasters in Lao between 1966 and 2009 were climate-related. Flooding, health epidemics, storms and drought are the main climate-related hazards and since 1992 appear to have increased in intensity and frequency (DOE, 2013). Higher temperatures and reduced rainfall are already causing reduced agricultural production.⁵⁵

⁵⁴ The Government aimed to eradicate shifting cultivation by 2010 (MAF, 2005).

⁵⁵ See www.irinnews.org/report/98259/laos-farmers-struggle-with-erratic-weather#sthash.swaUYyV5.dpuf.

The NAPA (2009) focuses on four areas: agriculture, forests, water resources and public health. Cross-cutting actions are aligned with national development priorities and strategies, such as the National Environment Strategy and Action Plan, the National Forestry Strategy, the National Growth and Poverty Eradication Strategy and the Sixth National Socio-Economic Development Plan 2006–2010 (MRC, 2009). The NAPA cites 45 project proposals, of which 12 are considered high priorities. These include eradicating slash-and-burn agriculture and strengthening the capacity of village foresters in the planting, management and use of village forests. The implementation of activities outlined in the NAPA has so far been limited, however (DOE, 2013).

Mitigation

The Government conducted a national greenhouse inventory in 2000, which recorded an estimated greenhouse gas emissions total of 50,733 gigatonnes of CO₂ equivalent (DOE, 2013). Most of it (83 percent) was produced by the land use and forestry sectors, with agriculture contributing 15 percent and the energy sector adding 2 percent. Conversion of forests and savannah fields to other land uses accounted for 72 percent of total net emissions, followed by logging at 15 percent and farming at 10 percent (DOE, 2013). This highlights the importance of forest conservation and utilization of forest resources for Lao's mitigation strategies.

The Forest Strategy seeks to reverse deforestation and return forest cover to 16 million ha, or 70 percent of the total land area, by 2020 by regenerating up to 6 million ha of the unstocked forest area and planting 500,000 ha of trees (MAF, 2005). The Second National Communication estimates that successful implementation of this strategy would mitigate 75,000 gigatonnes of CO₂ (DOE, 2013).

Lao PDR has developed ten CDM projects in hydropower, agro-forestry, biogas and energy, with a total mitigation potential of 1,450 gigatonnes of CO₂ per year. Only two projects so far have been approved by the CDM Executive Board (DOE, 2013).

Progress on REDD+

Given the large proportion of emissions from deforestation and forest degradation in Lao PDR, REDD+ is highly relevant. Lao is a participant under the World Bank's Forest Carbon Partnership Facility and the Forest Investment Programme. A national REDD+ Task Force was established in January 2011 and a supporting REDD+ Office was set up within the Department of Forestry. REDD+ readiness is still in the early stages of development, pending formulation of a national REDD+ strategy, development of a legal basis and institutional arrangements for implementation and the establishment of reference levels, a monitoring, reporting and verification system and a benefit-distribution system.

REDD+ readiness activities at the national and subnational levels depend heavily on bilateral and multilateral support. The main programmes include the Climate Protection Through Avoided Deforestation (CliPAD) Programme, the Sustainable Forestry and Rural Development (SURFORD) project, the regional programme on Lowering Emission in Asia's Forests (LEAF) and projects supported by the Japanese International Cooperation Agency. At the subnational level, there are several REDD+ demonstration activities, feasibility studies and pilot projects taking place that were initiated by donor projects, international NGOs and the private sector. REDD+ demonstration activities cover different forest types, including production forest (SURFORD), protected areas (CliPAD) and village forests (PAREED), and they apply different approaches to tackling deforestation and different standards for addressing forest carbon monitoring and safeguards (IGES, 2012).

There are a number of REDD activities taking place in Lao PDR (Table 14).

Table 14: REDD+ projects in Lao PDR

Project	Province	Supporting agencies
CliPAD– REDD demonstration activity in Nam Phui National Protected Area	Sayabouri	German International Cooperation (GIZ) KfW Development Bank Wildlife Conservation Society German Federal Ministry for Economic Cooperation and Development (BMZ)
CliPAD – REDD demonstration activity in the Nam Et-Phou Louey National Protected Area	Luang Prabang, Houaphan and Xieng Khuang	German International Cooperation (GIZ) KfW Development Bank Wildlife Conservation Society German Federal Ministry for Economic Cooperation and Development (BMZ)

Project	Province	Supporting agencies
Participatory Land and Forest Management Project for Reducing Deforestation in Lao PDR	six provinces	JICA
Subnational REDD project in Nam Kading National Protected Area	Bolikhamxay	Blue Moon Foundation TheunHinboun Power Company Wildlife Conservation Society
Avoided Deforestation and Forest Degradation in the Border Area of Southern Lao PDR and Central Viet Nam for the Long-Term Preservation of Carbon Sinks and Biodiversity	Southern Laos and Central Viet Nam	World Wild Fund KfW Development Bank
Impacts of Reducing Emissions from Deforestation and Forest Degradation and Enhancing Carbon Stocks (I-REDD+)	Luang Prabang	CIFOR, ICRAF, NORDECO, National University of Laos, University of Copenhagen, IAMO, UEA, IRD, UBERN
REDD+ in Xe Pian National Protected Area	Champassak and Attapeu	World Wild Fund
SUFORD Programme REDD+ in selected production forest areas	Savanakhet	World Bank Government of Finland

Social forestry in national climate change strategies and programmes

A NAPA priority is the strengthening of village foresters' skills in the planting, management and use of village forests. Implementation of the NAPA projects has been limited, however.

Under the current legal and regulatory framework, forest carbon rights, particularly to carbon-rich protection and conservation forests, are held predominantly by government agencies. Local communities are only eligible for carbon rights in planted forests and village production forests (Bourgoin et al., 2013). The Ministry of Agriculture and Forestry is in the process of revising the 2007 Forestry Law to create a legal framework for REDD+ and clarify the issues of tenure, forest carbon rights and benefit-sharing possibilities (IGES, 2012). The role of local communities and social forestry in REDD+ will largely depend upon the outcome of those legal reforms. The Nam Et-Phou Louey REDD+ demonstration project integrated community benefits and land security into its activities from the outset because of the requirements for implementing agencies and the Climate Change and Biodiversity Alliance standards. It is not yet clear whether the Government's strategy will follow a similar approach (Moore et al., 2011).

Trends, issues and challenges

Forest governance reforms in 2011 established an additional Ministry of Natural Resources and Environment and divided the governance of forest resources between two agencies. The new Ministry's Department of Forest Resource Management now has authority for the conservation and protection of forests and coordination of REDD+ activities, and the Ministry of Agriculture and Forestry retains control over production forests. The Department of Environment within the new Ministry hosts the Climate Change Office, which is the national focal point for the UNFCCC. The institutional restructuring has led to some confusion over the roles of individual departments and ministries that requires clarification (The REDD Desk, 2013). A challenge in Lao PDR is the lack of long-term data on meteorology, hydrology and forest resources and limited national and sector climate change scenarios to inform impact analysis, vulnerability assessments and adaptation options (DOE, 2013). Weak implementation and financing as well as low levels of local ownership of NAPA projects are hampering progress on adaptation.

Agricultural expansion is an important driver of deforestation, and the development of more sustainable forms of agriculture will be essential to stabilize CO₂ emissions. However, market forces are beginning to restructure agricultural production away from small-scale subsistence farming and towards large-scale monoculture crops, which is reducing crop diversity and production techniques and creating greater vulnerability to climate risks (Colchester and Chao, 2013).



4.4 Malaysia

Updated national data: Federation of Malaysia	
Total population	28,334,000 people in 2010
Rural population	7,895,482 (World Bank, 2012) 28% of total population
Total land area (excluding inland water bodies)	32,984,000 ha
Total forested area	20,465,000 ha 62% of total land area
Actual forest cover	20,465,000 ha 62% of total land area
Production forest	12,739,000 ha 62% of total forest area
Protected forest – soil and water	2,694,000 ha 13% of total forest area
Protected forest – biodiversity	1,946,000 ha 9.5% of total forest area
Forest under community management	Data not available
Carbon stocks	In above- and below-ground living biomass: 3,212 Mt In litter: 43 Mt In soil: data not available
Deforestation rates (forest cover)	Average: 87,000 per year, 2005–2010 Average: -0.42% per year, 2005–2010 (FAO, 2010b)
Deforestation rates (natural forest)	Average: -128,000 ha per year, 2005–2010 Average: -0.64% per year, 2005–2010 (FAO, 2010b)
Social /community forestry policies and programmes	Joint forest management Community-based natural resource management Small grants programme to promote tropical forests Community forestry development project
Climate change mitigation policies and programmes	Malaysian Industrial Energy Efficiency Improvement Project Biomass-based Power Generation and Co-generation in the Palm Oil Industry (BioGen) Malaysia Building Integrated Photovoltaic Comparative studies on carbon sequestration CDM project in energy waste and agriculture Kinabatangan Corridor Research Project in Sabah
Climate change adaptation policies and programmes	Second National Communication Project Malaysian Meteorology Department climate change modelling studies Climate change and relationships to disease Impact of Climate Change on Water Resources National Coastal Vulnerability Index Study Study on Effective water Resource Management Conservation and Sustainable Use of Tropical Peat Swamp Forest and Wetlands Ecosystems National Self-Assessment for Capacity-Building Needs for Global Environment Management

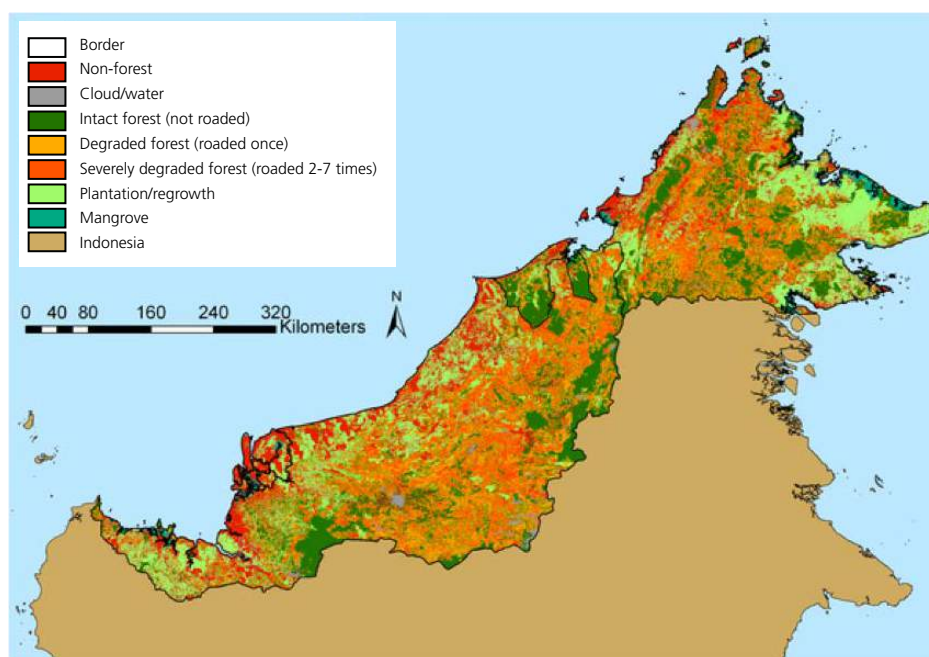
Sources: FAO, 2010a.

Forest data: Key changes and emerging trends

According to data provided by the Sabah Forest Department and presented in the 2010 FAO forest resources assessment, forest cover in Malaysia at that time was 20.5 million ha,⁵⁶ or 62 percent of the total land area. The Ministry of Natural Resources and Environment reported that there was 18.5 million ha of permanent reserve forest (PRF),⁵⁷ excluding rubber, cocoa and coconut trees, covering 56 percent of the total land area in 2010 (Malaysia Timber Council, 2012). More recent data from the Forestry Departments of Peninsular Malaysia, Sabah and Sarawak, indicated there were 17.7 million ha of forested land remaining in 2011, or 54 percent of the country's land area (FRIM, 2012).

Based on data presented in the 2010 forest resources assessment country report, Malaysia's forest cover reduced by an estimated 87,000 ha per year during the period 2005–2010 (-0.42 percent of forest cover). More recent data, based on satellite imagery, suggest the extent of deforestation and forest degradation may be higher than previously thought. A 2011 study, based on analysis of NASA Landsat data, indicates that forest cover fell by 2.3 million ha between 2000 and 2010 (Miettinen et al., 2011), which was a loss of more than 1 percent of forest cover every year. Forest condition varies across the country, with Sarawak having the highest rate of deforestation (ibid.). One study suggests that forest cover⁵⁸ in Sarawak reduced by 865,835 ha between 2005 and 2010, with the rate of deforestation increasing from -1.89 percent in 2005 to -2.14 percent in 2010 (SarVision, 2011). A study based on the Carnegie Landsat Analysis System on forest degradation in Malaysian Borneo indicates that 62 percent of the remaining forest areas are degraded or severely degraded (Bryan et al., 2013).

Figure 11: Forest cover and condition in Malaysian Borneo and Brunei, 2009



Source: Bryan et al., 2013.

Social forestry data and models

Social forestry models vary from state to state. In Peninsular Malaysia, the involvement of local people in forestry is mainly for recreation, education and the greening of urban areas. Sarawak promotes agro-forestry to sustain rural incomes, reduce shifting cultivation in the forest estate and restore degraded forests to productive forests. In Sabah, social forestry is a strategy to minimize shifting cultivation and reduce pressure on forest resources by creating alternative income sources and improve living conditions for forest communities (Chee, 2003).

Official data on the area of land used for social forestry projects was not available at the time of writing. Secondary sources indicate that there are 15 active or potential community forestry projects in Sabah (Vaz, 2012), covering 40,654 ha, or

⁵⁶ This figure includes rubber plantations.

⁵⁷ Permanent reserved forests, state land and alienated forests, national parks, wildlife and bird sanctuaries.

⁵⁸ Measured as areas greater than 1 ha, with more than 30 percent tree canopy cover and 5 m minimum tree height.

approximately 1 percent of the forest reserve.⁵⁹ The Sabah Forest Department is managing seven projects on 7,000 ha of state forest land (Vaz, 2012; Toh and Grace, 2006). As of 2006, 33,654 ha had been set aside by sustainable forest management license holders for eight social forestry projects, as required by the terms of the license agreements (Toh and Grace, 2006). In Sarawak, at least two social agro-forestry projects are ongoing, covering 60 ha of land in Rumah Rendah and 322 ha of degraded forest in the Sabal Forest Reserve (Kendawang, 2007; Chuo, 2001).

Policies and laws on forests and social forestry

Most forest land is owned and managed by the Government. Forest management is the responsibility of the state governments, with considerable autonomy to develop their own laws and forest management policies (MONRE, 2013; UNDP, 2008; Chiew, 2009).

The principle forestry law in Sabah is the Forest Enactment Law (1968) on the creation and abolition of forest reserves on state land (publicly owned land that is not a forest reserve), their use and management and the harvesting of forest products. Forests can be classified as protected, commercial, domestic, amenity mangrove forest, virgin jungle reserve or wildlife reserves. The domestic reserve covers 7,355 ha of forest for customary uses, including hunting, fishing and collecting NTFPs and small amounts of timber (Toh and Grace, 2006; UNDP, 2008). The Forest Enactment Law does not make provision for the rights of indigenous or local communities whose traditional lands have been included within the boundaries of the forest reserves (Vaz, 2012) and gives the State the right to evict forest communities from forest reserves (FPP, 2008). Traditional use rights are specified when the forest reserve is declared but can be cancelled if not exercised for three years and can be rescinded, modified or increased by the state governor at any time.

Sustainable Forest Management License Agreements require concession holders to set aside land for social forestry projects within their concession areas. Social forestry projects in Sabah focus on developing basic village infrastructure (housing, roads, water, electricity, schools and clinics) and promoting alternative livelihoods through agro-forestry, the introduction of cash crops (such as coffee, rubber, palm oil and maize), aquaculture, animal husbandry and eco-tourism development, with the aim of reducing the dependence of local communities on forest resources (UNDP, 2008; SFD, 2013). In 1998, the Sabah Forest Department created the Community Forestry Cess Fund, imposing a tax on all exported logs to generate funds for implementation of community forestry projects.⁶⁰ The Forest Department's social forestry projects have started to replace top-down planning and decision-making with more participatory approaches (Toh and Grace, 2006), with local communities becoming more involved in the planning, establishing, protecting, managing and using of forest resources and the Forest Department acting as facilitator. This model will be used for social forestry projects in Forest Management Units managed by license holders. The Forest Department is promoting Forest Stewardship Certification for all forestry concessions in the state by 2014.

Tenure arrangements and bundles of rights

Lack of secure tenure is reported to reduce the incentives for communities to invest in the Sabah Forest Department's social forestry (UNDP, 2008). Rule 20A of the Forestry Rules (1969) allows forest communities to occupy and obtain official tenure of traditional lands in the forest reserves through purchase of an occupancy permit from the Director of Forestry. Occupancy permits were originally designed for use by logging companies, and the price is often beyond the reach of rural communities. Many indigenous communities object in principle to paying fees to the state government to occupy land they consider their rightful ancestral land (Toh and Grace, 2006). Although the occupancy permits may provide communities with some degree of tenure security, they are not sufficient to address the inequities confronting communities with legitimate land claims (FPP, 2008).

Although traditional uses and native customary rights are recognized in state laws, secure access to land and forests for indigenous peoples remains an ongoing issue in practice (Box 15).

⁵⁹ The Official data from the Sabah Forest Department on the number, area and status of social forestry projects was not available at the time of writing, so alternative data sources were used to compile this chapter.

⁶⁰ The tax is collected by the Forest Department from all exported logs at the rate of 0.85 ringgit per m³ (\$0.24 per m³).

Box 15: Native customary rights in Malaysia

Malaysia recognizes the status of indigenous peoples and their rights to traditional lands through provisions in the Federal Constitution and the Sabah and Sarawak state constitutions and ordinances. Native customary rights consist of rights to traditions, customs and self-determined development as well as land and resources. However, legal frameworks fail to provide adequate protection for customary rights, and in practice, indigenous peoples' rights to their traditional land have not been upheld.

Native customary rights and collective land rights are officially recognized in the Sabah Land Ordinance (1930) and the Sarawak Land Code (1958). But the state legislation uses a narrow definition of native customary rights that does not adequately take account of traditional and cultural land use practices (SUHAKAM, 2011). Native customary rights are only recognized for land that is in active use for settlements or planting; rights to fallow lands that are an integral part of traditional rotational farming methods are not included. As a result, land considered by the state government to be vacant, idle or degraded and allocated for logging or agricultural concessions is frequently part of traditional land use practices and central to the livelihoods and socio-cultural identities of indigenous communities (FPP, 2008).

The problem is exacerbated by the lack of transparency in the land allocation processes and governance frameworks (ibid.). For example, the Sarawak government acknowledges that up to 2.8 million ha of land is subject to native customary rights claims but has not revealed the location of these lands, so communities are unsure what areas are recognized as subject to native customary rights (Colchester et al., 2007). In Sabah, many issues arise from the administrative process of applying for native land titles, including the slow processing of applications, lost applications, overlapping applications, survey and land inspection and the recording of native customary rights lands by the Lands and Surveys Department.

Land is frequently appropriated for logging, oil palm plantation development or gazettelement of land for forest reserves, national parks and other protected areas without adequate consultation and consent of customary owners or compensation (FPP, 2008; Chao, 2012). Affected communities have limited knowledge of their legal rights and few opportunities to challenge abuses and violations (Chao, 2012). Indigenous communities have resorted to the courts to seek redress for land conflicts. Between 2002 and 2011, the Human Rights Commission of Malaysia (SUHAKAM) received more than 1,000 complaints related to native customary rights (SUHAKAM, 2011), and there are hundreds of ongoing court cases against state agencies and corporations for alleged appropriation of customary lands. These efforts have had mixed results. While Sarawak courts have upheld native peoples' land claims as consistent with international human rights law and the Malaysian Constitution and rejected the state government's restrictive interpretation of native customary rights, the state government has responded by tightening regulations rather than recognizing native land claims (Colchester et al., 2007). Private sector expansion, including on native customary rights lands, continues to be promoted, with 60,000–100,000 ha of customary lands allegedly developed for oil palm every year (ibid.).

Sarawak's Konsep Baru ("new concept") aims to incorporate native customary rights land into joint ventures with private companies and the state government, particularly for oil palm development. Customary lands are surrendered to the state government for 60 years, with the government acting as trustee. It is not clear how native people are intended to benefit from the Konsep Baru or how they can reclaim their lands after the lease expires (ibid.).

National climate change policies, strategies and programmes

The growth of the industrial sector has created a high energy- and resource-consuming economy, along with inevitable environmental degradation. Rapid economic growth is a national priority for the Government, although it is meant to be achieved in a responsible and sustainable manner. The National Policy on Climate Change (2009) aims to ensure climate-resilient development. It is based on the principles of sustainable development, coordinated implementation, participation and common but differentiated responsibilities. The policy emphasizes the mainstreaming of climate change through responsible management of resources and improved environmental conservation and strengthened institutional and implementation capacity to reduce the negative impacts of climate change. The National Green Technology Policy was formulated to ensure climate-resilient development and promote green technology and a low-carbon economy. The Government set a target of reducing greenhouse gas emission intensity by 40 percent by 2020, compared with 2005 levels (NRE, 2011), conditional upon technology transfer and financing from Annex 1 partners.

Adaptation

The country's Second National Communication cites a number of vulnerabilities and adaptation options in seven sectors: water resources, agriculture, biodiversity, forestry, coastal and marine resources, energy and public health. In the forestry and biodiversity conservation sector, adaptation options include the conservation of genetic resources, plant and animal species and ecosystems and the establishment of forest conservation corridors (Box 16), gene banks, seed banks, botanical gardens, animal sanctuaries, captive breeding and rehabilitation centres. Building the resilience of forest-dependent communities through social forestry, agro-forestry or protection of ecosystem services is not discussed. Other adaptation activities include studies on climate change modelling and the impact of climate change on disease, water resources and vulnerable coastal areas.

Box 16: The Kinabatangan Corridor Research Project

This project involves a comprehensive landscape-level assessment within the larger Kinabatangan area, particularly within the nominated UNESCO Man and Biosphere Reserve. The corridor and protected area network will span coastal mangrove systems and upland interior rainforest. The establishment of the corridor network will help to ensure connectivity between forest patches and minimize the impacts of climate change on biodiversity and ecosystem functions by allowing shifting of species distributions and ecological processes in response to foreseeable environmental and climatic change. The creation of a corridor will increase the total forest area under conservation and help to safeguard carbon stocks within the area. The project will also produce carbon maps, providing baseline information on above-ground carbon stocks that will assist in the establishment and monitoring of carbon schemes, such as REDD.

Mitigation

The greenhouse gas inventory in Malaysia indicates that the energy sector is the major source of emissions, at 66 percent, followed by the land use, land use change and forestry sector, at 13 percent, and the waste sector, at 12 percent. Due to the CO₂ reduction from the land use, land use change and forestry sector, the country became a net sink of emissions in 2000, with net emissions at -26.8 million tonnes of CO₂ equivalent (NRE, 2011).

Malaysia pledged to maintain 50 percent of its land area under forest cover (NRE, 2011) at both the 1992 UN Conference on Environment and Development in Rio de Janeiro and the UNFCCC Conference of Parties 15 in Copenhagen in 2009. Strategies to achieve this include sustainable forest management, establishing forest plantations on marginal and unproductive lands to ease logging pressures and replanting in heavily logged or degraded forests. A nationwide initiative to plant 26 million trees (one tree per Malaysian) by 2015 was launched by the Ministry of Natural Resources and Environment in 2010. In addition, the National Landscape Department is to plant 20 million trees in urban areas from 1997 to 2020 to green urban landscapes (NRE, 2011). Other mitigation strategies include energy efficiency and conservation, uptake of renewable energy, improved waste management and disposal and agricultural practices.

Progress on REDD+

Malaysia is not part of the UN-REDD or the World Bank's Forest Carbon Partnership Facility. National activities will be guided by the national REDD+ strategy and coordinated by the Ministry of Natural Resources and Environment. During 2012 and 2013, a series of workshops were organized to discuss elements of REDD+, such as the development of a monitoring, reporting and verification (MRV) system.

REDD+ activities will be implemented by the state Forestry Departments. Sabah is initiating REDD+ readiness activities with support from the Government, UNDP, the European Union and the World Wildlife Fund. A REDD+ Operational Task Force and a REDD+ Technical Committee have been set up, consisting of various government agencies and NGOs. A REDD+ Roadmap outlines the steps to be taken in preparation, including plans for developing legal, policy and institutional frameworks, reference levels, a monitoring, reporting and verification system and carbon accounting techniques, benefit distribution mechanisms, free, prior and informed consent processes and a series of pilot projects.

REDD+ development activities in Peninsular Malaysia and Sarawak are less advanced. Although voluntary REDD+ projects have been proposed, they have yet to be implemented. The Sarawak Forestry Department appears to be less engaged in developing a state REDD+ strategy.

Social forestry in national climate change strategies and programmes

Social forestry is not specifically mentioned in Malaysia's climate change responses. It is not clear whether and under what circumstances social forestry projects and forest-dependent communities will be a part of REDD+ development. If efforts to reduce deforestation and forest degradation adopt a similar approach to the country's social forestry projects, it is possible that indigenous peoples and forest-dependent communities that have practised traditional patterns of hunting, gathering and cultivation for generations may be encouraged to develop more sedentary lifestyles. But that requires a huge lifestyle change on their part. In Sabah, the Forest Department has to provide people with constant "training" in many aspects of their "new lives" to facilitate the transition from forest-dependent communities to income-generating communities (SFD, 2013).

Trends, issues and challenges

In Sabah, the Forest Department's social forestry projects appear to be having a positive impact on the forest; trees are starting to regenerate, wildlife is becoming more abundant and forests are resuming their previous ecological functions (SFD, 2013). Similarly, agro-forestry projects in Sarawak are reported to have successfully reduced shifting cultivation and enhanced the incomes of rural people (Kendawang, 2007; Chou, 2001). The impacts on local communities are less clear, particularly in terms of how the lifestyle changes brought on by social forestry have impacted local people's vulnerability to climate change and their capacity to adapt. This area warrants further study.

Global demand for palm oil is a major driver of land use change in Malaysia, and the development of land for oil palm cultivation often takes place on natural forests and peat soils that store large reserves of carbon (Reynolds et al., 2011). An estimated 20 million tonnes of CO₂ are released into the atmosphere each year from around 510,000 ha of peat soils drained for palm oil production (SarVision, 2011). Under Malaysian law, the Head of State has the authority to de-gazette permanent forest reserves without legislative approval, consultation with the Forest Department, other experts or even notifying the public. This has led to large areas of forest being de-gazetted for conversion into oil palm plantations, particularly in the states of Sarawak and Perak, where 9,000 ha of permanent forest reserve have been de-gazetted.⁶¹

⁶¹ See <http://news.mongabay.com/2013/0926-hance-bikam-perak.html>.



4.5 Myanmar

Updated national data: Republic of the Union of Myanmar	
Total population	58.6 million (2010) ⁶²
Rural population	Approximately 41,020,000 Approximately 70% of the total population
Total land area	65,755,000 ha (excluding inland water bodies)
Total area defined as forest	31,773,000 ha in 2010
Total forest cover	31,773,000 ha in 2010 48% of the total land area
Production forest	19,633,000 ha 62% of total forest area
Protected forest – soil and water	1,352,000 ha 4% of total forest area
Protected forest – biodiversity conservation	3,510,685 ha 4.2% of total forest area (36 protected areas established, 7 protected areas proposed)
Area of community forestry	42,148 ha in 2010
Carbon stocks	In above- and below-ground living biomass: 1,653 Mt In litter: 67 Mt In soil: data not available
Rate of deforestation (natural forest)	Average annual change: -309,000 0.91% (2010)
Social/community forestry programmes and activities	Taungya agro-forestry system (since 1856) Forest Law (1992) Myanmar Forest Policy (1995) Community Forestry Instructions (1995) Forest Master Plan (2001) Review on Community Forestry by Ecosystem Conservation and Community Development Initiative and University East Anglia (2011) UNDP TNRP Comfort Project (JICA) Community forestry training for government staff and communities in Taungyi District by Ministry of Environmental Conservation and Forestry and Asia Air Survey Co. Ltd. from Japan RECOFTC activities on community forestry
Climate change mitigation policies, programmes and activities	Assessment of greenhouse gas emission reduction options and strategy development for socio-economic sectors Ministry of Energy policy aims to produce 67% of total energy from hydropower and biomass REDD+ project in Yedashe Township, Taungoo District (1 year, 2011–2012) Forest conservation activities Training and workshop on REDD+ Public talk on REDD+ for local communities Rural development activities at project site Extension 1 year (2012–2013) International Tropical Timber Organization's REDD+ project in Taungoo District (3 years, 2012–2015) National Forest Master Plan (2001–2030) Integrated Plan for Greening Dry Zone of Central Myanmar (2001–2030) Greenhouse gas emission inventory project (1995–1998)
Climate change adaptation policies, programmes and activities	Climate change hazard profiling Development of NAPA

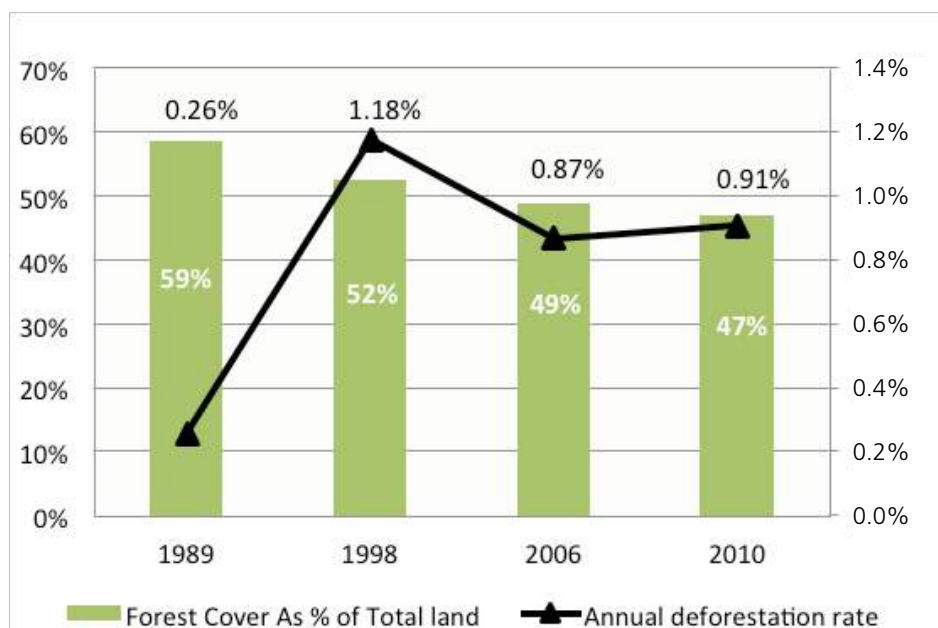
⁶² Due to a lack of recent census data, population figures vary from (48.3 million in 2010 (UNESCAP Statistical Yearbook 2012/World Bank 2013; available at <http://data.worldbank.org/country/myanmar> to 54,584,650 in 2012 (CIA World Factbook, available at www.cia.gov/library/publications/the-world-factbook/geos/bm.html

Forest data: Key changes and emerging trends

Forest cover in Myanmar stood at 31.8 million ha, or 48 percent of the total land area in 2010 (MOECA, 2013). Of this total, 62 percent was production forest, 4 percent was protected forest and 4 percent was conservation forest.

Myanmar has one of the highest rates of deforestation in ASEAN. Forest cover is reducing by an estimated 309,000 ha per year, equivalent to 0.91 percent of forest cover (ibid.). The extent of dense forest has declined by 50 percent in the past 20 years (Tint et al., 2011). Figure 12 illustrates the periodic trends in Myanmar's forest cover and rates of deforestation.

Figure 12: Trends in Myanmar's forest cover and deforestation rate



Source: MOECA, 2013.

Community forestry models and key data

All lands are considered to belong to the State. Community forestry in the Myanmar context means forestry operations that involve the local community, such as the establishment of woodlots where there is insufficient fuelwood and other products for community use, the planting of trees and the exploiting of forest products to obtain food supplies, consumer products and improve incomes among farmers.

As of 2011, 42,148 ha of land had been allocated to communities for community forestry, a small increase since 2010, and there were 571 forest user groups. The Government set a target of allocating 919,000 ha of forest to forest users groups by 2030. As of 2011, 6 percent of this target had been achieved (Kyaw Tint et al., 2011). Almost 60 percent of the community forests established so far are in Shan State, with smaller areas in Magway, Mandalay and Rakhine States, where there has been significant support from UNDP, JICA and the UK Department for International Development (DFID). Expansion of community forestry has been limited in other parts of the country because of less donor assistance (Kyaw Tint et al., 2011).

Policies and laws on forests and social forestry

The Myanmar Forest Law (1992) is based on the principles of public participation in the implementation of forest policy and environmental preservation, supporting the basic needs of people and ensuring the flow of benefits from the forest as well as preventing degradation and depletion of natural forests, ecosystems and biodiversity. The current law does not specifically cover community forestry (Kyaw Tint et al., 2011) but is likely to be revised in the near future; provisions to recognize community forestry may be introduced (Obendorf, 2012). Ongoing revisions of the legal framework may also facilitate foreign direct investment and land ownership and encourage large-scale agribusiness (Colchester and Chao, 2013).

Myanmar's Forest Policy (1995) is based on six principles. These include participation of local people in the conservation and use of forests, meeting the basic needs of the population for shelter, food, fuel and recreation and increasing public awareness of the contribution of forests to the well-being and socio-economic development of the nation.

Myanmar's 30-year National Forest Master Plan (2001) recognizes community forestry as a tool to achieve sustainable forest management and strengthen the livelihoods of rural communities (Kyaw Tint et al., 2011). The Forest Department issued Community Forestry Instructions in 1995 to facilitate community participation in forest management, in response to widespread forest degradation and increasing demand from rural communities for forest products and services. The Instructions provide a sound basis for community forestry. However, revision of the Forest Law and creation of a dedicated Law on Community Forestry would strengthen the legal basis for community forestry and the provisions of the Instructions and provide communities with a greater sense of legitimacy, ownership and security (Kyaw Tint et al., 2011).

Tenure arrangements and bundles of rights

Any land at the disposal of the State, including reserved forest land and forest plantations, can be alienated as community forests (Tint et al., 2011; MOECA, 2009⁶³). In practice, however, community forestry has mostly taken place to rehabilitate degraded lands. Community forestry certificates are granted to local communities for a period of 30 years. They can be inherited and extended, based on the performance and interests of forest user groups. Group members can use the community forest in accordance with the management plan. The collection of forest products and the sale of surplus products is tax free (MOECA, 2012; Tint et al., 2011).

The process for registering community forest certificates is lengthy, administratively difficult and fraught with corruption (Colchester and Chao, 2013), putting people's land tenure security at risk. Most landowners hold lands through customary or informal arrangements and lack official land titles. Government efforts to formalize land holdings as long-term, conditional leases on state lands do not recognize rights based on customary law or actual use, which may create greater tenure uncertainty. Land insecurity has been exacerbated by decades of internal conflicts that have caused large numbers of people to be displaced from their traditional lands, especially in ethnic minority areas (ibid.)

National climate change policies, strategies and programmes

Myanmar does not have a specific policy or law dealing with climate change. There are a number of legal provisions and ministerial policy statements that contain climate-relevant policies, however. The 2008 Constitution, the National Environment Policy (1994) and the Forest Policy emphasize environmental protection. The National Sustainable Development Strategy promotes the sustainable management of natural resources and sustainable social and economic development. The National Energy Policy aims to promote energy efficiency and conservation, wider use of renewable sources of energy and the use of alternative household fuels. The National Health Policy includes provisions to prevent air and water pollution and the National Environment and Health Action Plan deals with environmental health problems, such as air quality, water supply, sanitation and hygiene as well as climate change, ozone depletion and ecosystem changes. The National Medium-Term Priority Framework 2010–2014 for the Ministry of Agriculture and Irrigation includes construction of new reservoirs and dams, the renovation of existing dams, improved water storage and more efficient use of groundwater. To ensure coordination of these policies and programmes on climate change, a Myanmar National Climate Change Policy and a high-level central coordinating body are needed (MOECA, 2012).

Myanmar's Initial National Communication to the UNFCCC is being finalized and was not available at the time of writing.

Adaptation

A hazard profile was prepared in 2009 that identified nine major risks, including climate-related hazards of fire, forest fires, floods, cyclones, storm surges, droughts and landslides.

The NAPA is being prepared, with financial support from the Least Developed Country Fund and the UNEP–Global Environment Facility. The NAPA specifies adaptation priorities in agriculture, forestry, biodiversity, the coastal zone, energy,

⁶³ See www.myanmar.teak.gov.mm/forestdep-statistics-4.htm [18 April 2013].

transport, industry, public health and water resources. Proposed projects include reforestation, improved weather forecasting equipment and a reassessment of the country's dams and reservoirs. The NAPA experts group proposed eight priority adaptation measures: integrating climate resilience into agricultural production for food security in rural areas; developing forest in environmentally fragile areas; establishing a marine protected area in the Myeik Archipelago; integrating coastal zone management; establishing a weather radar system for detecting and minimizing the impacts of natural disasters; constructing disaster-resilient health facilities in Rakhine State and the Ayeyarwady Region; re-evaluating existing dams and reservoirs; and establishing solar-powered water purification systems for fresh drinking water and water pumping for irrigation. Public submissions on the first draft were invited in March 2012.

Various adaptation activities are taking place, including the rehabilitation of mangrove forests, improved soil and water management, the development of tolerant crop varieties, initiatives to improve food security and an integrated multistakeholder ecosystem-based adaptation project at Inle Lake to address problems of decreasing water levels and deteriorating water quality (MOECA, 2012), which includes participatory mapping and zoning with local communities. These activities are helping to reduce vulnerabilities at the local level, but a coordinated national strategy and approach for adaptation is lacking.

Mitigation

More than 500,000 ha of forest plantations have been established throughout the country as carbon sinks, and the Dry Zone Greening Programme will plant an additional 1.5 billion trees on 1.5 million ha of land between 2011 and 2016. The Ministry of Energy is promoting energy efficiency and conservation; it will increase the use of hydropower and biomass to 67 percent of the nation's energy supply.

Progress on REDD+

Myanmar joined the UN-REDD Programme in November 2011 and Norway's International Climate and Forests Initiative is supporting the REDD+ readiness process. Myanmar's REDD+ programme is in the initial stages of preparation. An assessment on readiness of its major components has been conducted in cooperation with UNDP and local NGOs. Preparation of a REDD+ readiness roadmap and funding proposal is ongoing, with support from the UN-REDD Programme and RECOFTC, with working groups established on the drivers of deforestation, stakeholder engagement and safeguards, among other issues. A three-year International Tropical Timber Organization-funded project to build capacity for developing REDD+ activities in the context of sustainable forest management is being implemented in Taungtha District, Bago Region, Myanmar. Other activities include support from the Korea Forest Service for reforestation and climate change mitigation in Bago Yoma Region (2011–2013) and a study supported by Asia Air Survey Co. on strengthening the methodological and technical approaches for reducing deforestation and forest degradation within the REDD+ implementation framework.

Social forestry in national climate change strategies and programmes

There are a number of community-based mangrove restoration and protection projects taking place, funded by various donors, such as JICA, the European Union, the Daewoo Cooperation and FAO. These projects demonstrate the multiple benefits of social forestry in rehabilitating and managing mangrove forests, poverty reduction, social development, environmental protection and climate change mitigation and adaptation. For example, a Ministry of Environmental Conservation and Forestry and FAO community-based mangrove management project in the Wundwin Forest Reserve in Rakhine State restored five acres of mangrove forest, registered 25 acres of degraded area as community forest and established fuel and timber lots to reduce pressure on the mangrove areas. The project also improved local livelihoods, increased the security of food and water supplies and empowered local women through the development of business skills (FAO, 2013). These outcomes will help to sequester carbon, reduce the exposure of local communities to storm damage and increase their resilience to impacts of climate change.

Box 17: Community forests in Myanmar protect villages from cyclone damage

In May 2008, the category 3 Cyclone Nargis struck the Ayeyarwady Delta with wind speeds of up to 200 km per hour, heavy rain and a 3.6 m storm surge, killing more than 140,000 people (UNDP, 2009). The impact of the cyclone was exacerbated by previous environmental degradation in the region, including over-exploitation of natural resources, soil erosion and deforestation, particularly of mangrove forests. The high death toll caused by the storm surge was attributed to the prior loss of 75 percent of the Delta's original mangrove forests that would otherwise have served as a buffer against the storm surge. In areas where mangroves had been destroyed, the tidal surge was able to fatally penetrate far inland, destroying homes, inundating farmland and leaving thousands of people dead.

In contrast, intact mangrove forests helped protect lives, property and livestock from the worst impacts of the cyclone. Survival rates in villages with community-managed mangrove forests were considerably higher than in villages where mangroves had been destroyed (UNDP, 2009). For example, the coastal village of Byant Gyi Gon had initiated community forestry in 1996. The community forest took the brunt of the damage from the cyclone and protected the village. No lives were lost in Byant Gyi Gon, whereas neighbouring villages without forest protection lost up to 30 percent of their population (Springate-Baginski et al., 2011).

Trends, issues and challenges

The handover of community forests to local people is proceeding slowly and has declined substantially in recent years, with only 105 acres handed over in 2009–2010 (Tint et al., 2011). To meet the national target, approximately 20,000 ha of land would need to be transferred to communities every year. Although community forestry was initiated in 1995, it accounted for less than 1 percent of the total land area in 2011. In contrast, the allocation of land for private plantations began in 2006 and already they cover more than 2 percent of the total land area (MOECAAF, 2013). As of 2012, a ban on shifting cultivation makes it impossible for communities to receive a community forestry certificate for forest areas under traditional forest management practices.

Almost all of the forest user groups that have been established appear to be managing their forests responsibly (Tint et al., 2011). This has led to forest regeneration and a range of benefits, including improved livelihoods, ecosystem services and the development of social capital at the village level. Yet, the forest user groups are suffering from a number of limitations, including a poor understanding of the complex community forestry provisions and limited technical capacity in planting, reporting, accounting and bookkeeping. Forest protection is also a challenge, with outsiders trying to harvest forest products from the community forests. The user groups require considerable support from the Forest Department in technical matters and to protect the community forests from encroachment by outsiders. There are also problems with equity, inclusiveness and elite capture of community forestry at the village level, with female community members and the poor under-represented (Woods and Carnaby, 2011).

Recent political and economic changes and the lifting of economic sanctions have led to increasing international investment in Myanmar. An important area for investment is large-scale agriculture and industrial plantation projects, particularly rubber and oil palm, sponsored by the State and private entities. An estimated 1.5 million ha of agribusiness concessions were allocated between 2011 and 2012, and such concessions are now reportedly the main driver of deforestation in the country (Osborne, 2013⁶⁴). They have also resulted in the confiscation of land used by smallholding farmers and provided limited benefits for local communities because investors often import unskilled labourers from other countries to work in the plantations (Colchester and Chao, 2013; Obendorf, 2012).

⁶⁴ See www.dw.de/as-myanmar-opens-up-forests-face-new-risks/a-17000046.



Landscape of natural production forest
Photo by Michael Padmanaba for Center for International Forestry Research (CIFOR)

4.6 Philippines

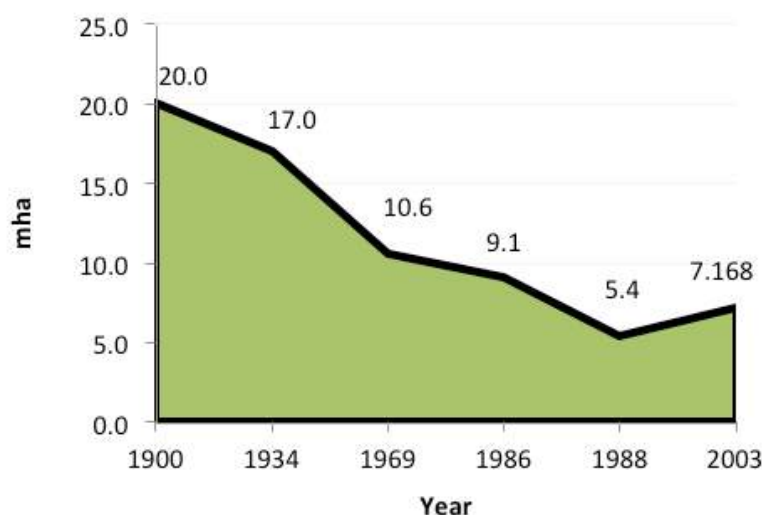
Updated national data: Republic of the Philippines	
Total population	92,337,852 in May 2010 (National Statistical Coordination Board)
Rural population	33,600,000 in 2010 (World Bank) 36%
Total land area (excluding inland water bodies)	29,692,419 ha
Total forest land	15,800,000
Total forested area	7,168,400 ha in 2003 (Forestry Statistics, 2011) 24.1% of total land area 45% of total forest land
Production forest	5,376,000 ha 75% of total forest area
Protected forest – soil and water	788,480 11% of total forest area
Protected forest – biodiversity conservation	3,570,000 ha and 113 protected areas proclaimed 223,844 ha of buffer zone (PAWB-Biodiversity Conservation Division)
Forest under community management	4,003,354 ha 55.8% of total forest area
Carbon stocks	Above-ground biomass: 1,566 Mt (FAO, 2010g) Below-ground biomass: 376 Mt
Rates of deforestation (natural forest)	Average annual rate: 42,643 per ha (based on 1988 Forest Resource Inventory, based on 2003 NAMRIA data (DENR presentation, 2012))
Social/community forestry programmes and activities	Established by Executive Order No. 263 adopting community-based forest management as national strategy for the sustainable development of forest resources
Climate change mitigation policies and programmes	Executive Order No. 774 – Reorganizing Presidential Task Force on Climate Change Philippine Climate Change Act (2009) RA 9729 National Climate Change Action Plan Local Climate Change Action Plan National Framework Strategy on Climate Change Executive Order No. 881 on REDD+ planning and development UN-REDD observer partner Philippine National REDD+ Strategy developed and approved by the Department of Environment and Natural Resources (2010) REDD+ demonstration activities in 5 locations
Climate change adaptation policies and programmes	Philippines Strategy for Climate Change Adaptation 2010–2022 Climate change adaptation projects implemented by the Department of Environment and Natural Resources, some local governments and international development partners

Forest data: Key changes and emerging trends

The Philippines has a total land area of 30 million ha, consisting of 15.8 million ha (53 percent) of forest land and 14.2 million ha (47 percent) of alienable and disposable land. The 2002 forest inventory recorded 7.2 million ha of forest cover on 24.1 percent of the total land area and 45 percent of total forest land.

The Philippines has one of the lowest levels of forest cover in ASEAN, having lost more than half of its original forests during the past century. Of the remaining forests, only 800,000 ha are primary forest; and 80 percent of the country's mangrove forests have been cleared (CCC, 2011).

Figure 13: Forest cover change in the Philippines, 1990–2003



Source: DENR, 2013.

Community forestry data and models

More than 4.1 million ha of forest land have been allocated to local people through the various “people-oriented forestry” mechanisms (DENR, 2013).

Table 15: Land managed under people-oriented forest management instruments

Forest management instrument	Area (ha)
Community-Based Forest Management Agreement	1,615,600
Certificate of Stewardship Contract	723,503
Protected Area Community-Based Resource Management Agreement	38,249
Certificate of Ancestral Domain Title	1,635,972
Certificate of Ancestral Land Title	5,628
Total	4,128,212

Source: DENR, 2013; third ASFN Learning Group Workshop, August 2013.

The main people-oriented forestry instrument is the Community-Based Forest Management Agreement. Data from the Department of Environment and Natural Resources (DENR) indicate that 1,890 such agreements had been issued by 2013, covering an area of 1.6 million ha.⁶⁶

⁶⁶ Other sources refer to Forest Management Board 2005 data stating that 5,503 people-oriented forestry sites covering nearly 6 million ha had been established by 2005 (Bacalla, 2006; Pulhin and Inoue, 2008; Rebugio et al., 2010).

The objectives of the agreements are the sustainable management of forest resources, social justice, the improved well-being of forest communities and partnerships between local communities and the DENR. The DENR's Strategic Action Plan for Community-Based Forest Management (1997) set a target of 9 million ha of forest lands to be managed through people-oriented forestry by 2008.⁶⁷ Although less than half of this area has been achieved, more than a quarter of the state forest land has been placed under the management of local people.

Policies and laws on forests and social forestry

The first Philippine Master Plan for Forestry Development (1990) recognized the role of local communities in forest protection, rehabilitation, development and management. People-oriented forestry was adopted as a cross-cutting strategy in all forest management systems.

Executive Order No. 263 (1995) established community-based forest management as the official national strategy for the sustainable development of forest resources. Such management is a collaborative undertaking of the national Government, local government units, local people, community organizations, civil society organizations and private business entities; it integrates and unifies all other people-oriented forestry activities. Executive Order No. 263 is a presidential decree with implementing rules and regulations issued by the DENR Secretary and does not carry the same weight as a law. The community-based forest management policy is thus vulnerable to political pressures as well as changes in the goals and objectives of the DENR (Pulhin et al., 2008; Rebugio et al., 2010).

Other legislation also has promoted the engagement of local people in forest management. The Law on National Integrated Protected Areas System gives indigenous and other local communities the right to participate in the development of protected area management strategies. The Indigenous Peoples' Rights Act (1997) recognizes the rights of indigenous peoples to their ancestral lands and paves the way for the individual or communal titling. Community-based forest management, the National Integrated Protected Areas System Act (1992) and the Indigenous Peoples' Rights Act rely on the principles of community participation and bottom-up approaches to forest management planning and protection strategies (Guiang and Castillo, 2006; FAO, 2010f).

Tenure arrangements and bundles of rights

Community-based forest management applies to all areas classified as forest lands, including allowable zones within protected areas not covered by prior vested rights. The agreements grant communities tenure over forest lands for 25 years and can be renewed for a further 25 years. The long tenure period is intended to provide tenure security and incentives for people to develop, use and manage portions of forest lands in a sustainable manner (DENR Administrative Order No. 96–29).

The rights transferred by a community-based forest management agreement are conditional and subject to other government regulations, such as regulations on harvesting, processing and transporting timber, complicated management planning requirements and other regulations on forest use (Rebugio et al., 2010). The harvesting of forest products is subject to a resource use permit that can take considerable time and expense to obtain. This allows the DENR to retain a high degree of control over the use of forest resources (ibid.), which can reduce the benefits to forest communities and reduce tenure security.

In 2006, the DENR Secretary cancelled existing community-based forest management agreements and suspended the processing of new applications due to non-compliance of tenure holders with the forest tenure instruments. This had negative impacts on the livelihoods and income of participants and appears to have led to the increased exploitation of forest resources (Pulhin and Inoue, 2008) as well as the reduced impetus of the community-based forest management programme (Pulhin and Inoue, 2008; Rebugio et al., 2010).

As for other forest types, limited use rights can be granted within designated multiple-use zones and buffer zones of protected areas and watershed reserves. The Certificate of Ancestral Domain Title is used to recognize indigenous peoples' ancestral claims to public forests, forest land and natural resource assets as well as their rights to occupy, develop, manage, protect and benefit from the forest lands and resources.

⁶⁷ The 9 million ha included 2.9 million ha already covered by people-oriented forestry projects and a further 6.59 million ha considered as open and potentially open access land.

National climate change policies, strategies and programmes

The Philippines is highly vulnerable to the impacts of climate change and other natural disasters and has developed various policies and programmes to respond to the challenges and achieve the vision of a climate-resilient nation enjoying sustainable development.

Since its creation in 2009, the Climate Change Commission has formulated the National Climate Change Action Plan, the National Framework Strategy on Climate Change and the guidelines for the Local Climate Change Action Plan.

The National Climate Change Action Plan is the main policy document guiding the response to climate change for the period 2011–2028 and to facilitate the incorporation of climate change issues into national and local development processes. It covers the likely impacts of climate change on vulnerable areas, ecosystems, communities and groups, the management of risks and potential greenhouse gas mitigation measures. The Plan prioritizes adaptation above mitigation due to the Philippines' high level of vulnerability to climate change and its relatively low level of greenhouse gas emissions.

The National Framework Strategy on Climate Change (2010–2022) aims to strengthen the adaptation of natural ecosystems and human communities to climate change and outline a cleaner development path for the country. The Framework recognizes the mutually beneficial relationship between mitigation and adaptation and that mitigation strategies (such as energy efficiency, renewable energy, sustainable transport and infrastructure and REDD+) will be more effective if undertaken in the context of adaptation.

Adaptation

The DENR prepared the Philippines Strategy for Climate Change Adaptation 2010–2022. It was intended to guide the drafting of the 2011–2015 Medium-Term Development Plan and support the translation of adaptation strategies into national and local policies. The goal of the strategy is to build the adaptive capacity and resilience of communities and increase the resilience of natural ecosystems to climate change. The Strategy focuses on biodiversity, forestry, coastal and marine resources, fisheries, land, agriculture, water sector, minerals, energy, public health and infrastructure. The four objectives in each sector are creation of an enabling environment for the mainstreaming of climate change; reducing climate risks and vulnerability of human and natural systems; improved knowledge management; and a non-discriminatory and gender-sensitive response to climate change.

The Strategy promotes the protection and sustainable management of forest ecosystems and recognizes that the forestry sector offers opportunities for joint adaptation and mitigation. A range of actions are outlined under the four broad objectives, including passage of a bill on the sustainable management of forest ecosystems for climate change adaptation; mitigation and poverty reduction; integrating adaptation into the forestry master plan; and developing innovative financing mechanisms for sustainable forest management (CCC, 2011).

Mitigation

The greenhouse gas inventory indicates that the energy sector is the largest contributor of emissions, at 55 percent of the total, followed by agriculture, at 29 percent, and smaller amounts from waste, at 9 percent, and industrial processes, at 7 percent. The land use change and forestry sector sequestered 82 percent of the emissions from other sources (CCC, 2011). The greenhouse gas emissions are expected to quadruple in the energy sector and double in the transport sector by 2030 because of the country's growing economy and increasing urbanization and motorization.

The National Framework Strategy on Climate Change facilitates the country's transition towards low greenhouse gas emissions and sustainable development. Mitigation strategies include energy efficiency and conservation, doubling the country's renewable energy capacity in the next 20 years, development of low-carbon transportation systems and public infrastructure and developing REDD+.

Progress on REDD+

The Philippines joined the UN-REDD Programme as an observer in 2010. The National Framework Strategy on Climate Change recognizes that REDD+ provides an opportunity to strengthen the forestry sector's capacity to adapt to climate change impacts by enhancing ecosystem services and environmental and social benefits (CCC, 2011). The National REDD+ Strategy was finalized and approved by the DENR in July 2010. It presents an overview of the forestry sector and the

strategic outlook for REDD+ development, reviews the legal framework in the context of REDD+ and outlines a range of strategies and activities for REDD+ development over a three- to five-year readiness phase and a five-year engagement phase (CCC, 2011).

There are five REDD+ projects in various stages of development (Table 16). The Peñablanca Sustainable Reforestation Project and the Quirino Forest Carbon Project were the first projects to achieve the gold-level Climate Change and Biodiversity Alliance Standard and the Quirino project is also accredited under the verified carbon standards programme.

Table 16: Ongoing REDD+ projects in the Philippines

Project	Province	Hectares	Supporting	Period	Expected benefits
Climate-Relevant Modernization of Forest Policy and Piloting of REDD in the Philippines	Southern Leyte	31,848	DENR-FMB and GIZ	October 2010–March 2013	42 tonnes of carbon/year
Advancing Development of Victoria-Anepahan Communities and Ecosystem through REDD	Southern Palawan	50,000	NTPF Task Force, Flora and Fauna International and the European Union		
Community Carbon Pools Programme (C2P2)	Southern Sierra Madre Quezon	144,000	NTPF Task Force, Flora and Fauna International and the European Union	March 2010–2014	
Quirino Forest Carbon Project, Sierra Madre Biodiversity Corridor	Quirino	177	Conservation International and More Trees Inc.	2009–2029	31,771 tonnes of CO ₂ equivalent in 23 years
Philippine Peñablanca Sustainable Reforestation Project	Peñablanca	2,943	Conservation International and Toyota	30 years	362,920 tonnes CO ₂ equivalent in 30 years
Forest and Climate Protection Project in Panay and Leyte	Panay and Leyte Islands		GIZ and DENR		
Forest protection and carbon stock enhancement project, Ikalahan ancestral forests	Nueva Vizcaya		Community-led, Kalahan Education Foundation, Mitsubishi		

Social forestry in national climate change strategies and programmes

Forest-dependent communities are important stakeholders in the majority of REDD+ pilot activities. Two REDD+ projects are implemented as community-based forest management projects (Lasco et al., 2013). For example, the Quirino Forest Carbon Project is establishing 177 ha of agro-forestry and reforestation plots within integrated social forestry farms managed by local community members on lands they hold through Certificate of Stewardship Contracts. The project is reforesting degraded areas using indigenous tree species to improve habitat for native plant and animal species, stabilize soil erosion, preserve ecosystem functions and offer alternative income sources for local people as well as sequestering carbon. The REDD+ Community Carbon Pools Programme in the Agta-Dumagat-Remontado tribes' ancestral domain seeks to establish community carbon pools to link neighbouring forest areas into a common management and benefit-sharing scheme.

Trends, issues and challenges

Forest protection and sustainable forest management have been largely unsuccessful. Policy and operational failures (including unstable forest policies, balancing forest protection and production areas, management of forest areas covered by ancestral titles, open access forest areas, weak government support in the rehabilitation of watersheds, insufficient investments in community-based forest management areas, forest industries and reforestation programmes, the pervasiveness of poaching and illegal logging and ineffective monitoring of forest resources) have caused forest cover to decline. This has resulted in the loss of biodiversity and forest ecosystems services and the exacerbation of poverty in the uplands. All of it leaves the sector vulnerable to the impacts of climate change (DENR, 2011).

Community-based forest management has achieved varying levels of success in different parts of the country, largely due to unstable policies, poor policy implementation and a lack of funding and support from the national and local governments (Rebugio et al., 2010). Successful projects tend to result from strong government support and community engagement in sustainable forest management, along with international funding and technical assistance. The varying degrees of success indicate that challenges remain in achieving the objectives on a national scale. Scaling up such a community approach has been mainly a result of donor support. Since 2000, there has been a reduction in donor funding and support, which has affected the participation of NGOs and local government in community-based forest management activities. The development of people's organizations has been uneven across the country and dependent on external support; many people's organizations lack the capacity to develop the highly technical management plans required from community-based forest management agreement holders. Additionally, the benefits generated through community-based forest management projects have not been widely sustained after project completion (Rebugio et al., 2010).

Climate change policies and programmes are starting to recognize the links between adaptation and mitigation. Climate policies are not yet fully aligned with national, sector and local development plans, which limits their effectiveness and leads to difficulties in monitoring, coordination and convergence across various sectors and levels of government.

REDD+ activities are having some success in reforestation and biodiversity conservation, improving the livelihoods and incomes of local people and building the capacity of partners and participating communities. There are also challenges relating to weak forest policies, conflicting interests of local government units, tenure insecurity and the absence of a proper accounting system and a monitoring, reporting and verification system, among others (Lasco et al., 2013). National laws and policies are needed to strengthen the legal framework for development of REDD+ and particularly to enhance the links between local communities and various government and non-government agencies for REDD+ financing and collaboration, facilitate implementation of the REDD+ or forestry carbon projects and increase the confidence of potential investors.



4.7 Thailand

Updated national data: Kingdom of Thailand	
Total population (2013)	64,623,000
Rural population (2013)	34,961,000
Total land area (excluding water bodies)	51,300,000 ha
Designated forest area	22,400,000 ha 43% of total land area
Actual forest cover	17,200,000 ha 33% of total land area 76% of designated forest area
Conserved forest	7,400,000 ha 33% of forest area
National forest	7,500,000 ha 33.5% of forest area
Production forest	14%
Protected forest – soil and water	7%
Protected forest – biodiversity conservation	47%
Forest under community management	More than 8,500 sites registered with the Royal Forest Department, covering 500,000 ha
Carbon stocks	880 Mt of carbon
Rates of deforestation (total forest)	Not available
Rates of deforestation (natural forest)	-0.57% per year ⁶⁸
Social/community forestry programs and activities	Community forest registration Food security programme Urban forestry promotion Forest conservation voluntary programme
Climate change mitigation policies and programmes	National Action Plan on Climate Change (2000) National Strategic Plan on Climate Change Climate Change Master Plan (2012–2050) Forest Rehabilitation Programme Within Degraded Lands Private plantation promotion Low-carbon development REDD+ initiative activity
Climate change adaptation policies and programmes	Climate Change Master Plan (2012–2050) Green Investment Policy Food security promotion within community forests

⁶⁸ Period not specified.

Forest data: Key changes and emerging trends

Thailand has 22.4 million ha of designated forest land, covering 43 percent of the country's total land area. The Royal Forest Department estimates that forest cover stands at 17.2 million ha, or 33 percent of total land area. Forest cover fell from 22 million ha in 1973 to 13 million ha in 1998. Commercial logging was banned in 1989. In the past decade, the rate of deforestation stabilized and forest cover has risen slightly (RFD, 2011). Encroachment on forest land for cultivation continues to provoke deforestation and the degradation of forest resources (USAID, 2011).

Community forestry data and models

Registered community forests have increased in recent years. By February 2013, 8,500 community forests had been approved by the Royal Forest Department, covering approximately 500,000 ha, or 3.5 percent of the total forest area (RFD, 2013).

Community forests can be established on three categories of land: national reserved forest or public and overgrown areas; land under the jurisdiction of other government agencies (such as monasteries, educational institutes or military areas); and private lands. They are classified either as natural forests (in which local communities protect forests and trees in non-hunting areas, cemeteries, monasteries, sacred sites, head waters and paddy fields to benefit from their productive capacity) or rehabilitated degraded forests (developed for land and water conservation, food security, recreation, amenities and other purposes). Rehabilitated forests include forest plantations for community purposes, forest plantations within educational and religious institutions, forest plantations under Royal Initiative Projects and urban community forests (Ongprasert, 2010).

Policies and laws on forests and social forestry

All natural forests are owned by the State. Responsibility for forest management is shared between the Royal Forest Department and the Department of National Parks, Wildlife and Plant Conservation. The national target for forest cover is 40 percent; with 25 percent as protected forests and 15 percent for timber production.

There are five primary laws: the Forest Act (1941) on the management of state forests, logging, licenses and royalty payments; the National Parks Act (1961) on the designation, management and protection of national parks; the National Reserved Forest Act (1964) on governing the designation, management and protection of national reserved forests; the Wildlife Preservation and Protection Act (1992) and the Commercial Forest Plantation Act (1992) on the registration and regulation of plantations and creation of private plantations on degraded forest.

Thailand does not have a law on community forestry. Various drafts of a Community Forestry Bill have been proposed, rejected and redrafted, but a law has not yet passed (Zurcher, 2005; Ongprasert, 2010). The main issue holding up its passage relates to whether forests inside protected areas can be used for community forestry. The existing legislative framework is somewhat contradictory – the National Park Act prohibits settlement, land cultivation and the collection of timber and NTFPs within national park boundaries, whereas the Thai Constitution (2007) upholds the right of communities to participate in natural resource management.

Tenure arrangements and bundles of rights

Despite the lack of a formal legal framework for community forestry, there are ongoing efforts to engage local people in forest management outside the protected areas. As mentioned previously, there are at least 8,500 approved community forests covering approximately 500,000 ha of land, mostly in the North and Northeast of the country. Approved and established community forests are recognized by the Government and receive financial and technical support from the Royal Forest Department. Within established community forests, villagers are permitted to freely collect dead wood for domestic use and construction and NTFPs (such as rattan, bamboo and bamboo shoots, wild vegetables, flowers, fruit, nuts and medical plants) for domestic use and cash income (FAO, 2009), in line with communally agreed rules. Since the 1989 logging ban, felling or harvesting living trees in natural forests for commercial or household use is prohibited, although in plantation forests certain species may be harvested for timber and fuelwood.

More than 20,000 communities (some one million households) currently live inside protected areas (Lakanavichian, 2006; Weatherby and Soonthornwong, 2008; Ongprasert, 2010). This is considered illegal under the National Parks Act, even though many households occupied these lands prior to the establishment of the parks. The draft Community Forestry Bill

(2007) recognizes their right to use NTFPs but not timber. That right has not been formally recognized in national law, but in practice the collection of some basic forest products for household use is generally permitted (FAO, 2009). Without an official framework for community forestry, however, these communities have very few legal rights and their tenure remains highly insecure.

In May 2011, community land title permits were introduced to legally allow communities to temporarily occupy, use and manage state land for livelihood purposes. The land title permits do not confer ownership, and communities must periodically renew their title deeds with the relevant government agencies.⁶⁹ Decisions on resource use are made by the Community Committee, and titles may be revoked if communities fail to meet the requirements (RRI, 2012). Community land title permits are not applicable in protected areas. As of June 2012, only two community land title permits had been issued, and the policy does not appear to be a priority for the current Government.

National climate change policies, strategies and programmes

Thailand is preparing a National Master Plan on Climate Change (2012–2050). The Master Plan is a framework of integrated policies and action plans on climate change adaptation, reducing greenhouse gas emissions, moving towards a low-carbon society and building capacity for climate change risk management. It aims to support climate change preparedness initiatives and align them with Thailand's economic and socio-cultural contexts and the philosophy of "sufficiency economy". The Master Plan lists policy recommendations in seven areas: cities and urban areas, coastal zone and wetlands, freshwater ecosystems, public health, agriculture and rural areas, forest ecosystems and public infrastructure. The Master Plan went through its final round of public consultation in August 2012.

The eleventh National Economic and Social Development Plan (2012–2016) addresses climate change under the Strategy on Managing Natural Resources and Environment Towards Sustainability. It moves the country towards a low-carbon and environmentally friendly nation and calls for increased adaptive capacity and climate resilience. This includes development of a greenhouse gas registry and carbon market, a carbon fund and a strong monitoring, reporting and verification system. Other relevant policies include the National Action Plan on Climate Change (2000), which established an initial framework for reducing greenhouse gas emissions and adapting to adverse impacts of climate change and outlined adaptation plans for forests, water and coastal resources, public health and agriculture; and the National Strategic Plan on Climate Change (2008–2012), which provided guidelines to support national and local government agencies to develop climate change action plans, focusing on agriculture, water resources, marine and coastal resources and the health sector (ONEP, 2011). In addition, sector plans, such as those of the Ministry of Energy, offer roadmaps and targets.

Adaptation

Adaptation is featured in the draft National Master Plan on Climate Change 2011–2050 and the eleventh National Economic and Social Development Plan for 2012–2016 (NSEDB, 2011). Strategy Two of the draft Master Plan promotes adaptation to climate change through a Green Investment Policy.

To enhance technical and scientific knowledge on climate change, several studies have been carried out to develop future climate scenarios and assess likely impacts, vulnerabilities and adaptive capacities in different areas of the country and sectors of society. However, research on vulnerability and adaptation is constrained by scientific and technical limitations, especially regarding scenario uncertainties and the lack of vulnerability assessments. This restricts the integration of climate change adaptation into national development (ONEP, 2011).

Sectors for adaptation are agriculture, water resources, health and marine and coastal resources. Sector policies have been formulated, such as for improved water management and irrigation and the development of seed varieties that are more resistant to water stress. Communities in many coastal regions have engaged in the planting, rehabilitation and conservation of mangrove forests to reduce erosion, prevent storm damage and reduce the impact of tides and waves (Chinvanno and Kerdsuk, 2013).

⁶⁹ The duration of the community land title is decided by the Government Committee.

Mitigation

According to the greenhouse gas inventory data included in the Second National Communication to UNFCCC, the energy sector produces 70 percent of Thailand's emissions, followed by agriculture, at 22 percent, and industrial processes, at 7 percent. The land use change and forestry sectors emitted about 44.2 million tonnes of CO₂ and removed about 52 million tonnes, making the forest sector a net sink for around 8 million tonnes of CO₂ (ONEP, 2011).

The mitigation strategies focus on achieving a low-carbon society through economic restructuring, green investment, forest conservation and increasing the forest area under REDD+. The Ministry of Natural Resource and Environment is implementing about 15 CDM projects.

Progress on REDD+

Thailand is in the early stages of REDD+ readiness. An interministerial REDD+ Task Force was created in 2010 and led by the Department of National Parks and Wildlife. The Task Force oversees several technical working groups and coordinates the implementation of REDD+ at the national and local levels. Thailand submitted a Readiness Plan Idea Note to the Forest Carbon Partnership Facility in 2009 and a Readiness Preparation Proposal in 2012 (revised in February 2013). Those readiness plans have been criticized by civil society groups for weak participatory processes and for neglecting the issue of forest communities living in protected areas (Thai Climate Justice Working Group, 2013).

REDD+ project activities have not yet been started. Possible future REDD+ activities may focus on addressing the drivers of deforestation, such as commercial agriculture and the expansion of shrimp farming in mangrove areas. Three sites, the Khao Yai National Park, the forest corridor linking the Western Forest Complex and Kaeng Krachan National Park and the Thungyai-Huai Kha Khaeng Wildlife Sanctuary, have been selected as possible locations for future REDD+ pilot activities. Given the lack of secure tenure and weak rights of forest-dependent communities in protected areas, it is not yet clear how they will be affected by REDD+ projects. There are serious concerns that measures to reduce deforestation and forest degradation will further reduce their access to forest resources.

Social forestry in national climate change strategies and programmes

According to the Second National Communication, Thailand has been undertaking efforts to expand forest areas through reforestation and rehabilitation of deforested areas and the expansion of community forests, commercial forests and conserved forest areas. Reforested areas have increased by more than 64,000 ha since 2000. There are plans to protect more than 500,000 ha of mangrove forests along the coastline (ONEP, 2011).

The draft climate change master plan includes a number of action points relevant to social forestry, including establishment of pilot projects on community rights and land use; improving laws and regulations to enable greater participation in conservation and land use by local communities and administration organizations; and supporting community learning on natural resource management to facilitate adaptation to climate change (Chinvanno and Kertsuk, 2013).

Trends, issues and challenges

The delay in passing the Community Forestry Bill has inevitably slowed down the progress of community forestry and limited its impact. The absence of an official regulatory framework has led to confusion regarding the rules and regulations covering community forests, contributing to frustration and tension between the parties involved (USAID, 2011; FAO, 2009). The different approaches to community forestry adopted by the Royal Forest Department and the Department of National Parks and Wildlife can result in confusion on the ground, particularly because the boundaries between protected areas, neighbouring forests and farm areas are not always clearly demarcated (RECOFTC, 2013).

Although the number of officially recognized community forest sites has increased in recent years, tenure rights in conservation forests remain unclear and are frequently contested. A concerted effort is required to resolve this situation. Unless the issue is addressed, the development of REDD+ may further reduce local people's access to forest resources and reduce their livelihood options. As well, Thailand would be unlikely to achieve the desired objectives of forest conservation and climate change mitigation.



4.8 Viet Nam

Updated national data: Socialist Republic of Viet Nam	
Total population	87,840,000 in 2011
Rural population	59,951,800 in 2011 72% of total population
Total land area (excluding inland water bodies)	33,095,760 ha
Total forest land	15,188,740 ha in 2010 (VNFOREST, 2013) 46% total land area
Total forested area (forest cover)	13,515,064 ha 39.7% of total land area 89% of forest land (VNFOREST, 2013)
Production forests	6,677,105 ha 50% of total forest area
Protected forest – soil and water	4,644,404 ha 35% of total forest area
Special used forests– biodiversity conservation)	2,011,261 ha 15% of total forest area
Forest under community management	Forest allocated to communities: 298,984 ha Forest allocated to households: 3,510,336 ha (VNFOREST, 2013)
Carbon stocks	In above- and below-ground living biomass: 992 Mt In litter: 72 Mt In soil: 651 Mt
Forest cover change	+149,727 ha (+1.19 percent) per year 2006–2011 (VNFOREST, 2013)
Social/community forestry policies and programmes	Community Forest Management and Forest Protection and Development Law Pilot Community Forest Management Project, 2006–2009 Strengthening Community Forestry in Viet Nam Project, June 2012–December 2013
Climate change mitigation policies and programmes	National Target Programme on Climate Change UN-REDD partner country CDM: Afforestation and reforestation project in Hoa Binh Province (funded by JICA and Honda) National PES Pilot Policy (Decision 380/QĐ-TTg10/04/2008) and pilots in Lam Dong (Winrock International) and Son La (GIZ) Pilot project in Bac Kan Province under resource use permits National policy to upscale payment for ecosystem services nationwide in effect from 1 January 2011 (Decree 99/2010/NĐ-CP 24/09/2010) National REDD Programme development ongoing
Climate change adaptation policies and programmes	National Target Programme to Respond to Climate Change (Decision 158/2008/QĐ-TTg) Action Plan Framework for Adaptation and Mitigation for Climate Change in Agriculture and Rural Development Sector 2008–2020, launched by the Ministry of Agriculture and Rural Development in 2008

Sources: Unless specified, Viet Nam General Statistics Office (available at www.gso.gov.vn).
Viet Nam Administration of Forestry (VNFOREST) data available at www.dof.mard.gov.vn.

Forest data: Key changes and emerging trends

Based on data from the Viet Nam Administration of Forestry (VNFOREST), the country's forested area stood at 15.2 million ha, or 46 percent of the total land area in 2010. Forest cover was 13.5 million ha, or 40 percent of the total land area and 89 percent of forest land (VNFOREST, 2013).

Viet Nam's forest cover declined from 43 percent in 1943 to 27 percent in 1990. Over the past ten years, forest cover has gradually increased (figure 14). This is attributed to national reforestation efforts and the distribution of forest land to local people to incentivize improved forest management. Despite this increase, some regions still experience high rates of deforestation and forest degradation, and natural forests continue to suffer from degradation and fragmentation, with more than two-thirds considered poor or regenerating.

Figure 14: Forest cover and forest types in Viet Nam, 2002–2011

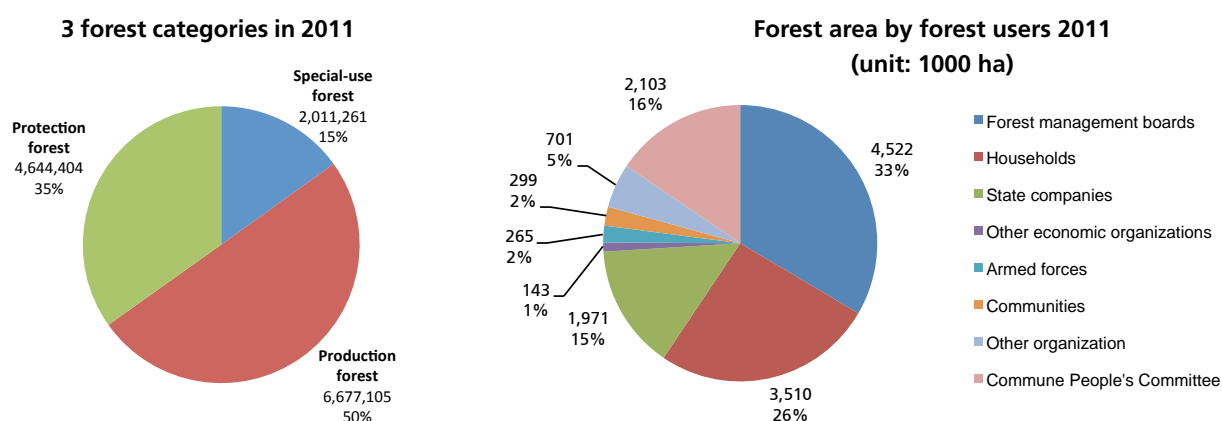
Area of forest and forestry land (ha)			
Forest Status	2002	2005	2011
Forest area	11,784,589	12,616,700	13,515,064
A. Natural forest	9,865,020	10,283,173	10,285,383
Timber forest	7,772,416	8,113,580	8,222,075
Bamboo forest	788,713	783,667	561,635
Mix forest	685,766	684,958	708,834
Mangrove forest	70,205	63,263	60,822
Rocky mountain forest	547,920	637,705	732,017
B. Plantation	1,919,569	2,333,526	3,229,681
With standing volume (>3 years)	595,147	825,485	1,705,436
Without standing volume (< =3 years)	1,169,554	1,209,882	1,158,334
Bamboo	59,066	86,911	82,568
Specialties	95,801	211,247	205,117
Mangrove forest	-	-	78,224

Source: VNFOREST, 2013.

Forests are classified into production, protection and special-use forests. Production forests are natural and planted forests designated for production of timber and NTFPs and account for around 50 percent of the total forest area. Protection forests make up around 35 percent of the total and are designated for the protection of soil and water resources and climate regulation. Special-use forests are designated primarily for nature conservation, tourism, scientific research and the protection of areas of historical and cultural importance and make up around 15 percent of the total forest area (Figure 15). Community forestry data and models

In 2011, a total of 3.8 million ha of forest land (25 percent of the total forest land) were managed by local people, mainly for production purposes. Most of the area was managed by households, with only 298,984 ha allocated to communities (VNFOREST, 2013). Other forest users include forest management boards, state companies and Commune People's Committees. More than 2 million ha of forest land is under the temporary management of communal authorities, some of which is expected to be allocated to local people in the future (RECOFTC, 2010).

Figure 15: Forest categories and forest users, 2011



Source: VNFOREST, 2013.

Pilot community forestry programmes were initiated during the 1990s to promote planting on barren hills, with local people intended as the driving force behind reforestation and the main beneficiaries of forestry activities. At that time, most forests and plantations had been heavily degraded; forest cover was as low as 27 percent (USAID, 2013).

Policies and laws on forests and social forestry

According to the Constitution (revised 1992), all land and forest resources belong to the population as a whole and are managed by the State on behalf of the people. The State may grant rights to use and manage forests to different entities, including individuals, households and communities, through land use rights certificates and forest protection contracts.

Community forestry has a strong foundation in legislation and policy. The Forest Protection and Development Law (1991) enables forest resources to be allocated to various stakeholders for management, protection and commercialization (Sikor and Nguyen, 2011). The Land Law (2003) officially recognizes communities as a legal entity who can enter into land tenure agreements, enabling land to be allocated to communities. The Forest Protection and Development Law (2004) officially recognizes community forestry and provides the legal basis for the allocation of forest use rights to communities, individuals and households for forest protection and development.

Tenure arrangements and bundles of rights

Forest management and protection duties are assigned to different users by allocation, contracting and leasing arrangements. Forest user groups receiving forest or forest land by allocation enjoy the largest scope of rights, compared with those granted under contracting and leasing arrangements.

Land use rights for production and non-critical protection forests are allocated through a Land Use Rights Certificate (known as a Red Book) for a period of 50 years. They can be extended at the discretion of the State and can be exchanged, inherited, transferred, leased and mortgaged (Nguyen, 2005). The exact bundle of rights transferred depends upon the type of forest allocated. In plantation forests, people are granted rights to plant and harvest trees and use other forest products without restrictions. In natural forests, they are allowed to harvest a limited number of trees, depending on the quality and protection function of the forest. When natural forest is allocated to communities, the transfer, exchange, lease, rent or mortgaging of the land is not permitted (Heimo, 2010).

Forest Protection Contracts (known as FPCs or Green Books) are made with local people for the protection of existing forests and promoting natural regeneration. They can apply to forested lands, non-forested lands and lands designated for regeneration and plantation development, including special use forests, critical watershed protection forests and mangrove protection forests. This mechanism was utilized by national reforestation programmes, such as the 5 Million Hectares Reforestation Programme. The contracts are valid for one year but can be extended for up to five years. Beneficiaries receive payments⁷⁰ for planting, regeneration and forest protection activities and are allowed to collect NTFPs and other forest products (with some restrictions). Households, groups of households and ethnic communities living in or near forests are the primary beneficiaries (Sunderlin, 2005).

Special-use forests, such as national parks and nature conservation zones, cannot be assigned directly to households or individuals. Recently, however, the Government started to advocate for co-management of the special-use forests, an approach in which local communities are encouraged to participate in forest protection and ecotourism activities to increase their incomes and benefits from forest protection and thus strengthen the protection of the forests (Swan, 2008; Nguyen et al., 2012).

Although there is no law that specifically addresses carbon ownership, the legal basis for a performance-based benefit distribution exists (Forest Trends, 2012). The laws on land and forest allocation and the payments that can be received for performance of forest management and protection duties could presumably be extended to include carbon rights.

National climate change policies, strategies and programmes

The main climate change strategy is the National Target Programme to Respond to Climate Change, 2009–2015, prepared by the Ministry of Natural Resources and Environment. The strategy provides an assessment of the country's vulnerability to climate change, focusing on:

⁷⁰ The payment is 50,000 dong per hectare per year.

- vulnerable regions – coastal areas, river deltas and mountainous areas;
- vulnerable sectors – water resources, agriculture, food security and public health; and
- vulnerable people – farmers, fishing communities in coastal areas, ethnic minorities in mountainous areas, senior citizens, women, children and the urban poor (MONRE, 2008).

The strategy also outlines broad responses to climate change, setting long-term goals for adaptation and mitigation in all sectors and at all levels, including policy development, mainstreaming climate change into development strategies, programmes and plans, strengthening institutional capacity and raising awareness (MONRE, 2008). It also requires all government ministries to develop their own action plan on climate change. As of 2011, the Ministry of Natural Resources and Environment, the Ministry of Agriculture and Rural Development and the Ministry of Industry and Trade had approved action plans (ISPONRE, 2011).

Provincial authorities and people's organizations have limited involvement in the development of the strategy and thus recommended activities may not be closely aligned with local priorities (Oxfam, 2010). Provincial action plans focus more on infrastructure development and less on community-participation, raising awareness and building capacity of the most vulnerable communities, which will be critical in achieving cost effective and lasting impacts (Oxfam and CARE, 2013). Although the strategy identifies the social groups most vulnerable to climate change, it fails to account for the different capacities, roles, responsibilities and decision-making powers of men and women in responding to climate change (UN Viet Nam, 2009).

The National Green Growth Strategy for 2011–2020 aims to facilitate economic restructuring to promote the efficient use of natural resources, address climate change and drive sustainable economic growth.

Adaptation

Viet Nam's Initial National Communication (2003) and Second National Communication (2010) to the UNFCCC outlined adaptation measures in agriculture, water resources, coastal zone management, forestry, aquaculture, energy, transport and public health, based on the scenario of a 1 m sea-level rise by 2100 (MONRE, 2003; MONRE, 2010).

The Action Plan Framework for Adaptation to Climate change (2008–2020) focuses on agriculture, rural development and capacity building. Forests and social forestry do not currently have a major role in adaptation strategies. Given the large number of rural people managing forest resources, Viet Nam needs to consider whether local people have the knowledge, skills and necessary capacities to manage the forest resources effectively under changing climatic conditions and also how forest resources can help to build the resilience of forest-dependent people to the negative impacts of climate change.

The strategy focuses primarily on the development of early warning systems and infrastructure, such as coastal and flood defences and more durable buildings. The majority of activities focus on disaster response and risk reduction (such as forecasting and weather monitoring) and disaster risk management. So far, less attention has been paid to the integration of climate change considerations into development planning, addressing underlying causes of vulnerability, building institutional capacity and enhancing social capital to increase resilience (World Bank, 2010).

Mitigation

Viet Nam's communications to the UNFCCC outline mitigation options in the energy, land use change and forestry and the agriculture sectors. The Government aims to reduce emissions in all economic sectors, including a 20 percent reduction in the agriculture sector. Reducing deforestation and forest degradation is a major component in the mitigation strategy, with a projected reduction of 19 million tonnes of CO₂ equivalent per decade (REDD Viet Nam, 2012).

Progress on REDD+

The National Action Plan on Reducing Emissions from Deforestation and Forest Degradation, Sustainable Forest Management, Conservation and Enhancement of Carbon Stock in the Forest (2011–2020) was approved in June 2012 and is the main framework guiding REDD+ implementation. It seeks to increase national forest cover to 44–45 percent by 2020, sets out specific tasks and objectives for the periods 2011–2015 and 2016–2020 and defines the roles of relevant agencies. Activities targeted for the first period include completing the legal framework for REDD+, building capacity and institutional coordination for the management of REDD+, data collection for the formulation of reference emissions levels, establishing a monitoring, reporting and verification system and a benefit distribution system from the national to the local

levels and piloting REDD+ implementation at the provincial level in eight pilot provinces. The second period will focus on the completion of the mechanisms for coordination, management and implementation of REDD+ and scaling up REDD+ nationwide.

Phase II of the UN-REDD Programme runs from 2012 to 2015, with financial support from Norway. It will focus on technical assistance at the national and provincial levels and building capacity to operationalize REDD+ at site level. Phase II has six objectives:

1. Capacities for an operational National REDD+ action programme in place.
2. Six pilot provinces (Lam Dong, Ca Mau, Binh Thuan, Ha Tinh, Bac Kan and Lao Cai) are enabled to plan and implement REDD+ actions.
3. National forest monitoring system for monitoring and measurement, reporting and verification and national REDD+ information system on safeguards are operational.
4. A national benefit distribution system is established.
5. Mechanisms to address social and environmental safeguards are established.
6. Regional cooperation achieved on REDD+ implementation in the lower Mekong subregion.

The Forest Carbon Partnership Facility project – Support for REDD+ Readiness Preparation in Viet Nam – was approved in January 2013 for strengthening the institutional and technical capacity of the National REDD+ Steering Committee, the Viet Nam REDD+ office and central organizations and organizations in three pilot provinces, all of which are to contribute to the successful implementation of the National Action Programme on REDD+.

Table 17: REDD+ projects in Viet Nam

Project	Province	Support
Harnessing Carbon Finance to Arrest Deforestation and Forest Degradation to Conserve Biological Diversity in Cat Tien National Park	Lam Dong	SNV, DARD, IIED, DEFRA and Darwin Initiative
Project on Environmental Protection and Management of Natural Resources in Dak Nong Province	Dak Nong	GIZ and Cart ONG
Avoidance of deforestation and forest degradation in the border area of southern Lao PDR and central Viet Nam for the long-term preservation of carbon sinks and biodiversity	Thua Thien Hue and Quang Nam	World Wildlife Fund, Department of Agriculture and Rural Development and KfW Development Bank

Social forestry in mitigation and adaptation

The targeted beneficiaries in the National REDD+ Action Plan include organizations, local households, individuals and communities participating in forest management, protection and development. As outlined in the action plan, it will be necessary to clarify the legal framework regarding carbon rights and particularly the rights of forest owners to be compensated for reduced emissions achieved through forest protection activities. Promulgating regulations for carbon services under Decree 99 on Payment for Environmental Services is one option to develop the legal framework that could be explored (Forest Trends, 2012).

Trends, issues and challenges

Despite the strong legal foundation and progress on forest land allocation, community forestry in Viet Nam faces a number of challenges. Limited human and financial resources mean that forest mapping and allocation is frequently conducted using outdated information, limited field visits and limited involvement of local people. This has led to inaccuracies, confusion and conflict over boundaries, a reduced sense of ownership and the lack of incentives to protect forests for future use (RECOFTC, 2010). Many people do not yet possess official land use certificates for the forest areas they are using and are not fully aware of their rights and responsibilities regarding forest management. In other cases, the impact of forest land allocation has been limited due to the emphasis on forest protection above sustainable management and restrictions on the activities of rights holders (Sikor and Nguyen, 2011).

Many forest areas allocated to households and communities are heavily degraded and provide few livelihood or income-generating opportunities for local rights holders. This, however, also presents significant opportunities for local communities to become involved in activities to increase forest carbon stocks and receive benefits under a future REDD+ scheme (Nguyen et al., 2010). REDD+ will need to balance the needs of local people with the need for forest protection and increased carbon stocks.



5. Summary of the current situation

5.1 Summary of progress on social forestry

In the three years since the 2010 baseline assessment was published, social forestry programmes have continued to grow in the ASEAN region. The area of land allocated to local people through official community forestry agreements has increased by more than 2 million ha.⁷¹ The most notable expansions have taken place in Cambodia, Philippines, Thailand and Viet Nam. Despite this expansion and with the exception of Viet Nam, social forestry programmes in ASEAN countries are not progressing quickly enough to meet national targets on community forestry and land allocation.

A number of factors impede the more rapid expansion of social forestry. These include inadequate legal frameworks, the inherently complex and time-consuming nature of land allocation (Soriaga and Mahanty, 2008), overly restrictive rules, complicated and bureaucratic procedures and limited financial resources and capacities at the local level. Additionally, data on the financial and livelihood benefits that social forestry provides to local communities are ambiguous. Limited profitability of social forestry reduces the incentives for local people to engage. As a result, forest tenure rights in much of the region remain insecure, and governments retain a high degree of control over the majority of forest resources (RRI, 2012; RECOFTC, 2013). The rules and procedures for allocating land to local people and establishing community forests need to be streamlined and simplified and administrative blockages removed to reduce the time and costs required to establish social forestry sites.

Social forestry is proving to be a successful strategy for rehabilitating degraded forest lands and improving forest quality in the region as well as providing livelihood benefits. For example, in Viet Nam, the allocation of forest lands to local people and their engagement in forest management has had a significantly positive role in reforestation, rehabilitation and forest protection. In Myanmar, community forest management has improved forest conditions and also livelihood benefits (Springate-Baginski et al., 2011). Social forestry thus offers the opportunity to respond to climate change in the region, contributing to mitigation efforts in the forest sector, particularly in terms of reducing forest degradation and enhancing forest carbon stocks. It may also considerably boost adaptive capacity by contributing to more resilient livelihoods, protecting ecosystem services and expanding social capital at the community level. However, achieving these various objectives and balancing the different needs is not without its challenges, particularly under the harsher climatic conditions of the future.

5.2 Summary of progress on climate change mitigation and adaptation

ASEAN countries have made considerable progress in developing climate change adaptation and mitigation policies and programmes. The majority of countries now have a climate change strategy or action plan in place, along with a high-level body responsible for overseeing and coordinating national responses on climate change. Implementation of these policies and strategies now needs to be scaled up at the national and local levels, along with the integration of climate change considerations into all sectors.

Social forestry features strongly in national REDD+ programmes in Cambodia, Philippines and Viet Nam, where forest communities are already participating in REDD+ demonstration projects. Experience from Thailand and Viet Nam is also proving that communities can be effective partners in measuring and monitoring forest carbon stocks on the ground, which will be necessary for implementation of a future international REDD+ scheme. In countries where the rights and responsibilities of local communities in forest management are less well established, it is not clear how they will participate in and benefit from REDD+. More effort is required to clarify tenure rights, carbon ownership and the fair distribution of any benefits to ensure forest-dependent communities can benefit from any future REDD+ scheme.

At the present time, social forestry is not a high priority in national or provincial adaptation policies and strategies. Although NAPAs have designated community forestry projects as priority areas for funding, financial support has been slow to materialize. Nonetheless, many success stories are emerging that demonstrate the positive contributions that social forestry can make in increasing the resilience of local people to climate change. These include protecting communities from storm damage, reducing the risk of forest fires, supporting resilient livelihoods and empowering people to develop their own innovative responses to adapt to climate change within their communities.

⁷¹ The area of community forestry in Indonesia and Philippines in 2010 is based on figures from 2005, presented in the 2010 FAO forest resources assessment.

5.3 Looking to the future

Moving forward, ASEAN governments should work to remove the barriers hindering the allocation of forest land to local communities to expand the forest area officially managed by local people and meet national targets. This may include revising legal frameworks, simplifying land allocation processes and administrative procedures and building capacity at the local level.

For social forestry to be of value for communities, it must provide clear and more immediate benefits for local people. It remains unclear whether international mitigation mechanisms, such as REDD+, can achieve this in the near future. Allocating better-quality forests that can generate greater social and economic benefits will help create stronger incentives for local people to engage in sustainable forest management. A greater focus on social forestry in support of climate change adaptation and building resilience may result in more immediate and tangible benefits for forest communities.

Social forestry programmes in ASEAN have suffered from a lack of sufficient funding and limited capacity. To advance social forestry and its benefits, it may be necessary to identify new sources of funding. In the absence of traditional development funding, governments can explore other mechanisms, such as payment for ecosystem services, REDD+, corporate social responsibility and private investment.

Measures to strengthen tenure security in ASEAN countries will be important in incentivizing mitigation and adaptation measures at the community level. Rights, such as exclusion rights, will need to be strengthened if community forestry is to be effective in reducing deforestation and forest degradation. The ownership of carbon rights will need to be clarified in national laws. Local ownership of carbon rights may be necessary to ensure that local people can benefit from any future international carbon financing scheme. Tenure security is also a critical factor in adaptation efforts at the local level. Without security of tenure, people are unlikely to invest in adaptation responses on their lands.

If progress can be made in these areas, enormous potential exists for social forestry to contribute to climate change mitigation and adaptation in the ASEAN region as well as to meeting the basic needs of local communities and sustainable forest management. It is the poorest and most vulnerable people in society and those who depend upon natural resources for their livelihoods who will suffer most from climate change. By directly supporting these vulnerable groups, social forestry provides a valuable mechanism to improve their well-being and enhance their resilience to climate change.





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Statistics: Brunei Darussalam	
Total population	414,400 in 2010 (Brunei Economic Development Board)
Rural population	97,348 in 2010 (World Bank, 2012) 23.5% of total population
Total land area	567,000 ha
Total forested area	380,000 ha (FAO, 2010g) 67% of total land area
Protection forest – soil and water	19,000 ha
Protection forest – biodiversity conservation	81,000 ha
Production forest	219,000 (58% of total land area)
Forest under community management	0
Carbon stocks	93 Mt
Rates of deforestation (total cover)	Average – 2,000 ha per year from 2005 to 2010 Average – 0.47% per year from 2005 to 2010
Social forestry programmes and activities	Data not available
Mitigation programmes and activities	Data not available
Adaptation programmes and activities	Data not available

Functional forest classification in Brunei Darussalam

Forest category	Gazetted area (ha)	Proposed area (ha)	Total area (ha)	% of forest	% of total land area
Production forest	18,562	0	18,562	3.96	3.22
Conservation forest	28,562	3,173	31,684	6.75	5.50
National park	46,210	2,644	48,854	10.41	8.47
Protection forest	138,026	80,624	218,650	46.62	37.92
Recreation forest	4,211	234	4,445	0.95	0.77
Total	235,520	86,675	322,195	68.69	55.88

Statistics: Singapore	
Total population	53,124,000 in 2012 (Government of Singapore)
Rural population	0
Total land area	71,580 ha (Government of Singapore)
Area defined as forest	2,300 ha ⁷² (FAO, 2010h) 3.2% of total land area
Total forested area	2,300 ha (FAO, 2010h) 3.2% of total land area
Protected areas	3,347 ha (Government of Singapore) ⁷³ 4.6% of total land area
Production forest	0%
Forest under community management	0
Carbon stocks	Data not available
Social forestry programmes and activities	None
Mitigation programmes and activities	National Climate Change Strategy (2008)
Adaptation programmes and activities	National Climate Change Strategy (2008)

⁷² In its 2010 global forest resources assessment, FAO estimated that there were 2,300 ha of primary forest remaining in Singapore. All were protected for soil and water conservation and biodiversity conservation.

⁷³ Singapore has 3,347 ha of nature reserves (including Bukit Timah Nature Reserve (164 ha), Central Catchment Nature Reserve (2,889 ha) and the Sungei Buloh Wetland Reserve (130 ha). These nature reserves include the areas of primary forest mentioned above as well as areas of regenerating and secondary forest and wetlands.



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