The context of REDD+ in Myanmar

Drivers, agents and institutions

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PROGRAM ON
Forests, Trees and
Agroforestry

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The Bago Mountains (Bago Yoma), home to teak (*Tectona grandis*) in Myanmar.

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Abbreviations

AAC	Annual allowable cut
ACMECS	Ayeyawady-Chao Phraya-Mekong Economic Cooperation Strategy
ASEAN	Association of Southeast Asian Nations
B(M)SS	Burma (now Myanmar) Selection System
BMUB	German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
CDM	Clean Development Mechanism
CEDAW	United Nations Convention on the Elimination of All Forms of Discrimination against Women
CF	Community forestry
CFI	Community Forestry Instructions
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CRC	United Nations Convention on the Rights of the Child
CSO	Civil society organization
DALMS	Department of Agricultural Land Management and Statistics
DMH	Department of Meteorology and Hydrology
DZGD	Dry Zone Greening Department
ECD	Environmental Conservation Department
EIA	Environmental Impact Assessment
ETWG	Environment Thematic Working Group
EWEC	East–West Economic Corridor
FAO	Food and Agriculture Association of the United Nations
FDI	Foreign direct investment
FIL	Foreign Investments Law
FPIC	Free, prior, and informed consent
FLEGT	Forest Law Enforcement Governance Trade
FREL	Forest reference emission level
FRI	Forest Research Institute (FRI), Ministry of Natural Resources and Environmental Conservation
GCS REDD+	Global Comparative Study on REDD+
GDP	Gross domestic product
GEF	Global Environment Facility
GHG	Greenhouse gas
ICERD	International Convention on the Elimination of All Forms of Racial Discrimination
ICIMOD	International Centre for Integrated Mountain Development
IKI	International Climate Initiative of the BMUB
IMF	International Monetary Fund
INC	Initial National Communication
INGO	International non-governmental organization
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for Conservation of Nature
JICA	Japan International Cooperation Agency
LULUCF	Land use, land-use change, and forestry

MCCA	Myanmar Climate Change Alliance
MCCSAP	Myanmar Climate Change Strategy and Action Plan
MERN	Myanmar Environmental Rehabilitation-conservation Network
MRV	Measurement, reporting and verification
MoAI	Ministry of Agriculture and Irrigation
MoALI	Ministry of Agriculture, Livestock and Irrigation
MoECAf	Ministry of Environmental Conservation and Forestry (now MoNREC)
MoHA	Ministry of Home Affairs
MoFL	Ministry of Fisheries and Livestock
MoNREC	Ministry of Natural Resources and Conservation (formerly MoECaF)
MNPED	Ministry of National Planning and Economic Development
MRRP	Myanmar Reforestation and Rehabilitation Programme
MSPP	Myanmar Stark Prestige Plantation Co., Ltd.
MSS	Myanmar Selection System
MTE	Myanmar Timber Enterprise
NAPA	National Adaptation Plan of Action
NBSAP	National Biodiversity Strategy and Action Plan
NCEA	National Commission for Environmental Affairs
NCoFHPs	National Code of Forest Harvesting Practices
NDC	Nationally Determined Contribution
NECC	National Environmental Conservation Committee
NECCCC	National Environmental Conservation and Climate Change Central Committee
NEMC	National Energy Management Committee
NEMP	National Electricity Master Plan
NFMP	National Forest Master Plan
NGO	Non-governmental organization
NLUP	National Land Use Policy
Norad	Norwegian Agency for Development Cooperation
NSDS	National Sustainable Development Strategy
PAS	Protected Area System
PFE	Permanent forest estate
POINT	Promotion of Indigenous and Nature Together
PPF	Public Protected Forests
PROFOR	The Program on Forests
PSD	Planning and Statistics Department
RECOFTC	The Center for People and Forests
REDD+	Reducing Emissions from Deforestation and Forest Degradation
REL	Reference emission level
RF	Reserve Forest
RRtIP	Resource Rights for the Indigenous Peoples
SDG	Sustainable Development Goal
SEZ Law	Special Economic Zone Law
SIA	Social impact assessment
SIS	Safeguard information system
SoE	State-owned enterprise
SLORC	State Law and Order Restoration Council
SLRD	Settlement and Land Records Department
SRAP	State REDD+ Action Plan
STB	State Timber Board
TWG	Technical Working Group
The Tatmadaw	The Myanmar Armed Forces
UNCED	United Nations Conference on Environment and Development

UNDP	United Nations Development Programme
UNDRIP	United Nations Declaration on the Rights of Indigenous Peoples
UNFCCC	United Nations Framework Convention on Climate Change
UN-REDD	United Nations Programme on Reducing Emissions from Deforestation and Forest Degradation
VFV	Vacant, Fallow and Virgin Land Management

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Executive summary

This REDD+ Country Profile for Myanmar is a joint collaboration between the Myanmar Forest Research Institute/Myanmar Forest Department and the Center for International Forestry Research (CIFOR). The report aims to provide contextual background for Reducing Emissions from Deforestation and Forest Degradation (REDD+) design and implementation in Myanmar, and discusses both the opportunities and challenges for Myanmar to achieve effective, efficient and equitable REDD+ implementation. This paper is based on a literature review and results from in-depth interviews with Myanmar stakeholders on the progress of, and opportunities and challenges for, REDD+. It should be treated as a living document that must be continually updated; the data collected and analyzed in this report date to February 2019.

Our report shows that drivers of deforestation and forest degradation in Myanmar are complex and are often tied to the national development agenda and national politics. Direct drivers of deforestation and forest degradation include agricultural expansion, mining, infrastructure development, over-exploitation of forest resources, illegal logging, use and demand for fuelwood, and shifting cultivation. Indirect drivers of deforestation and forest degradation include inadequate enforcement of the law and safeguards, weak governance that fosters corruption, illegality and organized crime or syndicates in many economic sectors, long-running internal conflicts and/or poverty and inequality, overlapping and conflicting priorities among sectors, weak legal frameworks and participatory governing decisions on land and its management, and insecure land—tenure.

Despite these challenges, the report highlights the potential for REDD+ to be developed and

implemented thanks to a large number of new environmental, climate change and forestry laws, as well as to the existing institutional setting. The commitment of the Government of Myanmar at the international level was also conveyed through its Nationally Determined Contribution (NDC), which includes achievement of the target of the National Forest Master Plan as its main activity. However, implementation of environmental and zero-deforestation policies faces challenges as a result of strong pressure for economic development. Numerous policies and programs are likely in conflict with the objectives of REDD+ and might constrain its effectiveness, efficiency and equity. Several policies, regulations, initiatives and programs that have been created or are in the process of being established (in particular to increase the economy of the country) may undermine environmental goals, in particular reducing deforestation and forest degradation. For example, during 2010–2013, few concessions on large-scale oriented agriculture (such as palm oil, rubber, maize, sugarcane and jatropha) were not able to achieve their intended purpose of developing modern agriculture after they received permit. Effective implementation of these policies and programs, including REDD+, requires political commitment to address contradictory policies, weak governance, ethnic conflicts, corruption and tenure conflicts, as well as better collaboration among sectors and ministries.

As written in the Myanmar REDD+ Readiness Roadmap (UN-REDD 2013), Myanmar established and developed a national forest monitoring system (NFMS) and Reference Emission levels (RELs) for REDD+ following the guidance and modalities set out by the United Nations Framework Convention on Climate Change (UNFCCC). The NFMS action plan mentioned that the country will provide financial

resources, technical and technological support, including capacity building, to implement its national forest monitoring system for REDD+ activities. Although the institutional and action plan have been set up and developed, national mechanisms or tools are not yet in place to share forest information in a transparent manner. Further, forest monitoring activities have not been carried out at the community level, even though there are legal provisions for community forest management in Myanmar. While the NFMS/RELS TWG were designed to assess baseline national technical and institutional arrangements related to forest monitoring and measurement, reporting and verification, it is important to evaluate the current situation against the country's baseline to better understand the implications of REDD+.

The effectiveness of REDD+ in Myanmar also depends on what reference emissions level is used. Stakeholders who participated in consultation workshops asserted that the effectiveness of REDD+ in Myanmar has only been measured since 2016, as the RELs provided by government are for 2015. Taking 2015 as the reference level, Myanmar has carried out many policies and measures, such as approval of a logging ban, reduction in the annual allowable cut, release of the Community Forestry Instructions, and launch of the Myanmar Reforestation and Rehabilitation Programme – all actions required to implement REDD+. However, further research is needed to ascertain the volume of emissions that can be reduced through reforestation, as well as through a one-year logging ban and reduction in allowable cuts. This report highlights information gaps and a lack of available data to analyze the impact of REDD+. For example, while Myanmar's NDC discusses numerous mitigation options, there are no available data or analyses on their feasibility, which might hinder actual implementation. Moreover, information on the macro-economy and export/import of commodities that are identified as drivers of deforestation is not available, leading to difficulties in estimating both the impacts and effectiveness of current policies and measures. There is also a lack of technical capacity to quantify both emissions reduction from deforestation and forest degradation and carbon enhancement from sustainable forest management.

Implementation of REDD+ policy in Myanmar requires funding for government and stakeholders to operate the activities described in the REDD+ strategy, as well as to balance the costs and benefits of incentivizing actors to change business-as-usual practices. To date, the start-up costs for REDD+ have been secured through support from donors such as the United Nations Programme on Reducing Emissions from Deforestation and Forest Degradation (UN-REDD). These funds have helped Myanmar to initiate REDD+ strategy, a national forest inventory system, a REL and safeguards information system, and to conduct a large number of consultation workshops on REDD+ strategies. However, there is a lack of detailed analysis of the costs and benefits for each policy and measures listed in the national REDD+ strategy as well as the full costs and benefits of implementing the strategy. There is also no REDD+ benefit-sharing mechanism in Myanmar. Although the start-up costs for REDD+ have already been secured for the most part, this paper shows that the transaction costs to implement REDD+ policies in Myanmar are high due to overlapping mandates among government agencies, widespread corruption and conflicts over land. Moreover, some of the most important policies, such as the Vacant, Fallow and Virgin Land Management Law, and policies on foreign direct investment that aim to build the country's economy, not only undermine environmental goals (i.e. of reducing deforestation and forest degradation) but also favor large-scale operators. Government policies respond more to the high demand of national and international-based investments for natural resources extraction rather than to considerations of overall sustainability or even feasibility.

The Government of Myanmar is working toward an equitable REDD+ implementation through the establishment of a SIS and standards for free, prior, and informed consent (FPIC), as well as a grievance-handling system for ethnic peoples. The Ethnic Rights Protection Law (The Republic Union of Myanmar 2015) mentions that all development projects, extraction of natural resources, and business affairs to be implemented in the region of ethnic groups, requires the FPIC of the local ethnic communities. The law also

requires a grievance mechanism for ethnic groups to be established at regional and national levels. The Ministry of Environmental Conservation and Forestry (now called the Ministry of Natural Resources and Conservation, or MoNREC) has demonstrated a willingness to recognize the rights of ethnic minority groups and local communities through, for example, FPIC or community forestry. While there is commitment in Myanmar to the application of FPIC, its implementation remains unclear. Concerns were raised that, should FPIC be conducted too early in the process, communities would lack sufficient capacity to make informed decisions. There are a number of detailed guidelines for conducting FPIC, and REDD+ must assure gender equality and respect of indigenous peoples' rights in REDD+ readiness activities and future implementation. However, experience in both of these aspects, in particular forest resource management, is still nascent. Another important challenge to implementation for REDD+ is limited access to land by local communities. All land is owned by the State, although communities are allowed usage rights via leases. While a strong central government might result in effective implementation of a policy such as REDD+, the limited access to land might lead to encroachment

and/or reclaiming of forest land. Community forestry thus complements the development of social safeguards in the REDD+ program.

In summary, Myanmar stands at the crossroads of economic development and conservation. This resources-rich country is attracting foreign investments from neighboring and Western countries. At the same time, Myanmar has adopted the global trajectories of sustainable development, which includes efforts to mitigate climate changes. Thus, Myanmar faces the all-too-common dilemma of how to develop its economy while at the same time curbing environmental degradation and contributing to carbon emissions reduction. Myanmar has great potential to implement REDD+, and is actively engaging with actors in the international arena and refining its policies and practices for REDD+. However, implementing REDD+ requires political commitment to address direct and indirect drivers of deforestation, an adequate funding mechanism that is based on thoroughly analyzed costs and benefits, a transparent and equitable benefit-sharing mechanism, and a participatory decision-making approach in which all stakeholders can take part in REDD+.

1 Introduction

For participating REDD+ countries, many questions remain on how to effectively, efficiently and equitably formulate and implement REDD+. Drivers of deforestation and forest degradation are often highly complex, and can form part of dense networks of economic and political interests. Reducing emissions by preventing deforestation and forest degradation can be seen as a controversial approach in the context of national development paradigms and existing policy frameworks or objectives. What are the political implications of a REDD+ mechanism? How could it be implemented successfully on the ground? Understanding the complex relationships between drivers, agents and institutions within the national context is vital for ensuring effective implementation of REDD+.

The Global Comparative Study on REDD+, together with its country partners, is compiling profiles of 14 countries to better understand the socioeconomic contexts in which REDD+ policies and processes emerge. The country profiles provide contextual analysis on conditions that affect the REDD+ policy environment in each country. They are based on reviews of existing literature, national and international data, legal reviews, and selected expert interviews.

The country profiles examine five areas:

- drivers of deforestation
- institutional environment and revenue distribution mechanisms
- political economy of deforestation and forest degradation
- political environment of REDD+: actors, events and processes
- implications of each country's current REDD+ design for effectiveness, efficiency and equity.

The aim of the country profiles is to inform decision makers, practitioners and donors of the

opportunities and challenges in implementing a REDD+ mechanism, and to support evidence-based REDD+ decision-making processes.

The Republic of the Union of Myanmar is culturally diverse, with more than 135 ethnicities speaking 100 different languages (Minorityrights.org 2019). Some 70% of its population lives in rural areas, and the agricultural sector is a major contributor to the country's gross domestic product (GDP) (30%) (World Bank 2014). However, the share of other sectors, such as, industry, manufacturing and services has increased over time.

Myanmar is in a process of economic and political reforms with the overall goal of becoming a modern, developed and democratic nation by 2030 with increasing foreign direct investment (FDI). However, the country is confronted with socioeconomic issues, including a high poverty rate (more than 70% of the population), subnational inequalities and other human development indicators. Natural disasters have hampered development activities in areas exposed to climate hazards, such as cyclones, heavy rain, flooding, drought or erratic rainfall (e.g. Ayeyarwady, Bago, Mon, Rakhine or the Central Dry Zone in general); places with the highest rates of deforestation over the last 10–15 years.

Having retained more than 40% of its forest cover (Aung 2001), Myanmar adopted a REDD+ program in 2013 and has started the required actions for the preparatory phase: a national forest monitoring system is being developed including forest reference levels, stakeholder engagement mechanisms have been established, and a high-level policy dialogue on REDD+ has been ongoing.

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1.1 Methods

This paper follows the guideline on development of a Country Profile (Brockhaus et al. 2012) developed for GCS REDD+. Two trainings were conducted with authors in February and October 2017.

The report draws on both primary and secondary data. Primary data was obtained mainly through

key informant interviews, both from civil society organizations (CSOs) such as Advancing Life and Regenerating Motherland (ALARM) and government agencies. Main sources of secondary data were official reports and statistics from donors, CSOs, international non-governmental organizations (INGOs) and domestic NGOs, the private sector, media outlets and research institutes. In addition, we organized three consultation workshops to obtain stakeholder feedback and to verify the study findings.

In developing this country profile, CIFOR also facilitated three writing workshops: 16–23 February 2017, 14–22 October 2017, and 28 February – 4 March 2019. These workshops were attended by our collaborators from the Forest Research Institute (FRI), the University of Forestry and Environmental Science, The Center for People and Forests (RECOFTC) and staff from the Myanmar Environmental Rehabilitation-conservation Network (MERN). Following the writing workshops, we conducted consultation workshops on 23 February 2017 and 4 March 2019 involving government and non-government stakeholders working on forest governance and REDD+. The first workshop was attended by 66 people from different stakeholder groups and the second workshop was attended by 60 people.

2 Drivers of deforestation and forest degradation

2.1 Forest cover and historical overview of forest cover change

Myanmar has the second largest extent of forest cover in the Association of Southeast Asian Nations (ASEAN) region, although deforestation and forest degradation are high and increasing. The 2015 Global Forest Resources Assessment of the Food and Agriculture Association of the United Nations (FAO) reported that, between 2010 and 2015, the world's forests decreased annually by some 3.3 million ha (FAO 2015). Currently, Myanmar, has a forest cover of 42.92% of the country area (Than 2016). However, between 2010 and 2015, Myanmar had the third highest rate of deforestation in the world (Thu 2019). The annual deforestation rate is estimated at 546,000 ha per year, which represents 1.7% of the forest cover in year 2010 (Phyu 2015). Table 1 details the percentage of forest and other land types in the country in 2015.

Figure 1 shows the changes in forest cover over time, and Figure 2 gives a snapshot of the percentage of various land uses to total land area at five different points in time.

The forests are distributed over three climatically distinct regions (i.e. tropical, subtropical and temperate) with eight major forest types and several subtypes defined by the occurrence of certain dominant species or species groups (e.g. dipterocarps) or specific edaphic conditions (Table 2).

The most abundant forest type in Myanmar is tropical mixed evergreen and deciduous hardwood forest, which, in both its upland and lowland subtypes, is known for the occurrence of teak and other valuable timber species such as ironwood. No

Figure 1. Forest cover changes between 1990 and 2015

Source: Oo et al., 2019

Table 1. Forest cover status in Myanmar (2015)

Classification	Area (000 ha)	% of total country area
Closed forest	14,585	21.56
Open forest	14,456	21.36
Total forest	29,041	42.92
Other wooded land	15,080	22.28
Other lands	21,634	31.97
Water bodies	1,903	2.81
Total	67,658	100

Source: FAO 2015

Figure 2. Land use status (%) in five different years

Source: Oo et al. 2019

recent study provides a contemporary assessment of the distribution of the different forest types.

All forest land is formally state property and is governed by the Forest Department under the Ministry of Natural Resources and Conservation (MoNREC) (Table 3). The permanent forest estate (PFE) is defined as either reserved forest, protected public forest or a Protected Area System (PAS), which includes nature reserves and wildlife sanctuaries. However, much of Myanmar's forest remains unclassified.

FAO reported that Myanmar has one of the highest rates of forest area loss worldwide, behind only Brazil and Indonesia (FAO 2015). Leimgruber et al. (2005) estimated that between 1990s and 2000, Myanmar lost 12,000 km² due to human activities, with an annual rate of forest loss of 0.3%. During the same interval, about 3,000 km² of forest regenerated, reducing the annual net deforestation rate to 0.2%, which corresponds to the global average (Leimgruber et al., 2005). Deforestation rates, however, vary widely within the country and Leimgruber found 10 deforestation hotspots within Myanmar with annual clearing rates well above the

Table 2. Forest types in Myanmar

Forest type/sub-type
I. Tidal/mangrove forest
II. Beach and dune forest
III. Swamp forest
IV. Hill and temperate evergreen forest
a. Hill evergreen forest
b. Dry hill forest
c. Pine forest
1. Evergreen forest
a. Riverine evergreen forest
b. Giant evergreen forest
c. Typical evergreen forest
2. Mixed deciduous forest
a. Moist upper mixed deciduous forest
b. Dry upper mixed deciduous forest
c. Lower mixed deciduous forest
3. Deciduous dipterocarp forest
a. High indaing ^a forest
b. Semi-indaing forest
c. Scrub indaing forest
4. Dry forest
a. Than-dahat ^b forest
b. Thorn forest

Notes:

a Indaing refers to dipterocarp species that are characteristic of dry dipterocarp forest.

b Than-dahat Forest is dominated by Than (*Terminalia oliverii*) and Dahat (*Tectona hamiltoniana*).

global average. Some localities had extremely high losses, such as townships that are hotspots for intact forest loss in Shan, Sagaing, Kachin, and Tanintharyi administrative regions (Bhagwat et al. 2017). The rapid change rates in closed forests (either an increase or decrease in area of closed forests) are associated with increases and decreases in timber harvesting in Myanmar, particularly during 1999–2000s and 2006–2008 (Treue et al. 2016). Aside from considerable forest loss, forest degradation has also intensified over time. An Oo et al. (2019) analysis shows a distinct trend of forests being degraded from closed forest to open forest and wooded land, as shown in Table 4.

Figure 3 shows that forest cover in Myanmar gradually declined between 2005 and 2015, and this was associated with three major land-use change patterns during this period:

Table 3. Legality analysis of Myanmar's forestry sector (as of 28 March 2019)

Category	Area (km ²)	% of total land area
Reserved forest and Protected public forest	42,312,773	25.31%
Protected area system	9,740,079	5.83%
Total forest area (PFE)	52,052,852	31.13%

Source: Oo et al. 2019

Table 4. Changing rates of forest cover in Myanmar (ha), 2000–2015

Forest type	Annual change 2000–2015	Annualized change rate 2000–2015
Closed forest	-889,104	-4.81%
Open forest	+461,103	+ 3.57%
Total forest	-397,766	-1.22%

Source: Oo et al. 2019

Figure 3. Forest cover change in Myanmar, 2000–2015

Source: Oo et al. 2019

1. **Massive conversion from closed forest to open forest.** Around 11.5 million ha (60%) of closed forest changed to open forest or other woodland. Only 7.2 million ha (37%) of closed forests remains as it was during 2005–2015.
2. **Slow rate of changing from open forests to closed forests.** 3.1 million ha of open forests (20% of total forest area); 1.3 million ha (10%) of the other woodland category, and 0.4 million had of other land categories have reverted back to closed forest.
3. **Massive conversion from mangrove to other land uses.** 27% of mangrove forests in 2005 changed to other land uses in 2015; 90% of these changes occurred in Ayeyarwady Region and Rakhine State.

2.2 Review of drivers of deforestation and forest degradation

While Myanmar follows the FAO definition of forests (FAO 2015), the country has also adopted global definitions of deforestation and forest degradation (Box 1).

The Myanmar REDD+ Readiness Roadmap of 2013 (UN-REDD 2013) identifies major drivers of deforestation and forest degradation in Myanmar, including expansion of agriculture (both subsistence and commercial), mining, hydropower and infrastructure development, urbanization, resettlement and aquaculture development.

2.2.1 Agricultural expansion

Conversion of forests for agricultural expansion has been the dominant driver of deforestation and forest degradation in Myanmar. Conversions for agriculture have occurred both within and outside of PFEs.

Forest Trends analyses found that, between 2010 and 2013, land allocations for large-scale private agriculture concessions saw an increase of 170% (from 809,371 ha to 2,104,365 ha) (Woods, 2015). Byerlee et al. (2014) reviewed official 2013 agricultural statistics and identified

that the government granted 822 companies and/or individuals 750,000 acres or 303,514 hectares of land demarcated as forestland for industrial agricultural production (outside of Mon State, where small- and medium-sized farms predominate in land grants). The largest areas were allocated to rubber, oil palm, rice and jatropha, followed by sugarcane and cassava for large-scale agribusiness use.

Most large-scale agriculture concessions were allocated in forest reserves, de-gazetted in anticipation of the shift to agriculture. Between 2004 and 2005, 716,293 ha of forests (protected forest reserves, unclassified forests, and “other” forests) were degazetted and shifted to other uses such as agriculture and mining. “Unclassified” forests, which typically have less substantial tree cover, appear to be most vulnerable to conversion to agribusiness concessions (Woods 2015). A more recent assessment found that 3 out of 9 forest reserves in the Ayeyarwady Delta are now completely under agricultural expansion, and only 26% of the area is covered by forest in the remaining six reserves (Webb et al. 2014). However, these shifts in land use show poor results in delivering on intended outcomes, with few concessions achieving their intended purpose of developing modern agriculture. A review conducted by the Ministry of Agriculture and

Box 1. Myanmar’s definitions for forest, deforestation and forest degradation

Forest is defined in Myanmar’s National REDD+ Strategy (Myanmar-redd.org 2010) as “land with an area of more than 0.5 hectares (ha) and tree crown cover (or equivalent stocking level) of more than 10 percent. The trees should be able to reach a minimum height of 5 meters at maturity *in situ*. It consists either of closed forest formations where trees of various storeys and undergrowth cover a high proportion of the ground or open forest formations with a continuous vegetation cover in which tree crown cover exceeds 10 percent. It includes windbreaks and shelter belts of trees with an area of more than 0.5 ha and width of more than 20 meters; plantations primarily used for forestry purposes”.

Deforestation is defined under the Kyoto Protocol (UNFCCC 2001) as “the direct human-induced conversion of forested land to non-forested land”.

Forest degradation refers to “changes within the forest, whether natural or human-induced, that negatively affect the structure or function of the stand or site, and thereby lower the capacity of the resulting degraded forest to supply products and / or services” (FAO 2011). While the Intergovernmental Panel on Climate Change (IPCC) (Penman et al. 2003) has no specific definition for forest degradation, it is described as the “direct, human-induced, long-term loss (persisting for X years or more) of at least Y% of forest carbon stocks [and forest values] since time T and not qualifying as deforestation”. Forest degradation may lead to deforestation but may not always be a precursor of deforestation (Sanz et al. 2007, 25).

Irrigation in 2013 shows that, despite the agreed development schedules, most concessions made little progress in implementing their development plans, and the national plantation rate only meets 23% of the national target (Table 5). Only 24% of agricultural land concessions provided under the Vacant, Fallow and Virgin Land Management Law (see Chapter 3) and 27% of the forestland concessions were developed or planted (Byerlee et al. 2014; see Box 2).

Sixty percent of the agribusiness concessions were granted in Kachin and Tanintharyi regions between 2010 and 2013, and yet only 12-19% were planted by the end of 2013 (Buchanan et al. 2013). Table 5 Agribusiness concessions in Myanmar by state and region, 2010–2013, depicts agribusiness concessions granted between 2010 and 2014, and the percentage planted by state/region.

After 2011, the transition towards democratic reform and the opening of the economy under former President U Thein Sein saw greater promotion of industrial agricultural development as an attractive sector for economic development, livelihoods and foreign investment. Agricultural GDP was expected to increase on average by 1.8% per year in Fifth Five-Year short-term plan (2011–2012 to 2015–2016) (JICA 2015b). The goal of the Ministry of Agriculture, Livestock and Irrigation (MoALI)’s Master Plan for the Agriculture Sector (2000-01 to 2030-31) is to convert 10 million acres or 4,046,856 hectares of “wasteland” into private industrial agriculture production, with rubber, oil palm, paddy, pulses and sugarcane for export particularly encouraged. But a range of land governance issues related to lack of recognition of customary land tenure, lack of adequate redress and dispute resolution,

Box 2. Land classification in Myanmar

Farmland. These lands are administered under the 2012 Farmland Law and are subdivided into: *Le-land*, or paddy land; *Ya-land*, or land not suitable for paddy; *Kaing- Kyung*, or land near rivers, seasonally flooded, suitable for growing oilseed crops, pulses, vegetables and tobacco; *Garden land*, or land suitable for fruit orchards and/or for growing vegetables; *Dhani-land*, or land where Nina palm is grown; and *taungya* land, or land used as part of shifting cultivation. The Law further states in this definition, that farmland “does not include land situated within any town or village boundary used for dwelling, religious buildings and premises, and public owned land which is not used for agriculture purposes”. The Farmland Law specifically defines paddy land in Article 3 as “land mainly for growing irrigated or rain fed rice paddy.” The Law also specifically defines alluvial land in the same Article as “land flooded yearly whose character and location varies in relation to the water channel.” The Farmland Law does not further define the other sub-classifications of farmland mentioned. The sub-classifications of farmland have historically been used in order to control agricultural outputs of farmers and provide a basis for calculation of taxes (tax rates based on agricultural land classifications). This classification system does not recognize customary land use and agricultural practices of many communities on what is commonly referred to as *taungya* (upland cultivation). It should be noted that the term used for ‘taungya land’ in the Farmland Law specifically refers to this land-use when it is not in a rotational fallow system. Areas of farmland currently included in land surveys conducted by the Settlement and Land Records Department (SLRD) within the MoAI have some level of land tenure security due to formal recognition of land use rights by the government. However, in practice, even when smallholder farmers have legal land tenure documents, their land is still often appropriated in the interests of the nation or the public as prescribed by the Farmland Law. Many farmers possess records that clearly show they have been cultivating and paying taxes on these lands for some time. Some farmers possess what are classified as ‘permanent land use rights’ to these lands, which appear to be primarily for areas of irrigated paddy lands. Other areas of land often have land use rights classified in tax payment documents as being ‘non-permanent’. The non-permanent designation has made the land tenure security of these lands less certain.

Reserved (protected) forest land: These lands are administered under the provisions of the 1992 Forest Law. Such lands are intended primarily to be used in the production of forest products.

Protected public forest land: This is forested land used primarily for conservation purposes, and administered under both the Forest Law and the Protection of Wildlife and Conservation of Natural Area Law (1994).

Public forest land: Public forest lands fall under provisions found in the Forest Law (1992) and the Vacant, Fallow and Virgin Land Management Law (VFV Law) (2012). The Central Committee for the Management of Vacant, Fallow and Virgin Land, headed by the Minister of the Ministry of Agriculture and Irrigation, may make a request from the Ministry of Environmental Conservation and Forestry (MoECaF) that these lands be used for state economic development under the VFV Law. Currently, the most common land use in public forestland is by smallholder farmers in the uplands practicing rotational fallow agriculture.

Virgin land: 'Virgin land' is defined in Article 2 of the VFV Law as "new land or other woodland, in which cultivation has never been done before." The land may or may not be covered in forest, and includes land that has been "cancelled legally from Reserved Forest land, Grazing land and Fisheries Ponds." These areas fall outside of the land surveys conducted by the SLRD. There are mechanisms by which Community Forestry (CF) arrangements can be secured for these areas of land. The Forestry Department of MoECaF and the MoAI currently have overlapping authority over these areas of land. The access and land use tenure claims to these areas of land generally do not appear to be very secure, due to the lack of documentation to back up land use claims.

Vacant and Fallow Land: These are areas of land are defined in Article 2 of the VFV Law as "land which was cultivated by the tenant before, and then that land was abandoned by the tenant for any reason, not only the State designated land but also for agriculture or livestock breeding purposes." The majority of these areas of land fall outside of the land surveys conducted by the SLRD. Due to the way that "vacant and fallow" land is defined, many areas of land that are under active cultivation by farmers and community groups, which use these lands in a traditional or customary manner, could be classified as "vacant and fallow". The land tenure claims to these lands are very weak, due to the lack of documentation to back up land use claims.

Grazing Land: Classification and management of grazing lands in Myanmar is set out in the Upper Burma Land Revenue Regulations (1889). Grazing land is not mentioned in the Farmland Law, though brief mention is made of these lands in the definition of "virgin land" under the VFV Law.

Non-agriculture land: Non-agricultural land is subdivided into 13 sub-categories: mine areas; grazing ground areas; railway land areas; road areas; embankments, land and dam areas; river/stream and underwater areas; fisheries/ponds areas; factory areas; town land areas; village areas; air field areas, religious buildings and cemetery areas; and cantonment areas.

poor investment climate, lack of strong producer organizations, weak extension services, poor access to technology, and a range of other issues has limited the intensification and increased production of the agricultural sector.

Kachin State's plantation area (mostly rubber) increased by 74,000 ha, primarily as extensions of existing agriculture and plantations along rivers on the edge of degraded and intact forest areas. Sagaing Region had a modest (3.5%) expansion of the already large agricultural area, while plantations expanded by 75.6%. In Tanintharyi Region, new

non-forest and new non-oil palm plantations (e.g. rubber, areca nut) tend to be extensions of existing agricultural and plantation areas along rivers and main roads (Treue et al. 2016).

Current agricultural crop production is largely focused on rice, though no assessment has been identified during the research for this study that estimates what overall impacts crop production has had on forests. Other important crops include pulses and sesame, and maize is a crop that has seen significant increases in production, largely related to Chinese demand.

Table 5. Agribusiness concessions in Myanmar by state and region, 2010–2013

State/Region	Allocated	Allocated	Allocated	Planted	% Planted
	2010–2011	2011–2012	2012–2013	2013–2014	
Tanintharyi Region	671,594	993,887	1,896,970	359,455	19%
Kachin State	596,180	1,396,575	1,381,165	172,348	12%
Sagaing Region	100,057	259,273	533,406	19,543	4%
Ayeyarwady Region	193,353	285,844	335,331	212,969	64%
Shan State	117,096	160,626	323,833	120,403	37%
Magwe Region	202,492	211,292	219,578	95,949	44%
Bago Region	19,772	52,238	200,150	91,074	46%
Rakhine State	0	7,826	131,667	13,176	10%
Yangon Region	30,978	30,980	80,208	76,243	95%
Mandalay Region	10,300	6,262	56,046	14,497	26%
Kayin State	2,161	4,011	34,946	15,867	45%
Nay Pyi Taw	0	7,408	17,554	5,217	30%
Chin State	0	1,542	1,743	118	7%
Kayah State	0	0	0	0	0%
Mon State	0	0	0	0	0%
Total	1,943,983	3,417,764	5,212,597	1,196,859	23%

Source: Woods 2015

Agricultural expansion will maintain its strong influence over deforestation dynamics, although it is expected to decrease due to new policies (e.g. quality-based agriculture) and better law enforcement. Conflicting policy targets between MoNREC and MoALI are still a major issue, at least as long as no comprehensive classification and inventory of land use and land use suitability is completed, especially for presently unclassified land (VFV-land). Limitations in institutional capacities, especially for environmental impact assessment (EIA) and law enforcement, will also likely prevail for some time in the coming years. The development of demand for export crops will depend on the dynamics of overall economic forces at regional and international levels, and thus its future development is difficult to predict.

Current crop production is largely focused on rice (ca. 7 million ha), although little is known about its impact on forests. Other important crops include pulses and beans (4.3 million ha), and maize (530,000 ha). Rubber (ca. 652,000 ha)

and oil palm (ca. 400,000 ha, only in Tanintharyi Region) are other common crops.

2.2.2 Mining

Myanmar has a wealth of geological resources, e.g. jade and ruby, copper, tin, tungsten, nickel and gold, which might make mining a significant driver of the country's economic development in the decades to come. Mining is the third largest recipient of FDI in Myanmar, earning approximately USD 1.5 billion in the 2013/14 financial year (Linn 2019). A study suggested that mining and deforestation does not follow a linear trajectory, as it takes years before a cleared forest is exploited for mining. A geospatial study conducted by LaJeunesse Connette et al. (2016) found that, of a total 46,000 ha of mining areas identified, 31.5% was newly disturbed as the vegetation had been removed since 2002 (also found in UN-REDD Programme 2017). However, an in-depth study is needed to have a better understanding of patterns of deforestation driven by mining. Increased

investment for mining establishment between 2002 and 2014 (mining area increased by 141.7% in Kachin and 743.6% in Sagaing) brought infrastructure associated development (roads and settlements) adding more pressure to forests. Land grabbing for gold mining is occurring in Shan State, causing land loss and heavy pollution (Andersen 2015), but it is unclear to at degree this has resulted in exploration or concessions being granted.

Legal confusion coupled with concern over environmental damage led to the suspension of new mining exploration in 2016. For the time being, the land area under the influence of mining will likely stay stable at around 0.4% of the land area over the coming years, although illegal mining will still be an issue. In July 2018, after a review of 519 mines, the government issued a new mining rule allowing foreign companies to invest in large-scale sites covering over 500,000 acres or 202,342 hectares, as well as medium-scale operations of up to 247 acres or 99 hectares. MoNREC will also permit investment in small-scale precious metal sites of up to 4 acres or 1.6 hectares, other mineral sites of up to 10 acres or 4 hectares, and raw industrial material and precious stone sites of up to 20 acres or 8 hectares (Casey 2018).

2.2.3 Hydropower development

Myanmar is endowed with an abundant hydropower potential of around 39,720 megawatts (MW) (Kyaw 2006), but this has remained largely undeveloped due to economic and political constraints. Currently, Myanmar only produces just under 5,000 MW from all sources of power, with hydropower contributing 68% at 3,005 MW (Nam K-Y et al. 2015).

Since the early 1990s, Myanmar has adopted a new development strategy premised on a greater role for private capital and a partial opening to the international economy (Bryant, 1997). Since the partial economic liberalization where Myanmar has just entered economic liberalization but is still heavily influenced by the military regime (McCarthy 2000), Myanmar's energy sector is increasingly interested in developing its hydropower potential to meet both domestic energy demand and to gain much-needed foreign capital from electricity exports. The recent changes towards economic reform further supports this

development. The authorities have taken steps to unify the multiple exchange rates, prepare a new national development plan, and pass a foreign investment law that will offer tax breaks to investors, allowing them to lease private land and to set up businesses without the need for local partners (cf. ADB 2012; Robinson 2012; IISS 2011; Bremmer 2012). With pledges from The Asian Development Bank and JICA to help implement hydropower projects within the next 5–10 years, it is estimated that the country's hydropower potential will increase to more than 30 times the current capacity.

In addition, the increased development assistance, reduced sanctions, and improved trade have raised hopes for renewed economic opportunities (Webb et al. 2012). The FDI that has come into the country has primarily focused on natural resource extraction and hydropower (Turnell 2011; Kattelus et al. 2015). Opening the energy trading routes from India and Bangladesh towards Thailand, and from China towards South and Southeast Asia could also potentially reduce Myanmar's regional isolation, and the ongoing cooperation over hydropower could support this development. Myanmar's business environment is thus changing, induced by regional investment and free trade agreements (Webb et al. 2012; Tay 2009).

Even though hydropower could have potential in fostering regional development and a safer energy future for Myanmar and its neighboring countries, environmentalists and human rights groups have raised several concerns related to ambitious hydropower development plans. They have been questioned whether hydropower development would truly enhance overall socioeconomic development, with shared benefits in the region, or would it instead cause dramatic environmental impacts, endanger water-related livelihoods, and increase socioeconomic inequity and political unrest. An asymmetric distribution of the negative socioecological impacts and the political and economic benefits between Myanmar and neighboring countries could potentially lead to adverse effects on the socioeconomic development of Myanmar. With the rising stress resulting from increasing development activities, Myanmar's water-related institutional and legislative setting could be, in many ways, unprepared for the upcoming regional pressures, and thus should be adapted to future requirements

(cf. Kattelus et al. 2015). Major changes for the future can be expected from dam building for hydropower purposes, especially to forest cover since potential sources for hydropower are mainly located upstream areas of Kachin, Shan, and Kayin states where reserved forests and public protected forests are located (Treue et al. 2016). Woods (2015) identified that between 2011 and 2012, 110,777 m³ of timber was cleared for hydropower development, almost 17,000 m³ of which was comprised of teak. Chinese traders indicate that logging for hydropower development provides a source of timber from Kachin State under a hydropower dam development scheme (example from the Yuandong company operating in Pianma) (EIA 2015).

2.2.4 Overexploitation of forest resources

Myanmar is recognized as having the world's largest superior-quality teak forests and is the largest producer of teak logs in the world (FAO 2015). FAO in 2015 reported that the country produces almost half of 29 million ha globally (about 1/4 of global teak log supply), but this comes at a cost: almost all natural teak forests have been degraded. With growing demand from Indian and Chinese markets, there is an increased interest in establishing and managing teak plantations to fulfill the demand.

Commercial teak logging started during the British colonial era in the mid 1800s, during which the annual allowable cut (AAC) calculations system was introduced to ensure sustainability. Logging quotas, however, have had little relation to the AAC. For decades, the government (formerly the State Peace and Development Council) set production targets to fulfill the need for foreign exchange, often in excess of the AAC (Woods and Canby 2011; Springate-Baginsky, 2013).

Illegal logging was rampant for many years, and the lack of transparency and entrenched interests have complicated efforts to change this. The over-extraction of timber has also accelerated land-use change and the conversion of forest to “non-forest” (including agriculture, agribusiness plantations). Despite the 2014 teak and timber ban implemented to curb deforestation rates, efforts to improve forest governance, such as implementing timber legality, have proven ineffective, with domestic timber needs being largely illegal and

ad hoc, and supply from reserved and unreserved forests further undermining sustainability. For example, Treue et al. (2016), in their study in Kachin and Sagaing, noted that teak was harvested under the minimum girth size, while teak forest compartments have not been allowed to recover for the prescribed 30 years and were re-entered for extraction of other hardwoods within 7–10 years. In addition, commercial fuelwood production in the former mixed-species forests was used for unplanned and apparently uncontrollable actions before being converted into permanent agriculture plots or plantations.

Treue et al. (2016) also noted that the extent of degradation that would be visible as changes in species composition, such as from mixed teak-dipterocarp to dipterocarps only, cannot be identified through Landsat images. Hence, further forest inventory data would be necessary to understand the full extent of degradation. That said, Landsat imagery analysis indicates that teak has been systematically overharvested, and valuable species of ‘other hardwoods’ such as Padauk (*Pterocarpus macrocarpus*), and Tamalan (*Dalbergia oliveri*), are likely severely overharvested. Other more abundant species like Kanyin (*Dipterocarpus spp.*) may have only become over-harvested in more recent years.

In Myanmar, the Myanma Timber Enterprise (MTE) is the income earning arm of the Ministry and is solely responsible for the harvesting, processing and marketing of timber. It controls virtually all aspects along the commodity chain – from harvesting to processing to marketing and export. However, around 2014–2015, MTE reduced the harvesting amount to be within the limit of AAC prescriptions set by the Forest Department (Table 6).

In 2015, the one-year national logging ban was promulgated. No harvesting was to occur in the 2016/17 season. The national logging ban ran until the end of March 2017, in effect closing the forests for one complete logging season. This decision, according to EIA, demonstrates clear intent to tackle corruption within the forestry sector by Myanmar's National League for Democracy-led government, which came to power in March 2016. However, according to Doyle (2019), despite efforts by local authorities, the logging ban has in fact heightened the illicit trade of wood in

Table 6. Annual allowable cut prescriptions and actual extraction per year, 2011–2016

Fiscal Year	Teak (tonne)		Hardwood (tonne)	
	Operation plan	Actual work done	Operation plan	Actual work done
2011–2012	371,000	246,755	1,789,400	1,636,155
2012–2013	269,800	247,989	1,391,600	1,642,235
2013–2014	186,650	151,101	787,600	800,028
2014–2015	60,000	44,361	670,000	627,652
2015–2016	60,000	59,640	670,000	616,310
*2016 (July)		18,337		108,891

Source: Myanmar Timber Enterprise 2016

Myanmar's second-largest city. Even some business owners sympathetic to the logging ban find it necessary to operate outside the law.

Forest degradation due to overcutting and overexploitation for timber is very likely to decrease in the future because of the Forest Department's recent policies to reduce the AAC rates substantially and to establish a logging ban on valuable timber species and on certain areas of the country that have been under heavy pressure for logging (Bago Yoma). Starting from the fiscal year of 2017/18, as part of the 100-Day Plan of the new government, AAC will be set to 19,210 tons or 17,427 tonnes of teak trees and 593,330 tons or 538,259 tonnes of other hardwood trees. MTE plans to harvest only 15,280 tons or 13,861 tonnes of teak and 300,000 tons or 272,155 tonnes of hardwood, which is under the AAC limit (Myanmar Timber Enterprise 2016).

Degradation of natural forests due to extraction of fuelwood and charcoal will remain an issue in the foreseeable future. The demand for wood energy for domestic and industrial use is increasing, as there are not yet any reliable and affordable alternative energy sources available, especially in rural areas. Neither is there sufficient fuelwood from multipurpose tree plantations. Reducing dependency on fuelwood is one of the priorities that Myanmar adopted in its Intended Nationally Determined Contribution submissions. The country is currently planning to distribute approximately 260,000 cooking stoves between 2016–2031, and is increasing efforts for electrification in rural areas.

2.2.5 Illegal logging

Myanmar's illegal wood flow includes timber, fuelwood and charcoal. Myanmar is the fifth largest

global exporter of wood in a rough or roughly squared format. Myanmar has developed a legal framework and tracking system to control the timber trade, under which wood is only considered legal if it has the hammer stamps of the State-owned Myanma Timber Enterprise (MTE).

Illegal cross-border trade of timber, particularly to China, has been going on for more than two decades and involves vast quantities (EIA 2015). Indeed, the demand from across the border, from wood processing industries and plantation in China, Vietnam and Thailand, exerts tremendous pressure on Myanmar's forests. All three countries have strict logging controls on their own natural forests and have consequently turned to forest-rich countries in the region and beyond, especially Myanmar, Cambodia and Lao PDR, for supplies of raw material. Myanmar is one of the main targets due to its stock of valuable species, notably its prized teak (*Tectona grandis*) and the rosewoods (*Dalbergia* spp.) that are called *Hongmu* in China (EIA 2015). EIA research shows that, based on current trends, the two most targeted rosewood species in Myanmar – Tamalan (*Dalbergia oliveri/ bariensis*) and Padauk (*Pterocarpus macrocarpus*) – might have been logged to commercial extinction by 2017. Listed as a reserved species, only MoNREC has the legal right to harvest and trade in Tamalan and Padauk. Yet, through a vast illegal trade, it has become one of the most traded timber species over the China-Myanmar border. EIA identified 33 timber species which are included in the 2000 China National Hongmu Standard, 6 of which are found in Myanmar and are captured in China's import data under its dedicated Hongmu Customs Code (HS Code: 44039930). These include Tamalan / Burmese rosewood (*Dalbergia oliveri / bariensis*), Burmese Padauk (*Pterocarpus*

macrocarpus), Burma Blackwood (*Dalbergia cultrate*), Ceylon ebony (*Diospyros ebenum*), Burma thinwin (*Millettia leucantha*) and Red Sandal (*Pterocarpus santalinus*). Of these, it appears that Tamalan and Padauk are the most commonly available and traded species, and the focus of Chinese traders, as sources and stocks have been depleted in neighboring countries (EIA 2015).

The COP 17 of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) listed over 250 tropical species of *Dalbergia* genus onto the Appendix II of the CITES list in October 2016. This necessitates that nearly all international trade in *Dalbergia* species can only be allowed for trade with permits. Yet as shown by EIA's research, between 2001 and 2013, 10.2 million m³ of Myanmar logs imported into global markets were not authorized for harvest, which would equate to a 47.7% illegal logging rate in the country related to exports. Any exports of semi-processed or finished products, and any domestic consumption, would add to this illegal logging rate and volume (EIA 2015).

According to UN Comtrade, Myanmar is also one of the world's largest exporters of fuelwood and wood charcoal, with an annual value of USD 30.5 million, which forms 2.8% of the global share. Richer (2014) identified that charcoal exports to China, which were almost non-existent in the early 2000s, boomed between 2006 and 2008, with volumes increasing by more than 2500%. Overall volumes have stabilized around 0.5 million m³, and charcoal now represents 32% of Myanmar's total wood product exports to China. The research also suggests the primary use is in the smelting process for China's silicon metal industry, likely for solar panel production. Almost 100% of Myanmar's charcoal exports are registered in the Kunming customs district, indicating cross-border rather than overseas transport (Richer 2014); this means all such export is illegal according to Myanmar's laws. Forest Department information indicates that between April and June 2016, 1,053 tonnes of charcoal were seized at the border (Myanmar-Chinese Website 2016), indicating that this is part of regular illegal wood product seizures.

2.2.6 Fuelwood use

Fuelwood accounts for more than 90% of biomass-sourced energy, most of which is harvested from

natural forests and is used in both urban and rural areas. The average annual consumption of fuelwood per household is estimated to be roughly 2.5 cubic tons (4.5 m³) for rural households and 1.4 cubic tons (2.5 m³) for urban residents (ADB 2012).

The majority of the population (85%) depends on solid fuels for cooking purposes. Fuelwood (59%) and charcoal (24%) are the most prevalent fuel sources, followed by electricity (14%). Agricultural residues (rice husks) account for only 3%. In rural areas, 80% of the population depends on firewood, whereas in peri-urban areas, only 18% relies on fuelwood and 45% relies on charcoal (EMC 2015). Access to modern fuels for cooking (such as liquefied petroleum gas) is limited to urban areas. Consequently, traditional biomass (wood and animal dung) is widely used and accounts for about 70% of primary energy consumption. The most common type of stove used across the country is the three-stone open fire (35%), followed by the charcoal/multipurpose stove (27%) and the electric stove (15%). Charcoal stoves (46%) and electric stoves (35%) dominate in peri-urban environments, while three-stone is the most predominant stove in rural environments (50%). Urban households tend to own and use more stoves than rural households. Households using iron, three-stone fires and mud stoves are the most likely to only use 1 stove regularly. A total of 95% of respondents indicated using the stove for water boiling, while only 18% use it for warmth, 7% for animal feeding, and 2% for lighting (ibid 2015).

Information from the Myanmar Household Cooking Survey in Ayeyarwady, Bago, Magway, Shan and Tanintharyi states provides useful insights. In Ayeyarwady, Magway, and Shan states, fuelwood collection has been increasingly difficult due to declining available resources. Survey results indicate that more fuelwood is collected from plantations than indicated in the Forestry Master Plan, and far less from community forests and natural forests in these states, which could indicate that fuelwood collection may have less of an impact on forest degradation in these states. However, 44% of respondents in Shan State indicated that they source wood from natural forests, compared to only 8% in Tanintharyi.

Overall, some two-thirds of the rural population lives in areas with fuelwood deficits, indicating

that any likely rural surplus probably flows into peri-urban and urban deficit areas. Over 50% of households tend to purchase their fuelwood for consumption, and there is a link between the high rate of fuelwood consumption and high deforestation rates, such as in Ayeyarwady and Tanintharyi (71%).

Myanmar has abundant energy resources, particularly hydropower and natural gas. Yet, the country has one of the lowest commercial per capita energy consumption rates in Southeast Asia. This low energy demand is due to its low per capita income and insufficient energy infrastructure, as reflected by its total electrification rate of only 26% (ADB 2012).

The Forest Department promoted fuelwood plantations as a means to develop sustainable supplies of fuelwood and to decrease extraction from forest reserves. A total of 0.84 million ha of forest plantations were established between 1981 and 2010, 20% of which were targeted for use as fuelwood. Plantation establishment has since slowed (ADB 2012). On the other hand, community forests were intended as a means to increase the amount of forest area that contributes

fuelwood for community needs. In 2001, the Government of Myanmar set a target of 919,000 ha under community forestry management by 2030. As of 2016, 12% of the target had been achieved (RECOFTC 2017). To meet the target, Myanmar must speed up the program from the current 2,810 ha per year to 67,000 ha per year until 2030 (Ferrand 2018).

In 2007, commercial and fuelwood plantations comprised 87% of the total plantation area, while only 13% used for conservation purposes. There is concern that failed plantations have been a major cause of forest loss and degradation (Than 2015).

The amount of biomass for fuelwood harvested in Myanmar has steadily increased and is several times higher than for timber extraction. Fuelwood extraction for the period 2000/01–2012/13, in terms of fresh biomass, can be estimated at 68–86 million m³ annually, of which 48–60 million m³ comes from natural forests, 17–21 million m³ from trees on farmland, and only 3.4–4.3 million m³ from fuelwood plantations (Table 7). Thus, fuelwood extraction, which is poorly regulated, is affecting millions of ha of natural forests and is therefore an important driver of forest degradation.

Table 7. Estimations of fuelwood harvests in Myanmar, 2000–2012

Year	Energy ktoe (kilotonnes of oil equivalent)	in tonnes (dry biomass)	in m ³ (dry biomass)	in m ³ (fresh biomass)	Estimated origin of fresh biomass in m ³		
					Natural forests	Trees on farmland	Fuelwood plantations
2000	7,723	17,015,789	34,031,579	68,063,157	47,644,210	17,015,789	3,403,158
2001	7,912	17,432,206	34,864,412	69,728,823	48,810,176	17,432,206	3,486,441
2002	8,105	17,857,435	35,714,871	71,429,741	50,000,819	17,857,435	3,571,487
2003	8,388	18,480,958	36,961,917	73,923,833	51,746,683	18,480,958	3,696,192
2004	8,401	18,509,601	37,019,201	74,038,403	51,826,882	18,509,601	3,701,920
2005	8,561	18,862,123	37,724,245	75,448,490	52,813,943	18,862,123	3,772,425
2006	8,879	19,562,760	39,125,519	78,251,039	54,775,727	19,562,760	3,912,552
2007	9,131	20,117,982	40,235,963	80,471,927	56,330,349	20,117,982	4,023,596
2008	9,401	20,712,862	41,425,725	82,851,449	57,996,014	20,712,862	4,142,572
2009	9,665	21,294,523	42,589,047	85,178,093	59,624,665	21,294,523	4,258,905
2010	9,993	22,017,193	44,034,386	88,068,773	61,648,141	22,017,193	4,403,439
2011	9,506	20,944,205	41,888,410	83,776,819	58,643,773	20,944,205	4,188,841
2012	9,708	21,389,264	42,778,527	85,557,054	59,889,938	21,389,264	4,277,853

Source: Data on primary energy consumption years 2000/01–2012/13 provided in Second Draft Renewable Energy Policy of Myanmar (2016) in MoNREC 2017, 19–20

2.2.7 Shifting cultivation

Shifting cultivation, called *shwe pyaung taungya* in Burmese, is the dominant agricultural system in Myanmar's upland areas. In shifting cultivation systems, land is cleared and planted with a diverse array of crops for 1–3 years and then left fallow for a longer period for soil and vegetation to regenerate. The fallow period varies from around 5 years to over 20 years. After the fallow period, the same areas are cleared again for cultivation. Although fallow periods are observed to be shortening in some regions, the reasons for this vary, ranging from needing to produce more to seeking to demonstrate more permanent settlement. There are no available figures on the total area of shifting cultivation in Myanmar. However, about 42% of the country's population lives in upland areas and is likely to be practicing some form of shifting cultivation (Andersen 2015).

Shifting cultivation is one component of customary tenure systems, which also include permanent agriculture gardens, orchards, and forests, including protected watershed forests and riparian areas. Customary tenure systems with well-developed rules for shifting cultivation have been documented across the country, from Kachin and Naga systems in the north, to Chin in the west, Ta'ang and Pa-Oh systems in the east, and Kayah and Karen systems in the south (OECD 2016; Tarkapaw et al. 2016).

Shifting cultivation land is held under communal tenure, with some mechanism for communities to decide where to clear land each year, though there are many variations in the specific ways that land is claimed and allocated. In northern Chin State, for example, the community holds communal tenure over blocks of land called *lopils* that are cleared each year and in turn allocated to households by lottery. In this and other systems, the land under shifting cultivation is clearly identified by the community, and forests are not cleared outside of the defined area.

Research by the Resource Rights for the Indigenous Peoples (RRtIP), on Naga customary land tenure systems, has combined digitized scale maps of community land use types with remote sensing data on forest cover change. These maps show clearly that, over the last decade, the studied communities have only cleared land within the

shifting cultivation area they defined on the map, and have not cleared areas that are designated as community protected forest or household woodlots. That is, forest clearing is not occurring in new areas, but in established shifting cultivation areas that have been under cultivation for decades.

A meta-analysis of 250 studies concludes that there is no evidence that policies designed to 'sedentarize' shifting cultivation will increase ecosystem-level carbon stocks, and may in fact incentivize forest conversion by intensive agriculture (Ziegler et al. 2012). Other studies argued that the transition from shifting cultivation to more intensified agriculture often contributes to permanent deforestation, loss of biodiversity, increased weed infestations, declines in soil fertility, and accelerated soil erosion (Van Vliet et al. 2012). Further, the Myanmar NGO Promotion of Indigenous and Nature Together (POINT 2015), a local organization working for Indigenous people's issues, claimed that shifting cultivation areas should not be compared to primary forest and declared 'degraded' but instead should be considered a diverse agricultural system with many trees. Shifting cultivation entails the conversion of primary forest to secondary forest at some point in history, and this conversion does alter the species composition and carbon storage of the ecosystem. Forest conversion that occurred decades ago for shifting cultivation should not be equally weighted in terms of causing carbon emissions with forest clearing for other types of agriculture that have caused more permanent forest loss. Shifting cultivation systems with long fallows may be comparable to some agroforestry systems and tree plantations for carbon sequestration, and are superior to continuous annual cropping (Bruun et al. 2009). Shorter fallow periods will sequester relatively less carbon, but should be managed to maintain soil fertility. POINT (2015) also found that shifting cultivation promotes food and nutritional diversity, with the types of vegetables planted in shifting cultivation sometimes exceeding 40 varieties. These composite agricultural systems work together to produce a variety of subsistence and commercial crops, while maintaining agricultural and biological diversity and managing soil and pests without intensive agrochemical inputs.

Should shifting cultivation move into forest areas where it has not been practiced before, or the

rotation cycles shorten or involve more nutrients or irrigation/water demand, then clearly there is a greater need to assess the sustainability of the practice. In most cases, the most likely alternative to this use is more intensified agricultural production and permanent conversion to non-forest uses.

Recognizing the link between shifting cultivation and customary tenure rights (explored in more detail in section 2.2.8. underlying cause of deforestation and forest degradation) is important. The National Land Use Policy (version 6) recognizes land under customary tenure, including shifting cultivation land, but processes to recognize those rights to land have yet to be defined. For the purpose of this assessment, more dialogue is needed between stakeholders and government to identify how to deal with shifting cultivation in the REDD+ context.

The rates of change between forest and non-forest are quite different at the subnational level due to the remoteness of lands, as well as to different economic development opportunities and pressures. The distribution of deforestation rates is shown in Table 8.

The development of shifting cultivation is difficult to forecast, not least because of the lack of reliable data, apart from localized studies, on the different kinds and spatial extensions, as well as on the dynamics of shifting cultivation systems in the country. However, it is likely that in the foreseeable future, it will remain a major land management system in hill and mountain regions, although this may decrease over time due to decreasing populations in rural areas.

The 2011 economic and political reforms have resulted in an increasing trend for intra-regional migration and out-migration of rural people in states/regions. With the majority of Myanmar's poor living in rural areas, the economic development concentrated in urban areas or certain states/regions creates rural-urban and rural-rural disparities, and this might draw the agriculture-based rural populations to urbanized, industrialized places (Ndegwa 2016). The 2013–2014 Formal Sector Survey found that 38.9% of formal sector workers had migrated from one state/region to another for work, with the figure rising to 48.7% when intra-regional migration was included

Table 8. Subnational distribution of deforestation rates in Myanmar, 2005–2010, 2010–2015, and 2005–2015

State/ Region	2005-2010	2010-2015	2005-2015
Ayeyarwady	-9.95	-4.98	-7.50
Kayah	-1.67	-11.53	-6.73
Mandalay	-4.60	-6.92	-5.77
Mon	-4.31	-6.95	-5.64
Magwe	-5.51	-5.17	-5.34
Sagaing	+0.25	-5.96	-2.91
Rakhine	-3.93	-1.82	-2.88
Kayin	-2.48	-3.12	-2.80
Chin	-1.80	-3.66	-2.73
Naypyitaw	-3.19	-1.31	-2.26
National total	-2.49	-1.38	-1.96
Shan	-5.47	+3.27	-1.19
Kachin	-0.85	-0.67	-0.76
Bago	-1.46	+0.89	-0.29
Tanintharyi	+0.51	+0.04	+0.27
Yangon	-7.81	+9.58	+0.51

Source: Kissinger 2017

(Griffiths and Oo 2014). Only 4 of 10 states/regions have a net in-migration, namely Yangon, Shan, Kayah and Kachin, while the main out-migration states/regions are the Dry Zone (Magway and Mandalay), Ayeyarwady, and Bago. Yangon and Mandalay are the primary urban destinations (Helvetas 2015).

Overgrazing of forests by domestic livestock is likely to remain an issue in the future, especially in wood-scarce areas such as the Dry Zone. If the present rate of increase of ruminant animal populations is maintained, the future stock of ruminant animals will rise from 26 million in 2015 to 44 million in 2025. If fodder sources remain, mainly in forests and woodland, it can be expected that the pressure on forests will be at least maintained or even increase.

For the development of forest fires and their underlying causes, it is also likely that their dynamics will remain the same over the next few years, with a tendency of increase in a number of hotspots. The areas of expansion cannot be measured with present fire-monitoring capacities, but they are likely to

increase as mean temperatures increase and drought periods become more common.

2.2.8 Underlying causes of deforestation and forest degradation

Underlying causes of deforestation and forest degradation are complex interactions of fundamental social, economic, political, cultural and technological processes that are often distant from their area of impact. These underpin the direct causes, and either operate at the local level or have an indirect impact from the national or global level. They are related to *international* (e.g. markets, commodity prices), *national* (e.g. population growth, domestic markets, national policies, governance) and *local* circumstances (e.g. changes in household behavior) (Geist and Lambin 2002).

Underlying drivers are mapped out in Myanmar's REDD+ Readiness Roadmap (UN-REDD 2013), which highlights poor institutional setting and overlapping and conflicting mandates of different land management committees. For example, land management is regulated and managed by three different government agencies: Central and subnational Land Management Committees (based on the FarmLand Law and headed by MoALI); the National Committee on Land Scrutinising and Land Allocation (created by Presidential Decision and headed by MoNREC); and the Central Vacant, Fallow and Virgin Land Management Committee (based on the new VFVLM law and headed by MoALI). This multiplicity reduces the efficiency of land management and land-use planning. Moreover, the Central Land Management Committee falls under the Ministry of Agriculture and Irrigation, while the subnational Land Management Committees at township level fall under the Ministry of Home Affairs/General Administration Department. Consequently, forest conversion is too easily carried out by different government agencies without proper monitoring and oversight. Moreover, forest ecosystem services are undervalued and/or not considered in policy and investment decisions.

The REDD+ Readiness Roadmap (UN-REDD 2013) also pointed out as drivers of the increasing deforestation rate: weak enforcement of the law; land grabbing facilitated by insufficient or ineffective protection of traditional land or forest tenure rights coupled with the lack of fair and

transparent land conflict resolution mechanisms and structures; poverty and lack of alternative livelihoods; and increasing demand for resources from a growing middle class.

Significant political changes have occurred in Myanmar since 2013 with the new National League for Democracy-led government, and it is particularly timely to consider underlying drivers in the context of historic levels of FDI, and current socioeconomic and political changes. Thus, while many of the underlying drivers identified in the Readiness Roadmap are still highly relevant, others, such as poverty and urban-rural linkages, are brought into the topic headings below, as they cross-cut a few underlying drivers.

2.3 Mitigation potential

2.3.1 The potential for climate change mitigation of the land use, land-use change, and forestry sector in Myanmar

Table 9 presents greenhouse gas (GHG) emissions and removals from land use/land-use change and forestry for the year 2000 in Myanmar. The estimations for the GHG-Inventory 2011 are rather conservative and based on IPCC default values and Tier 1 approaches for emission factor calculation (IPCC 2006).

Still, the estimations show that the forestry sector is a considerable contributor to the removal of CO₂ from the atmosphere, with more than 72 million tonnes of CO₂e per year absorbing all the emissions from the other sectors in Myanmar. However, since 2000, many factors such as population increase and a growing national economy have caused a loss of around 5 million ha, with large areas of additionally degraded forests. The overall GHG emissions have likely risen, and the potential of absorption of GHG emissions of the remaining forests has been reduced. A new national GHG inventory has yet to take place to provide updated estimations of the balance of GHG emissions and removals in the country.

The potential for climate change mitigation of the forestry sector in Myanmar can be estimated based on: forest policy targets for the increase of forests in the category of permanent forest estate (PFE) formulated for the period of 2000–2030, their

Table 9. Annual GHG emissions/removals from land-use change and the forestry sector in Myanmar

Activity	GHG emission (in tonnes of CO ₂ e)	GHG removals (in tonnes of CO ₂ e)	Net GHG emission (in tonnes of CO ₂ e)
Natural forests		-129,838,590	-129,838,590
Forest plantations	1,863,210	-11,750,040	- 9,886,830
Home garden trees		-470,070	- 470,070
Roadside trees		-162,490	- 162,490
Industrial wood removal ^a	2,177,000		2,177,000
Fuelwood harvest ^b	26,936,418		26,936,418
Shifting cultivation ^c	1,200,670		1,200,670
Deforestation ^d	37,340,970		
Total	69,518,268	-142,221,190	- 110,043,892

Notes:

a The data for industrial wood removal and fuelwood harvest in the GHG study are indicated to be in Gt (1,000 tonnes) of carbon. However, the unit is more likely to be CO₂, given that the figures for the harvest data of industrial round wood and approximations for fuelwood for the year 2000 were: 2,162,000 m³ of timber and approximately 45,000,000 m³ of fresh biomass for fuelwood, respectively (CSO, 2007; Table 21).

b Mentioned in the energy sector of the GHG Inventory but not included in the overall emission calculations of the GHG study.

c Calculated based on 15,000 ha slashed and burned annually (FAO, 2005)

d Calculated with 80 tonnes of CO₂ per ha and an annualized deforestation rate of 466,500 ha (FAO 2005)

Source: Ministry of Environmental Conservation and Forestry, 2012

achievements so far (2000–2015), and the likely development over the next 10–15 years under different assumptions.

The 30-year master plan for the forestry sector establishes a target of 40% of the national land area within the category of PFE.¹ The present amount of PFE in the country is 21.1 million ha (Table 10) and this figure would have to increase to around 27 million ha by the year 2030. The areas for increasing the PFE are taken from land presently unclassified according to existing legislation, and can be anything including well-developed forests, degraded and open forests, other woodland, or waste and fallow land.

The draft NDC for Myanmar considers the fulfillment of this target as the prime contribution of the forestry sector to the climate change actions of the country. Therefore, a corresponding calculation of what that could mean in terms of

potential emissions reduction under different assumptions can be developed.

Table 10 shows the development of the areas under the PFE categories during 2008–2015, the actual annual rates approaching the 2030 targets, and the rates needed to achieve the targets between 2016 and 2030. The actual rates achieved so far and the rates needed to fulfill the targets are very close. The rates of increase for the RF and PPF categories would have to be increased from 0.9% to 1.1% annually, while the rates for Protected Area System (PAS) can either be maintained and the target achieved earlier or even somewhat reduced and still fulfill the target. However, as the country approaches the targets, it may well become increasingly difficult to add additional areas to the existing PFE.

Table 11 shows the annual increase in area needed to achieve the 2030 target.

Although the rates of increase of PFE in the past have been considerable, it still constitutes a major challenge for the country to add nearly 400,000 ha of forests yearly to the PFE.

¹ The permanent forest estate (PFE), includes the categories of Reserved Forests, Protected Public Forests and the Protected Area System of the country. The PFE is under the authority of the Forest Department of Myanmar.

Table 10. Increase of permanent forest estate (PFE) during 2008–2015 and increase needed to fulfill the forest policy target (2030)

Forest category	PFE in 2008 in ha	PFE in 2015 in ha	Target for 2030 in ha	Annual rate of increase 2008– 2015	Annual rate of increase (2016–2030) needed to fulfill target
Reserve Forests (RF) and Public Protected Forests (PPF)	16,184,687	17,222,693	20,297,337	0.89%	1.1%
Protected Area System (PAS)	2,661,349	3,890,595	6,765,779	5.57%	3.76%
Total PFE	18,846,036	21,113,288	27,063,116	1.64%	1.67%

Table 11. Annual increase of PFE needed to achieve the 2030 target (ha)

Forest category	PFE 2015	PFE target 2030	Annual average increase needed over 2016–2030 in ha
RF and PPF	17,222,693	20,297,337	204,976
PAS	3,890,595	6,765,779	191,679
Total	21,113,288	27,063,116	396,655

For the calculation of the corresponding mitigation potential through the increase in PFE, an additional assumption is necessary. The deforestation rate in forests of the PFE are different from the overall countrywide deforestation rates, but they are not zero. Initial indications from the Forest Department show that the deforestation rate in PFE is between a third and half of the overall deforestation rate (Myint 2016). That means, conservatively calculating, that only half of the additional forest area counted in the PFE category under present conditions can be considered as being conserved permanently, and also that increasing the PFE alone is not a sufficient means to avoid deforestation or forest degradation.

For the following calculations, the (EF) (based on FAO, 2010) and the annualized deforestation (AD) (based on FD estimations) are used under the assumption that at least half of the area integrated into PFE will permanently be retained as forest (i.e. only half of the potential emissions reduction will be accounted for as mitigation potential).

Table 12 shows that, if, under the assumptions explained above, the country succeeds in achieving its policy target of incorporating 40% of the land surface in the PFE (30% RF and PPF, and 10% PAS) over the next 15 years, considerable gains in GHG emissions removal could be achieved, resulting in 30–50% reductions, depending on the emissions baseline or reference level applied.

Table 12. Potential emissions reduction 2016–2030 based on permanent forest estate target values (tCO₂e)

Years	Annual increase in ER (removal)	Annual emissions baseline 2000- 2010	Annual emissions baseline 2000 - 2015	Annual additional reduction				Annual accountable increase in PFE (50%)
				Annual emissions baseline 2005 - 2015	Net emissions baseline 2000 - 2010	Net emissions baseline 2000 - 2015	Net emission baseline 2005- 2015	
				tons of CO ₂ e				ha of forests
1	28,031,057	60,336,207	63,244,773	102,946,665	32,305,150	35,213,716	74,915,608	176,296
2	28,499,175	60,336,207	63,244,773	102,946,665	31,837,032	34,745,597	74,447,489	179,240
3	28,975,112	60,336,207	63,244,773	102,946,665	31,361,095	34,269,661	73,971,553	182,233
4	29,458,996	60,336,207	63,244,773	102,946,665	30,877,211	33,785,777	73,487,669	185,277
5	29,950,961	60,336,207	63,244,773	102,946,665	30,385,246	33,293,812	72,995,703	188,371
6	30,451,142	60,336,207	63,244,773	102,946,665	29,885,065	32,793,630	72,495,522	191,517
7	30,959,676	60,336,207	63,244,773	102,946,665	29,376,531	32,285,096	71,986,988	194,715
8	31,476,703	60,336,207	63,244,773	102,946,665	28,859,504	31,768,070	71,469,962	197,967
9	32,002,364	60,336,207	63,244,773	102,946,665	28,333,843	31,242,409	70,944,301	201,273
10	32,536,803	60,336,207	63,244,773	102,946,665	27,799,404	30,707,969	70,409,861	204,634
11	33,080,168	60,336,207	63,244,773	102,946,665	27,256,039	30,164,605	69,866,497	208,051
12	33,632,607	60,336,207	63,244,773	102,946,665	26,703,600	29,612,166	69,314,058	211,526
13	34,194,271	60,336,207	63,244,773	102,946,665	26,141,936	29,050,501	68,752,393	215,058
14	34,765,316	60,336,207	63,244,773	102,946,665	25,570,891	28,479,457	68,181,349	218,650
15	35,345,897	60,336,207	63,244,773	102,946,665	24,990,310	27,898,876	67,600,768	222,301
Cumulative	473,360,249	905,043,105	948,671,592	1,544,199,971	431,682,856	475,311,343	1,070,839,721	2,977,108
ave/y	31,557,350	60,336,207	63,244,773	102,946,665	28,778,857	31,687,423	71,389,315	198,474

3 Institutional, environmental and distributional aspects

This section examines governance conditions and institutional arrangements of relevance to REDD+ in Myanmar, including international agreements, forest governance, decentralization, land tenure, benefit sharing and the rights of indigenous/ethnic communities.

3.1 Governance in the forest margins

3.1.1 Broader context: Global governance and international agreements

Myanmar is a signatory to a number of international agreements relevant to forest governance and has made commitments to the following international agreements on forestry and other environmental issues:

- United Nations Convention to Combat Desertification (UNCCD) in those countries experiencing serious drought and/or desertification in January 1994
- UN Framework Convention on Climate Change (UNFCCC) in November 1994
- UN Convention on Biological Diversity (CBD) in November 1994
- International Tropical Timber Organization (ITTO) in November 1993, and ratification of the International Tropical Timber Agreement in January 1996
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in June 1997
- Kyoto Protocol 2003
- United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) in 2007
- ASEAN-China Free Trade Area (ACFTA) 2012
- Nagoya Protocol on Access and Benefit Sharing 2014
- Paris Agreement 2016

Myanmar is a founding member of the International Centre for Integrated Mountain Development (ICIMOD), with seven other member states. The main areas of cooperation between the Forest Department and ICIMOD are information exchange and dissemination, demonstration of conservation technologies and training on other technologies such as remote sensing, geographic information systems and global positioning systems. Since June 2018, ICIMOD has been helping FRI prepare a national REDD+ strategy for Myanmar. Shan State is currently drafting its State REDD+ Action Plan (SRAP).

Despite the large number of international agreements signed, these are often not effectively implemented due to weak law enforcement and lack of participatory decision making in the past. For example, Myanmar ratified the CBD and its Cartagena Protocol in 1994 (25 November 1994). In January 2006, a Memorandum of Understanding was signed with the UN Environment Regional Office for Asia and the Pacific (UNEP ROAP) in Bangkok for it to support Myanmar's National Commission for Environmental Affairs (NCEA) with the development of the National Biodiversity Strategy Action Plan (NBSAP). Myanmar is obliged, as a signatory, to meet the objectives of the CBD to expand their PAS (MoNREC 2015). However, the action plan was entirely based on the biophysical sciences and technical expertise without any regard for social and cultural value, indigenous territories, or the political ethnic conflict rooted in Myanmar. The indigenous peoples and environmental groups with indigenous representation based inside or outside of Myanmar had not been consulted in the process of developing the NBSAP (BEWG 2011). The revised NBSAP (2015–2020) was prepared by the Forest Department, MoNREC, and the International Union for Conservation

of Nature (IUCN) Southeast Asia Group, in close collaboration with numerous partner organizations and individuals from governments, local and international NGOs, universities, research institutes and CSOs. In order to provide a strategic framework for the conservation of Myanmar's biodiversity, while addressing new and emerging challenges arising from political, economic and social reform in the country, as well as taking into account new opportunities, and aligning targets and actions with the CBD's Strategic Plan for Biodiversity 2011–2020 and the Aichi Biodiversity Targets (MoNREC 2015), Myanmar also submitted its Sixth National Report on Biodiversity to CBD in December 2018 (with support from the United Nations Development Programme [UNDP]-Myanmar, funded by GEF), which measured the achievements of NBSAP while addressing Aichi targets and Sustainable Development Goals (SDGs).

As a signatory to CITES as of 11 September 1997 (Republic of the Union of Myanmar, 2015), Myanmar agreed to regulate or prohibit trade in endangered species or animal parts, with the Forest Department as the CITES management authority. In 1994, the Protection of Wildlife and Wild Plants and Conservation of Natural Areas Law (State Law and Order Restoration Council Law No. 583/94. 1994) was enacted. However, there is little or no enforcement of CITES regulations in Myanmar (BEWG 2011). In the case of elephant protection, culturally and historically Myanmar has allowed private ownership of captive elephants, although technically under the wildlife law it is banned. It is difficult to control elephant poaching and illegal trading in areas where insurgency groups (e.g. the Kachin Independent Army) are present, as they are involved in illegal trade, especially in border areas with China and India. Moreover, the capacity for law enforcement in Myanmar is limited, though under the new government, law enforcement along the border areas has been increased. Nevertheless, there is an urgent need to strengthen staff, funding and capacity building to improve the protection of endangered animals such as live elephants from illegal trading. Until 2015, Myanmar police and military were allowed to be armed with guns; however, Forest Department staff can only carry knives (CoP17 2015). The good news is that, since October 2018, Yangon became the first city in Southeast Asia to become "illegal wildlife trade free". In every district and township

in Yangon region, anyone caught selling or carrying illegal wildlife products now faces enforcement under the new Protection of Biodiversity and Protected Areas Law enacted in May 2018 (Elevenmyanmar.com 2018). The final round of discussions on the rule of the new law has been completed and should be ready to be approved by the Union Parliament in early 2019.

3.1.2 Forest governance status

In November 2017, as one of the outcomes of Voices for Mekong Forests (V4MF) project, a forest governance assessment was conducted by MERN, RECOFTC and WWF through focus group discussions and key stakeholders consultations meetings at national and landscape levels (in Thanintharyi Region). The Forest Governance Enabling Environment Assessment Tool, which is based on the Framework for Assessing and Monitoring Forest Governance developed by FAO and the World Bank's Program on Forests (PROFOR), was used for the assessment. The tool consists of three pillars; (i) policies, legislation and institutions; (ii) planning, decision making, and dispute resolution; and (iii) implementation, enforcement, and compliance. There are a total of 151 indicators for the assessment, and each indicator can be scored from 1 (weakest/failure) to 5 (excellent).

In general, despite high scores for policies and legislation, and for the institutional framework, the country's forest governance is considered weak, as indicated by the low scores for coordination between relevant sectors, incentives for benefits sharing, law enforcement, and measures to address corruption (Figure 4; RECOFTC 2018a).

In the segment on the governance system encompassing implementation, enforcement and compliance during forest product trading, scores were notably low (Figure 5). Land tenure is a big issue in affecting forest governance in the country, due to a lack of clear policies on the provision of land tenure and resource access to local communities (RECOFTC 2018a).

Looking at the principles of good governance (Figure 6), the scoring indicates serious issues in relation to implementation, enforcement and compliance despite good scores on policies and legislation (RECOFTC 2018a).

Figure 4. Scores for key areas of enabling environment resulting from the forest governance assessment in Myanmar to better understand the challenges and opportunities for strengthening forest governance using 0 to 5 as the score range (RECOFTC 2018a)

Figure 5. Scores for each value chain segment resulting from the forest governance assessment in Myanmar to better understand the challenges and opportunities in the value chain segment (RECOFTC 2018a)

This assessment was done in 2017. Since the new Forest Law was issued in 2018, the level of enforcement and implementation could be different from now and should be assessed again.

3.1.3 Forest administration in Myanmar

As explained, Myanmar's population is predominantly rural, with two thirds of its 53 million people living in rural areas (FAO 2016). Most of the rural people are poor and depend on

forests for their livelihood (Khaine et al. 2014). Forests and forest resources are governed by the Forest Department, which since 2016 has been a subdivision of MoNREC. The Forest Department itself was established in 1824 during British colonial times and has survived the government changes in Myanmar since then (see Box 3).

In more recent history, the Forest Department was restructured several times. From being part of the Ministry of Forestry, it became a department

Figure 6. Scores for each good governance principle resulting from the forest governance assessment in Myanmar to understand the scoring of good governance and the need to see how much the country can strive to enforce stakeholders to comply with new laws (RECOFTC 2018a)

Box 3. A short history of Myanmar's Forest Department

Monarchical times. In the pre-colonial time, a sound management regime was in place, mainly based on managing valuable teak. In the 18th century, teak was declared royal and no one was allowed to cut without permission of the king (government). Teak trees were cut to supply the development needs of the kingdom and were used in construction of palace buildings and ships. Rural peasants of the kingdom were only allowed the use of other species of wood, paying taxes to local authorized persons delegated by the kingdom (Linn and Liang, 2015)

Laissez-faire forestry development (1824–1855). After the first Anglo-Burmese war in 1824, the British conquered the lower Tenasserim region of Burma and started to exploit the Tenasserim teak forests and Ataran forest area for the construction of British naval vessels and for other purposes. Trees were cut freely and there were few rules to limit the rate of extraction until 1857.

Scientific forestry development (1856–1938). The British introduced the 'scientific' management of Myanmar's forests in 1856, establishing the Forest Department to implement a system which became the Burma (now Myanmar) Selection System (B[M]SS) (Woods and Canby 2011). At the same time, the British also adopted the 'taungya system' incorporated as part of the Burma Forest Act legislated in 1881. This act regulated procedures for creation of reserve forest, Taungya system regulations, taxation systems, manuals for timber extraction, and regulations of trade. After the third Anglo-Burmese war, forest sector development was addressed according to the India Forest Policy of 1894, until the Burma Forest Act was enacted in 1902. Forest management under this Act promoted long-term commercial timber production in reserves according to scientific principles. This event marked the beginning of the Forest Department's power over local private timber companies and foreign firms.

Policy and organizations development in forestry (1948–2015). In the 1970s, the socialist government established the State Timber Board (STB) as the only state agency authorized to extract and market timber. STB later transformed into the Myanma Timber Enterprise (MTE) and existed in parallel to the Forest Department, challenging its authority in an attempt to fulfill the need for foreign exchange (Wood and Canby 2011; NEPCon 2013).

Source: Linn and Liang 2015

under MoECAF in 2011. In 2016, the Ministry of Mines and MoECAF were combined as the Ministry of Natural Resources and Environmental Conservation (MoNREC). Today, MoNREC is responsible for managing all forestlands in the country including the permanent forest estate (PFE) and public forests. MoNREC develops forest policy and legal frameworks and coordinates climate change-related policy analysis and development (Ferrand et al. 2018). In this regard, it took over the responsibilities and duties of the NCEA, formed in February 1990, which was responsible for the development of environmental policies and for issuing environmental regulations, and which became part of the Ministry of Forestry in 2005 (Simpson 2016). The Ministry of Forestry is thus also in charge of environmental protection, including the development and implementation of rules relating to environmental and social impact assessment.

The ministry is structured into six institutions: the Forest Department (FD), Dry Zone Greening Department (DZGD), Survey Department (SD), Environmental Conservation Department (ECD), Planning and Statistics Department (PSD) and Myanma Timber Enterprise (MTE) (Htun 2009; UN-REDD 2013; Linn and Liang 2015). MTE has the sole responsibility for the extraction and sale of timber, with no role in forest management or environmental protection (NEPCon 2013). This division of roles is problematic. Also since it is at the same level within the Ministry, the FD has no oversight authority over MTE.

In managing the forest lands, the FD relies on one key law and policy: (i) Protection of Wildlife and Protected Areas Law (1994) (replaced with new law “Conservation of Biodiversity and Protected Areas Law 2018), and (II) the 1995 Forest Policy. With the 1992 Forest Law, Myanmar made a shift away from treating its forests as a purely commercial resource, along with a shift in the role of government from restricting access and generating revenues from forests to motivating local people and sharing management responsibilities (WRI, 2016). It emphasized the importance of forests’ contributions toward the food, clothing, and shelter needs of the public, and for the perpetual enjoyment benefits that forests provide. The Forest Law 2018 is seen as a tougher one that threatens violators in a bid to conserve the country’s fast-dwindling forests. Under the new law, forestry

staff can also be punished for accepting bribes or for being involved in the extraction, transfer or possession of illegally cut logs and forest products.

The Forest Policy of 1995 includes policies on: the protection of forest resources, sustainable forest management, economic efficiency, people’s participation and public awareness. It also stipulates the need to increase forest reserves to 30% of the overall land area and the PAS to 5% over the short term and 10% over the long term (NEPCon 2013).

Both laws also enabled the development of the 1995 Community Forestry Instruction (CFI) (replaced by CFI 2016), which give legal backing to rural communities to co-manage forests. Further, to implement the Forest Law, the government issued a set of Forest Rules in 1995. The rules spell out definitions, as well as provisions on forest reserves, forest management, forest plantations, extraction and transportation of forest products, rights to driftwood, stamps for marking timber, timber storage terminals and ports, establishment of factories, policing responsibilities of forest officers, offences and punishment (NEPCon 2013).

Myanmar has a strong commitment to sustainable forest management, historically rooted in the Brandis selection system introduced in 1856. Today it is known as the Myanmar Selection System and, especially for teak, forms the basis for harvesting practices (NEPCon 2013; Springate-Baginsky 2013; Raitzer et al. 2015a; 2015b).

In addition to the Forest Law and Forest Policy, Myanmar has several other environmental, conservation and trade-related laws (Table 13; WRI 2016).

3.2 Decentralization and benefit sharing

3.2.1 Decentralization in Myanmar

Myanmar is formally designated as a unitary state and for decades was governed by a strong military centralized authority. The constitution of 2008 amended in 2015 (Ninh and Arnold 2016), heralded reforms in the political, social, economic and institutional sectors towards a more

Table 13. Overview of forestry laws and regulations governing Myanmar's forests

Year	Law/Regulations	Description
1936	Existing Timber Extraction Manual, Logging Rules and Procedures	FD and MTE jointly applied Logging Rules and Standards for Jungle Rejection of Teak Logs, issued by the Chief Conservator of Forests, Myanmar in 1936. Also the Grading Rules for teak were based on MTE practices and on FAO's general guidelines (Oo 2013).
1948	State Timber Board (STB) Extraction Manual	The Extraction Department of MTE issued and adopted this manual. In 1974, the STB was reorganized and renamed Timber Corporation (TC) and in 1989, was restructured into Myanma Timber Enterprise (MoNREC 2019).
1992	Forest Law	This Law set the legal framework for the creation of a permanent forest estate and Protected Area System (PAS) and their governance. Superseding the Myanmar Forest Act 1902, the new Forest Law includes adequate provisions for increased private sector involvement, community participation, biodiversity conservation and increased forest resources security (Oo 2013). The Law demonstrates a shift from the concept of revenue generation and restriction to one of motivation and sharing of management responsibilities with people (Linn and Liang 2015).
1994	Protection of Wildlife and Wild Plants and Conservation of Natural Areas Law	The Protection of Wildlife and Wild Plants and Conservation of Natural Areas Law replaced the Wildlife Protection Act 1936. The Law introduced the modern concept of biodiversity conservation and highlighted the need for extended formulation of the PAS (Oo 2013). It focuses attention on the identification of nature reserves, establishment of zoological gardens and botanical gardens, protection of wildlife and wild plants, issuance of hunting permits, conduct of research studies, issuance of permits to establish zoological and botanical gardens, registration, search, arrest and administrative action, and enforcement of penalties for offences (Linn and Liang 2015).
1994	National Environment Policy of Myanmar	The objective of Myanmar's environment policy, adopted on 5 December 1994, is to achieve harmony and balance through the integration of environmental considerations into the development process, thereby enhancing the quality of life of all its citizens (Linn and Liang 2015).
1995	Community Forestry Instructions (CFI)	CFI offers local/rural people the opportunity to participate in forest management activities such as the establishment of forest plantations and, in some areas, the conservation of natural forests, especially in watershed areas. The FD established community forests in all the states and divisions of the country as the major strategy by which forests can be managed and used sustainably (Oo 2013).
1995	Departmental Instructions for Forest Officers in Myanmar	These instructions include the procedures for: (i) forest reservation; (ii) preparation and updating of working plans; (iii) maintenance and review of girdling; (iv) ensuring that registers include future yield trees; (v) climber cutting and improvement felling; (vi) selection marking of non-teak hard woods and report keeping; and (vii) measurement and royalty marking of logs extracted under long-term agreements (Oo 2013).
1995	Myanmar Forest Policy	The 1995 Myanmar Forest Policy and the updated 1996 Forest Working Plans are responsible for implementing the 1992 Forest Law (BEWG, 2011).
1995	Forest Rules	The Forest Rules, prescribed in 1902 were replaced by the new Forest Rules in 1995, issued by the Ministry of Forestry. In order to facilitate implementation of the 1992 Forest Law, the new rules also place emphasis on: increased formation and protection of reserved forests and protected public forests; sharing of forest management responsibility with the local communities; establishment of fast-growing plantations on degraded forest lands to conserve soil, water and biodiversity; and harvesting of timber and other forest products in an environmentally sound manner (Oo 2013). The rules also cover procedures for: investigating violations; administrative actions to penalize violations such as imposing fines and confiscating the timber; and offenses and penalties (Linn and Liang 2015).

Continued on next page

Table 13. Continued

Year	Law/Regulations	Description
2000	National Code of Harvesting Practices (NCoFHPs)	The NCoFHPs is based on the regional FAO/Asia-Pacific Forestry Commission Code of Practice for Forest Harvesting in Asia-Pacific, which was revised in 2003. In 2008, Myanmar developed reduced-impact logging guidelines to provide guiding mechanisms to realize NCoFHPs (Linn and Liang 2015).
2001	National Forest Master Plan (NFMP) (2001/02 to 2030/31).	The NFMP includes 10-year medium-term plans for 62 districts (Forest Management Units (FMUs)) covering the entire country. The focus is on development of rural communities, and the main components are: strategies for poverty alleviation, establishment of plantation forest, community forestry development, bio-energy, non-wood forest products, development of human resources, and forestry extension. NFMP also set the target to establish 30% of the total country area as Reserve Forest (RF) and Protected Public Forest (PPF) and 10% as Protected Area System. As well, 25% of the fuelwood demand should be fulfilled from community forests by the end of NFMP (Linn and Liang 2015).
1997	Myanmar Agenda 21	Myanmar created a national framework legislation on the environment to improve coordination and cooperation between ministries on issues related to the environment, and also created legislation that requires environmental impact assessments to be done before any development project is undertaken (WRI, 2016; Linn and Liang 2015).
2012	Environmental Conservation Law	This Law was designed “to reclaim ecosystems as may be possible which are starting to degenerate and disappear” and to ensure that “[t]he relevant Government departments and Government organizations shall, in accord with the guidance of the Union Government and the Committee, carry out the conservation, management, beneficial use, sustainable use and enhancement of regional cooperation of ... forest resources.” The Law contains 14 chapters that define the rights and responsibilities of the Ministry of Environmental Conservation and Forestry (now MoNREC), environmental standards, environmental conservation, management in urban areas, conservation of natural and cultural resources, the process for businesses to apply for permission to engage in an enterprise that has the potential to damage the environment, prohibitions, offences and punishments (WRI, 2016; (Linn and Liang 2015).
2012	Vacant, Fallow and Virgin Land Management Law	This law defines the Central Committee and its role – to coordinate with the MoECAF (now MoNREC) and other concerned ministries for the prevention of damage and destruction to the forest land, including Reserved Forest, and Protected Public Forest; and for conservation of natural regions, watershed areas and natural fisheries. The Central Committee has the right to designate use of vacant, fallow and virgin land in the country (WRI, 2016)
2014 2016– 2027	Logging ban policies	In an effort to stem the flow of illegal timber from the country, the government enacted a ban on the export of raw logs, which took effect on 1 April 2014. The logging ban was extended for the 2016/17 season for the whole country, while in the Bago Yoma Region, a 10-year logging ban was issued. Starting from the fiscal year of 2017/18, the AAC was set to 19,210 teak trees and 593,330 other hardwood trees. MTE plans to harvest only 15,280 tons or 13,861 tonnes of teak and 300,000 tons of hardwood, which is under the limit of AAC (Myanmar Timber Enterprise, 2016).

Continued on next page

Table 13. Continued

Year	Law/Regulations	Description
2016	National Land Use Policy (NLUP)	The National Land Use Policy (NLUP) was developed in a participatory manner, whereby suggestions from a national workshop and consultations process in January 2016 were incorporated into the final document. The NLUP states six objectives: (i) to promote sustainable land use management and the protection of cultural heritage areas, environment and natural resources for the interest of all people in the country; (ii) to strengthen land tenure security for the improvement of livelihoods and food security of all people in both urban and rural areas of the country; (iii) to recognize and protect customary land tenure rights and procedures of ethnic nationalities; (iv) to develop transparent, fair, affordable and independent dispute resolution mechanisms in accordance with rule of law; (v) to promote people-centered development, participatory decision making, responsible investment in land resources, and accountable land use administration, in order to support the equitable economic development of the country; and (vi) to develop a National Land Law in order to implement the above objectives of National Land Use Policy.
2016	Community Forestry Instructions (CFI)	The revision of the CFI in 2016 has opened up great opportunities to increase the impact of CF significantly in Myanmar. By allowing for commercialization of CF, the revised instruction creates a much stronger enabling environment for forest communities to make a meaningful living from tenure for their forests – one that will potentially transform the lives of millions of rural people (RECOFTC 2018).
2018	Forest Law	The new law replaces the 1992 Forest Law, is tougher on violators and makes it easier for forestry personnel to bring violators to court. It provides provisions concerning community forestry including utilization of planted teak (<i>Tectona grandis</i>) in community forests, and contains substantial changes in relation to people's participation.
2018	Conservation of Biodiversity and Protected Areas Law	The Protection of Wildlife and Protected Areas Law (1994) was reviewed and updated as the Conservation of Biodiversity and Protected Areas Law in 2018. The category of Indigenous Community Conserved Areas (ICCAs) was added among the protected area categories, recognizing the traditional rights and culture of indigenous communities. It creates more space for and favors community-based ecotourism and co-management of the protected areas between communities and the State.

democratic governance, whereby representatives at the national and state or regional levels are elected (though it should be noted that Chief Ministers for each state and region are appointed by the president) (ibid 2016).

The country has a decentralized structure, organized into seven states and seven divisions, six Self-Administered Zones and Self-Administered Divisions and one Union Territory (MCRB et al. 2014). Powers are devolved where state/region Hluttaws (unicameral legislative assemblies) are assigned roles and duties to enact laws, submit budget bills and collect taxes (Stokke et al. 2018; Lynn and Oye 2014). States and regions are further subdivided into districts, and districts into townships, towns and villages. This structure is the

basis for rural development and, with the added management responsibilities, forms the beginnings of decentralized institutions.

As well, decentralization of some natural resource-related functions has taken place, in which the Union Ministry transferred some responsibilities to state/regional governments; however, in a few cases, regions/states themselves have taken authority over some natural resources (Lynn and Oye 2014).

Although each state/region Hluttaw can pass laws, these are limited to eight sectors listed in Schedule Two of the Constitution, i.e. matters of land revenue, municipal taxes on buildings and land, and the sale, lease and other matters involving property of the region or state. Major resources

such as energy, electricity, mining, and forestry, are predominately managed and taxed by the central government through line ministries and state-owned enterprises (Stokes et al. 2018). Revenues from the exploitation of the natural resources of a region or state are to be paid to the Union Fund, not the Region or State Fund (Ninh and Arnold 2016). As well, the military retains a strong interest in natural resource extraction.

Thus while the reforms contained some elements of devolution of power, the devolved powers and responsibilities remain limited in scope (Stokke et al. 2018; Holliday et al. 2015). Laws passed by the Union Legislative Assembly (Pyidaungsu Hluttaw) are superior to those passed at the regional/state level (Holliday et al. 2015). The government supports community development projects at the village level through Local Development Funds.

Decentralization is further challenged by lack of authority and access, and by ethnic conflicts (Stokke et al. 2018). State/regional governments also have a constrained revenue base and continue to rely on transfers from the union level, even though many ethnic states are rich in valuable natural resources. As Nixon et al. (2013) conclude, although there is some devolution of administrative responsibilities, the small size and central oversight of budget and restrictions on political autonomy mean that Myanmar is still a strongly centralized country (Khine 2016). Lack of capacity at regional levels also limits decentralization processes.

Further, the dynamics of the armed struggles between diverse ethnic groups and the central government since the 1990s have resulted in what has been termed “ceasefire capitalism”, whereby land deals are inherent in the agreements between former foes with attendant significant political and securitization effects (Woods 2011, 751-752). The signing of ceasefire agreements between the central government and ethnic minority insurgents, gave rise to “new politico-business complexes” (Jones 2014, 145). In this complexity, the evolving relationship between center and periphery (Scurrah et al. 2015), and key reform areas related to decentralization and local governance, are still sensitive (Lynn and Oye 2014).

Degazettement of forest land

In 2013, the Forest Department (FD) undertook a one-off forest land degazettement process in the

areas that were settled by over 50 households and cultivated for an established period of time. FD identified 800,000 acres or 323,748 hectares (1% of total forests) of encroached land for degazettement in both lowland and highland areas (USAID 2017).

The Community Forestry Instructions 2016

In 2015, MoNREC established a Community Forestry National Working Group and a Community Forest Unit, tasked with transferring 918,000 ha of forest land from government hands to community forest management by 2030. Since the first CFI was issued in 1995, 160,000 ha of CF have been established by over 2,000 Forest User Groups (Than 2017). The revised Community Forestry Instructions creates a much stronger enabling environment for forest communities to make a meaningful living from tenure over their forests – and this will potentially transform the lives of millions of rural people (RECOFTC 2018). The new CFI provides rights to local communities to commercially sell timber, non-timber forest products and ecosystem services in line with the government’s market-led approach to community forestry (CF). In 2017, a regional conference on forest and farm producer organizations was hosted in Myanmar’s capital city Nay Pyi Taw to advance the cause of CF in the region. The conference delivered an outcome statement emphasizing the role of empowered forest and farm producers in meeting many of the SDGs in Asia (Macqueen 2017). The 2016 CFI presents a real opportunity to empower communities in sustainable forest use and management while also helping the government to reach its 10-year reforestation targets (USAID 2017).

3.2.2 Benefit sharing

The establishment of community forestry has enabled benefit flows to communities. Consequently, benefit sharing is mostly applied through community forestry. According to the 2016 Community Forestry Instructions, products from community forests can be traded freely for domestic use, as well as for export. In accordance with the regulations, the sale of the products from community forests is exempt from taxation, in case of household use and trade

within the same village. For marketing of the forest products to areas outside the village, tax shall be conferred to the Forest Department at specified rates. Apart from certain amounts of taxes, community forest user groups and community forest enterprises do not need to share any benefit from community forests with the government at both national and regional levels.

Benefit sharing could also learn from implementation of the Nagoya Protocol (Access to Genetic Resources and the Fair and Equitable Sharing of Benefits). In 1992, Convention on Biological Diversity (CBD) was adopted and entered into force in 1993. In Article 15, it laid down the principle of Access and Benefit Sharing, with three pillars: (i) the conservation of biological diversity; (ii) the sustainable use of biological diversity; and (iii) the fair and equitable sharing of benefits arising from the utilization of genetic resources. In 2004, COP 7 mandated an ad hoc open-ended working group to negotiate an international regime on ABS. After six years of intense negotiations, the Nagoya Protocol on ABS was adopted at COP 10, 2010. Based on the fundamental principles of Prior Informed Consent (PIC) and Mutually Agreed Terms (MAT), it ensures that biodiversity-rich countries obtain a fair share of benefits arising out of the use of their genetic resources by setting out a clear and transparent framework for ABS. Myanmar accessioned to the Nagoya Protocol on 12 October 2014. The Environmental Conservation Department is the focal point and implements the Nagoya Protocol in coordination with UNDP-Myanmar. The UNDP/GEF project aims to assist in the development and strengthening of National ABS frameworks, human resources, and administrative capabilities to implement the Nagoya Protocol. The implementation of the basic measures of the Protocol will open up a wide range of monetary and non-monetary benefits for providers of genetics resources.

3.3 National tenure and rights of indigenous peoples

At least two-thirds of Myanmar's labor force is engaged directly or indirectly in agriculture-related enterprises (FAO 2016). Agricultural land-use practices vary widely across the country's three major agroecological zones: the central Dry Zone

focuses on livestock and vegetable production; the Irrawaddy Delta is home to rice production and fishing; while the uplands, which are populated by ethnic minorities, produce irrigated rice and practice rotational farming (also known as swidden or shifting cultivation, or *taungya*), which accounts for 30-40% of all cultivation in Myanmar (McCarthy 2016).

Overall, access to land is critical. During colonial times, land came to be seen as individual property and a commodity. This gave rise to a class of land owners who held most of the land. The 1953 Land Nationalization Act, along with a series of land reforms through the 1960s, intended to break up the landowner-tenant relationship, granting agriculturists land use rights while retaining for the State the ultimate ownership of all lands. The objective here was both to create a government/owner-cultivator relationship and, at the same time, to strengthen government control over farmers (Boutry et al. 2017). Since then, many new laws issued by successive governments now make up a plethora of land-governing laws. In 2009, there were between 73 and 96 active laws, amendments, orders, and regulations related to land, combined with multiple and overlapping institutional mandates (FAO 2016).

In the lowland areas, land is mostly considered individual property, with ownership still dominated by landlords. In the upland areas inhabited by ethnic groups such as the Chin, Karen, Kachin, Kayah, Shan and others, land has historically been regulated by customary laws. These laws were formalized under the indirect administration of upland areas during the British colonial era. Yet, the mostly upland rotating fallow fields of the shifting cultivation system have not been formally or fully registered with the Settlement and Land Records Department (SLRD) of the Ministry of Agriculture and Irrigation, which is responsible for the certification and tax assessment of agricultural lands (FSWG 2010).

Since then there have been several attempts at reforms, though mostly in favor of large-scale investment. In 1988, the State Law and Order Restoration Council (SLORC) government introduced the *Foreign Investment Law* (1988) and in 1991 it established the Central Committee for the Management of Cultivable Land, Fallow Land and Waste Land.

A series of further reforms was introduced, with the Farmland Law of 2012, followed by the Vacant, Fallow and Virgin Land Management Law, the Foreign Investments Law (FIL) (2012); and the Special Economic Zone Law (2012), repealed by the 2014 SEZ Law. The Farmland Law and the VFVL Law represent the most substantial change to the legal framework for land since the early 1960s. The main impacts have been a massive delivery of land use certificates to farmers and the reintroduction of the concept of 'private property', with land use rights that can be sold, mortgaged, rented, pawned and inherited (Boutry et al. 2017). Although the Farmland and the VFVLM laws were ostensibly introduced to improve tenure security for farmers across the country, in many respects they had the opposite effect. Both laws continued to ignore or downplay the customary land rights, transfer laws, occupancy, communal tenure, and customary land-use practices for farmers – particularly among the most vulnerable of ethnic minorities, because farmland remained open to reclassification as vacant, fallow, or virgin land.

All these new laws, however, were aimed more at developing business opportunities and the country's economy through the improved use of lands. A Central Committee for the Management of Vacant, Fallow and Virgin Land (CCVFV) was established, and organized and determined the lease of land at 30 years for agricultural, livestock, poultry, aquaculture, mining or other purposes. Especially in the uplands, where shifting cultivation was prevalent, it was easy for governments to reclassify land as fallow or waste and, to be appropriated and redistributed, usually for the benefit of government-linked corporations and cronies (McCarthy 2016). Under the FIL and the SEZ laws, foreign investment in land was encouraged, with land use rights extended to 70 years under FIL and 75 years under SEZ.

A second committee was established in 2012, under the leadership of the MoECAf. The Land Use Allocation and Scrutinizing Committee (Land Scrutinizing Committee) was tasked with examining the issue of land reclassification and developing a National Land Use Policy (NLUP), and in contrast to its predecessor-the Farmlands and Land Acquisition Inquiry Commission (LAIC) it adopted relatively transparent and inclusive processes (McCarthy 2016). The government also established the parliamentary Land Confiscation

Commission in the same year, mandated to address allocation abuse and recover land from unauthorized holders. However, the Commission had no authority to resolve land disputes (FAO 2016).

Across regimes, revenue mobilization and institutional arrangements were split between the MoAI/SLRD and MoECAf/Forest Department and the local government led by General Administration Department. This complex legal and regulatory environment allowed governments to treat both agricultural and forest land as state property, which was freely sold or allocated for logging, plantations or extractive purposes to mobilize revenue (FAO 2016). At the same time, farmland management bodies at the district, township, and village tract levels were mandated to manage and resolve farmland disputes. Yet, in practice, these bodies merely referred local land conflicts to the higher administrative levels (Srinivas and Hlaing 2015). The Settlement and Land Records Department (SLRD) plays a major role in all levels of non-forestland administration. The SLRD has since been renamed the Department of Agricultural Land Management and Statistics (DALMS), in May 2015. It falls under the current Ministry of Agriculture and Irrigation (MoAI), formerly the Ministry of Agriculture, Livestock and Irrigation (MoALI). It is officially in charge of land administration through surveys and records (including the cadastral – or *kwin* – maps) and has a central role in the issuance of formal documentation concerning land use rights over farmlands. MoNREC (formerly MoECAf) assumes primary responsibility in areas designated as forests. The Forest Department is responsible for protecting the land under its jurisdiction from encroachment and squatting, and ensuring adherence to prescribed land use (Boutry et al. 2017).

The population of Myanmar includes more than 100 ethnic groups. Myanmar has adopted the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), but the country's indigenous peoples still face a number of challenges, including armed conflict, violations of human rights and land rights. Myanmar has not signed the International Convention on the Elimination of All Forms of Racial Discrimination (ICERD), nor has it ratified ILO Convention 169. On the other hand, the country is part of

the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) and the Convention on the Rights of the Child (CRC). Until now, however, many of the respective recommendations of the committees of CEDAW and the Convention Committee against Crime (IWGIA 2017) have been ignored. Myanmar also defended its controversial Laws of Protection of Race and Religion that, if implemented, would violate the norms of the convention. The Committee urged the government to amend or repeal the set of laws, as well as preconceived constitutionally implicit ideas about the role of women in society.

With regard to ethnic rights to land, existing laws related to customary land-use practices have never been formally recognized by the government (McCarthy 2016). Customary tenure falls under forest land administration and is linked to community forestry. In spite of the continuous agrarian reforms in Myanmar, the opposing interests over land remained in 2017, characterized by the lack of free, prior and informed consent (FPIC), inadequate compensation for relocation, and the lack of transparent judicial resources.

Aggravating the problem, there are different departments that do not include armed ethnic administrations, related to land governance, which means that indigenous lands and territories are still vulnerable to the state-sponsored cronyism that is so prevalent. It is worth noting that military confiscation of land continues to take place purely in the pursuit of recreational activities.

Some progress has been made, however. Notably, the sixth and final draft of the NLUP, which was

approved by the parliament in 2016, includes a chapter on the Land Use Rights of Ethnic Nationalities that refers to the customary tenure of the land and the mapping of the use of the land. NLUP says, “customary land use tenure systems shall be recognized in the national land law in order to ensure awareness, formal recognition of customary land use rights, protection of these rights and application of readily available impartial dispute resolution mechanisms”. Customary protections of land tenure are not limited to agricultural land, but also include practices of shifting cultivation on forest lands, as well as recognition of communal land tenure systems, such as shifting cultivation. The policy highlights the need to encourage stronger participation of ethnic nationalities, recognizes customary land tenure rights and culture, and develops dispute settlement mechanisms related to land use issues. Customary land use practices are recognized and protected even though they are not formally registered or mapped. The customary land area of ethnic groups will be reviewed and updated under land title of “customary land” from the current land classification according to the policy. However, the National Land Law has yet to be developed.

In 2017, Myanmar organized two National Policy Dialogues on the Rights of Indigenous Peoples, which brought together a total of 105 participants, including representatives of the Ministry of Ethnic Affairs of the Union, Ministers of Ethnic Affairs at the state and regional levels, representatives of organizations of indigenous peoples as well as representatives of the UN.

4 The political economy of deforestation and forest degradation

This chapter examines the political economy of deforestation and forest degradation in Myanmar. Key messages in this chapter provides analyses of the decline of the country's forests over different management regimes, from the feudal (monarchical) system to the existing democratic government, to contribute, to some extent, to the current REDD+ implementation of the country. Myanmar is one of the forest resource-rich countries, but is also facing serious deforestation and forest degradation problems. Their impacts on socioeconomic conditions, biodiversity, food security, agricultural productivity and human health need to be addressed urgently through assistance from international experts. To address such deforestation and forest degradation problems, we need to unpack the direct and indirect drivers of deforestation and to uncover the political economy context that often plays out in the background. The literature shows how developing country environmental problems, including rapid deforestation, are not simply a reflection of policy failure, but rather are a manifestation of broader political and economic forces associated with global capitalism (e.g. Watts 1983; Chapman 1989; Hirst et al. 2015; Moody 1996 cited in Bryant et al. 1997). Such problems are often embedded in political and economic structures that result in a series of highly unequal power relationships within the system of first/third worlds, rich/poor or ruler/ruled (Robbins 2008).

Myanmar forest governance, as explained earlier, has been shaped by an entrenched colonial system, with the State holding the power to shape forest use and management. This system allowed the growth of capitalist enterprise and included efforts to balance revenue creation with long-term timber production. On the other hand, peasants were

unable to manage their village forests because they were granted insufficient powers and opportunities. Scientific forestry emphasizes regulations and enumerates or calculates the yield for business concerns, whereby the State acts to manage these resources mainly for state revenue.

4.1 Political economy of deforestation and forest degradation

Myanmar has a total land area of 678,500 km² with an estimated total population of 42.5 million people, and shares borders with Bangladesh, China, India, Laos and Thailand. About 70% of the population lives in rural areas and relies on forests for food, fodder, fuelwood, construction and day-to-day subsistence. Myanmar experienced numerous distinctive political economic regimes which reflect the country's deforestation and forest degradation status (see also Chapter 3 and Table 14). All of these regimes recognized agriculture and natural resources extraction as the main economic tools of the country. Table 14 also shows that, to date, forest resources have only served to benefit elite groups such as the colonial and military governments, and only limited rights and benefits are allocated to communities.

Although different political regimes have had different impacts on forest management, Table 15 shows that annual felling decreased between 2007 and 2016. However, the impacts of global demand for agricultural products (e.g. rice) and the timber market, as well as institutional changes in land and investment laws, and the need to sustain and generate incomes for both government and opponents during civil wars continue to have major impacts on forest management and will be discussed in more detail in the following sections.

Table 14. Overview of political regimes and forest use in Myanmar

Political regimes	Political economy highlights	How forests are used
Feudal regime (monarchical system) (before 1824)	<ul style="list-style-type: none"> • A rice-based subsistence economy. • High demand for teak for ship-building, both domestically as well as from outside the country. 	<ul style="list-style-type: none"> • Teak was declared a royal tree, for exclusive use by the royalty. • Rural people mainly used timber only for subsistence needs. • Myanmar's forests did not decline significantly and had the capacity to regenerate by themselves.
British Colonial period (1824–1947)	<ul style="list-style-type: none"> • Myanmar was a main trade route between China and India, as well as the primary rice and teak timber exporter. • High global and domestic demand for teak and hardwood for the empire, especially for shipbuilding and railway sleepers. 	<ul style="list-style-type: none"> • Traditional shifting cultivation. • Conversion of large areas of forest to agricultural land to export rice under the British Empire. • The British government started commercial logging, leading to depletion of natural forests, especially in the Tanintharyi Region. • The British Government set up the Forest Department (FD) in 1886 and introduced the 'scientific' Brandis Selection System, later called the Burma (Myanmar) Selection System and now Myanmar Selection System, still used today.
Parliament democracy period (1948–1962)	<ul style="list-style-type: none"> • Unstable governance due to ethnic uprisings and civil unrest. • In 1962, General Ne Win and the Revolutionary Council (RC) created the 'Myanmarese Way to Socialism', which was hostile to business, banned new private enterprise and private imports and exports, and helped the army to control the machinations of the State. • In the Ne Win era, smallholders were exhorted to meet such quotas, and, as such, they exemplify the continuing hybrid socialist/capitalist nature of the political-economic system (Scurrah et al. 2015). 	<ul style="list-style-type: none"> • The government lost control over the country, particularly the forest and natural resources in areas where insurgent groups gained control. • The government launched the Land Nationalization Act (1953) to undo the 1894 Land Acquisition Act by deterring the possibility of foreigners becoming large-scale landholders and the 1947 Constitution that formally designed the State as the owner of all land. • Nearly half of the country's exports were teak, controlled by the State Timber Board (now the Myanma Timber Enterprise (MTE)). • MTE received more political space than the FD, and was the major force attempting to override the FD's annual allowable cut (AAC). Teak and other hardwoods were overexploited to meet the set revenue target, setting the foundation of the country's unwise revenue targets (extraction by revenue instead of AAC and ignorance to forest condition) and mismanagement practices (Lim et al. 2017). • The post-independence government sought not only to take back land from foreigners, but also to reduce or abolish landlordism through the 1953 Land Nationalization Act (FAO et al. 2016). However, this did not resolve existing uncertainties over smallholder property rights.

Continued on next page

Table 14. Continued

Political regimes	Political economy highlights	How forests are used
Reforms under the military regime (1988–2000)	<ul style="list-style-type: none"> In 1988, after the breakdown of the socialist economy, the State Law and Order Restoration Council (SLORC) opened the “military command economy”, which favored companies that had good relations with the military leaders. The 1991 Central Committee for the Management of Cultivable Land, Fallow Land and Waste Land managed and allocated large land holdings for state enterprises and for joint ventures with international companies. Township officials controlled decisions to determine land classification, though they did not have the technical expertise regarding land classification on how lands are determined to be ‘fallow and cultivated’ (Ferguson 2014). 	<ul style="list-style-type: none"> Myanmar had limited choices but to build close relationships with bordering countries i.e. China and Thailand for trading valuable natural resources including timber. State Peace and Development Council (SPDC) government set unrealistic revenue targets for logging which caused overexploitation of the forests. SLORC passed the new Forest Law (1992) to protect its forests and shut down the deals with Thai logging companies (Bryant, 1997). Deforestation continued at a rate of four times higher than before 1989. According to a recent presentation by the Forest Department, “The major acceleration after 1989 coincided with the opening of the forestry sector to the private sector in the aftermath of the economic reforms of 1988”.
Economic reforms (2000–present)	<ul style="list-style-type: none"> The Government of Myanmar opened the economy by allowing private and foreign investment to operate in the country. Most business still operated through connections with the military or based on informal relationships with high-level authorities. Foreign investors had little interest in Myanmar. By the mid–2000s, there was virtually no FDI in Myanmar outside of the extractive sectors, and that came mostly from China (Bissinger 2012). The country’s forests became a source of significant income for the government and armed opposition groups, and both legal and illegal logging is ongoing. Myanmar was put under embargo by many Western governments and international financial institutions as part of punitive actions for violating basic human rights norms. These sanctions have ironically strengthened the regime’s civil and military branches by forcing them to diversify their business interests and to develop new ones more quickly than might have occurred otherwise (Steinberg 2005). 	<ul style="list-style-type: none"> Cronyism and corruption were widespread in the country, especially in the granting of concessions for logging, mining and plantations. Many concessions were in areas of ethnic conflict, as the State reclaimed resources for profit and legalized its control over resources and people. A 2009 report by Global Witness stated that, while logging may have decreased in northern Myanmar, it is still a major source of finance for the military to continue its repression of ethnic communities. Foreign exchange earnings, derived from the sale of timber and other natural resources, were important to the regime, as international trade was almost exclusively conducted in hard currency (usually USD). The most serious destruction from logging occurred in ethnic areas along the borders with China and Thailand. China, Thailand and India are Myanmar’s biggest timber importers. At the same time, logging provided income for ethnic armed opposition groups. After the signing of ceasefire agreements, logging radically increased because these groups predominantly rely on selling timber to continue to fund their armies, administration and development programs (BEWG 2011).

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Table 14. Continued

Political regimes	Political economy highlights	How forests are used
The military-backed civilian government (2011–2016)	<ul style="list-style-type: none"> • In 2012, Parliament passed two new sets of land laws: the Vacant, Fallow and Virgin Land Management Law and the Farmland Law. Both were used to legalize land and resource grabbing by the Tatmadaw. The state used the ‘wastelands’ label to usurp land to establish large-scale extraction and other development projects, for which local communities are unlikely to see much benefit (Ferguson 2014). The military-socialist entities retained strong control over the ill-equipped Myanmar market institutions (Bissinger 2014). • Powerful cronyism, coupled with an outdated legal framework, governed the economy. • Myanmar experienced “arbitrary, often contradictory and ill-informed” macroeconomic policy making (Turnell 2006, XX). • In 2016, a new civilian government won the election. Myanmar opened its border to the international economy. Natural resources and small-scale agriculture remained the backbone of national development (Burnley 2013). 	<ul style="list-style-type: none"> • Forest lands were converted to rubber plantations and agribusiness crops to fuel economic growth, while neglecting sustainability (Schmidt 2012). • To attract FDI, in 2015 Myanmar enacted a new investment law that provides foreign investors the right to lease land, up to a maximum initial period of 50 years with an extension of 10 years, and for a further 10 years thereafter. • Increasing foreign and domestic investments, mainly from China and Korea for large-scale commercial plantations such as rubber oil palm plantations, cassava plantations and biofuel plantations (especially in Kachin State and Tanintharyi Region), as well as investments in the extractive industries, led to increased land tenure insecurity, conflicting access, forest losses and environmental destruction (Kramer 2015).
Democratic Era: the beginning of an open door policy (2016 to present)	<ul style="list-style-type: none"> • Reforms after 50 years of military rule included reengagement with the international community, including major international financial organizations, donors, NGOs, and CSOs that encouraged private domestic and foreign investment in agriculture (McCarthy 2016). • Adoption of first comprehensive environmental law requiring environmental impact assessments before approval of development projects. This policy change led to the ban of mining within 100 m of Myanmar’s four largest rivers: the Irrawaddy, the Thanlwin, the Chindwinn, and the Sittaung (Schmidt 2012). 	<ul style="list-style-type: none"> • International sanctions from US and Canada were lifted (Sayre, 2016). Myanmar expected a possible investment boom, but economic development came at environmental costs including imperiled biodiversity (Wang, 2013).

Table 15. Annual allowable cut (AAC) vs. actual felling 2007/08 to 2015/16

Year	AAC (Cubic Tons)	Actual Felling (Cubic Tons)
2007–2008	174,372	303,255
2008–2009	174,372	382,416
2009–2010	174,372	307,391
2010–2011	174,372	287,807
2011–2012	174,372	263,982
2012–2013	174,372	258,124
2013–2014	174,372	176,676
2014–2015	174,372	81,930
2015–2016	174,372	58,737

Source: Tint 2017

4.2 Political economy and its impact on people and forests in Myanmar

4.2.1 Foreign Investment Law and *private* sector investment

In the 1950s, the Tatmadaw emerged as the strongest political institution in the country, paving the way for the military to seize power in the 1960s. In 1988, economic reforms introduced by the SLORC sought to end the country's self-imposed isolation and attract foreign investment. Myanmar is thus emerging from decades of isolation through numerous political and economic reforms that improved external relations and renewed economic opportunities (cf. IISS 2011; ADB 2012; Bremmer 2012; Robinson 2012).

After taking power in 2011, the government of U Thein Sein instituted numerous economic reforms, most of which had a positive impact on Myanmar's business environment. The government passed a revised Foreign Investment Law to attract additional FDI, including enhanced tax incentives, new arbitration mechanisms, greater clarity on the structure of investment partnerships, and detailed lists of restricted sectors (The Republic of Union of Myanmar 2016). The government introduced a managed floating exchange rate and eliminated the overvalued, official exchange rate that distorted competition between private businesses and state-owned enterprises. As well, it extended

international banking and allowed international banking services to adopt wire transfers and letters of credit (Yin 2013). This broke the monopoly that state banks held over international and trade-related banking and removed barriers to international transactions and trade, including the 'export-first policy', which required that all imports be paid for with proceeds from exports (IMF 2013). In 2013, a new Central Bank Law allowed greater independence from the Ministry of Finance and more flexibility in overseeing the Myanmar *kyat*, and the financial sector. The government also removed barriers in the trading systems including licensing requirements for 100 imported goods and 152 exported goods (Bissinger 2014).

Myanmar reformed the tax system by abolishing the withholding tax on imports, simplifying the commercial tax on domestic sales, requiring public sector employees to pay income tax (Yin 2013). These reforms created widespread optimism about the economy and, combined with the removal or suspension of most foreign sanctions, drove improved economic performance.

Despite these positive developments, some authors questioned whether the ongoing political transition would last (e.g. Bhatia 2013; Lall and Win 2013; Lintner 2013; Yhome 2013). The USD 20 billion of foreign investment came almost exclusively from China and almost completely in extractive sectors. Despite the reforms and the strong international response they elicited, Myanmar remained a challenging place to do business due to long procedural processes and high costs. Increased transaction costs that resulted from lack of processes cost businesses time and money. A wide range of regulations limited access to credit. Control over business licensing and permissions remained strong, and helped create economic rents by limiting legal access to economic opportunities. Often it is the informal barriers, especially in lucrative sectors, that were important (Bissinger, 2014). There was also the risk of public pressure and political instability leading to direct or indirect expropriation (Bissinger, 2014). Moreover, according to Transparency International (2007), Myanmar ranked as one of the most corrupt countries in the world, very opaque and challenging to do business. Of the large amounts of foreign investment entering Myanmar (concentrated on energy and minerals in border regions), most were captured by joint ventures with

state-owned enterprises and military-linked firms. With the country opening up to foreign investors, the scope for much larger-scale investment heightened this cronyism (Woods et al. 2011, 2013). Scurrah et al. (2015) argue that patronage networks, where personal networks are used to gather information which is not publicly available, exclude some businesses and restrain competition.

Control of the private sector was often exerted through the civil service, where hierarchy and appearances guided government-business interactions. Kyi et al. (2000: 190) argue that this was the result of the socialist and military governments, in which decision making “followed that of the military system, the officers at one level unwilling to take any responsibility and preferring instead to push decisions to the next higher level”. The institutionalization of the hierarchical structure created a public administration in which lower-level staff were often unwilling or incapable of making even small decisions. The frequent turnover among staff in ministries was another challenge. Staff turnover in the civil service had deep roots in the socialist and military eras, when increasing personalization of power over government departments led to the deinstitutionalization of their operations. Weak coordination among departments arose partly from the size of the bureaucracy and weak communication and information-sharing technologies. The arbitrary announcement of new policies and unexpected and inconsistent implementation of existing policies was a major challenge for business. It increased uncertainty, thereby reducing the incentives for businesses to make long-term investments. The lack of clear and efficient processes and lack of public availability of information about these processes were major problems for business. This lack of clear processes helped government officials to seek rents through corruption. Yet when clear processes and guidelines did exist, problems often arose in implementation. Sometimes processes were circumvented by officials who lacked the proper accountability, incentives or capacity to implement them properly (Scurrah et al. 2015).

The potentially transformative, massive and rapid investment into Myanmar should have prompted some concern (Webb et al. 2012), as it had already increased pressure on Myanmar’s natural

resources, posing many social and ecological threats (Schmidt 2012). FDI in Myanmar was concentrated in the energy and extractive sectors and often resulted in militarization and displacement. The administrative legal standards and adequate safeguards needed to ensure that investment did not lead to unnecessary destruction of the environment and biodiversity had yet to be developed. And while there was been a positive shift toward favoring conservation, it remained unclear how effective this would be without substantial investments in conservation and enforcement of environmental laws. For instance, illegal hunting earned more than farming for villagers living in or near two protected areas: Hponkanrazi Wildlife Sanctuary on the Indian border and Hkakaborazi National Park bordering China. To address this, the government had to solve the underlying cause of the wildlife trade that was a lack of alternative income sources or land tenure for impoverished villagers. Although the government intended to hand 930,776 ha to communities with sustainable management plans by 2031 in order to restore depleted soil, villagers lacked the resources and organizational capacity to work the land sustainably. Thus, for community forestry to succeed, more external support was needed (Schmidt 2012).

In response, Myanmar promulgated the first national Environmental Impact Assessment (EIA) and Social Impact Assessment (SIA) law and procedure in 2016. Aung (2017) found that the country’s institutional and financial capacity is too limited to implement effective EIA. The presence of more than one standard EIA procedure and the lack of inter-departmental coordination and consultation are also major concerns (Aung 2017). EIAs for Chinese investments, especially in the extractive and natural resource sectors, are particularly problematic as they reveal several omissions, inadequacies and deficiencies in all projects, with a significant number of EISs falling short of satisfactory quality (Aung et al. 2019). It still remains a great challenge for the current Government of Myanmar to integrate environment conservation into its economic development plans, taking into account the potential long-term environmental costs, especially when considering how to enforce EIAs for large-scale hydropower projects (Yongmin, 2017).

4.2.2 Agricultural policy

Economic development in Myanmar is exciting, yet needs a safeguard to protect ethnic minorities whose livelihoods depend on forests, such as those who are still practicing swidden agriculture. The recent expansion of agribusiness and large-scale plantations often employs destructive profit-maximizing farming techniques that bring benefits only for military-favored Myanmar companies, foreign investors and governments, and that cause negative impacts on livelihoods and local food security, as well as the environment.

Development of agribusiness is driven by many factors, such as post-Cyclone Nargis agricultural aid and recovery, the government loan program targeting Myanmar agribusiness companies, the recent Myanmar declaration on being a “food surplus country” with a new priority on agricultural commodities export, and, most importantly, incentives that allow private entities to lease agricultural land plots. Around 30–40 favored Myanmar companies were selected to help realize this new policy directive with the generals’ recent push for increased agricultural commodity export that resulted in large-scale agricultural concessions being allocated to them. BEWG (2011) reported that by 2010, the total concession area had expanded to nearly 1.75 million acres or 708,199 hectares allocated to 216 different private Myanmar businesses (national only, not foreign). However, as a result, several concessions failed to achieve their intended purpose of developing ‘modern’ agriculture. Despite this, the government did not take further steps to review the nonperforming concessions in systematic ways (Byerlee et al. 2014).

The existence of agriculture policies skewed against smallholders resulted in widespread dispossession of farmers from their land. There were no policies that supported smallholder farmers in Myanmar, and no laws or policies exist to deal with the increasing occurrence of farmers being evicted from their land, which they needed for their subsistence lifestyle, to make way for private concessions (Wang et al. 2013).

Available literature suggests that employment opportunities for those dispossessed are disconnected from the land concessions. Byerlee

et al. (2014) report that many emerging articles on inclusive agribusiness models – most notably on contract farming – are premised on the idea that access to technology, capital and markets, and labor, land and local knowledge may achieve greater efficiency and equity. However, some studies also concluded that contract farming offers fewer solutions to the problems of Myanmar’s agricultural development, highlighting the importance of impacts within the livelihood terrains and the political-economic realities in which they operate (ibid 2014; Scurrah et al. 2015).

4.2.3 Market demand for oil palm and rubber

Myanmar’s Tatmadaw government began to implement a nation-wide crop campaign to plant 5 million acres or 2,023,428 hectares with *Jatropha curcas* for biodiesel production in December 2005. The species can be planted on marginal soils and thus does not need to compete directly with food crops. However, the food security of people was directly impacted as it was being planted on farmland. The national campaign for *Jatropha* resulted in forced labor for planting and appropriation of farmlands. Foreign investment in *Jatropha* mostly came from Malaysian Chinese investors, as well as mainland China, Singapore and Thailand, though the plantations are managed by Myanmar companies (Wang et al. 2013).

The Myanmar Tatmadaw government also had a rubber crop development goal of 1.5 million acres or 607,028 hectares to be planted over the following 30 years. This major expansion of large-scale plantations made two states – Eastern Kachin and Northern Shan – and the Wa autonomous region the ‘center of the rubber revolution in Northern Myanmar’ by covering entire mountains with rubber. Almost all (about 90%) of the rubber produced was exported to China and five ASEAN countries (Malaysia, Singapore, Vietnam, Thailand and Indonesia). China was the major source of finance and recipient of overland imports in the Myanmar’s rubber sector in the North. As a result, large-scale rubber plantations were outcompeting smallholder household incomes from uplands, as rubber was replacing food crops and poppy production became an important source of income (BEWG 2011).

The government plans to develop its oil palm sector to decrease its reliance on edible oil palm imports from Malaysia. This amounts to over 20,000 tons per month that can be used as affordable edible oil (palm oil costs about half the price of other cooking oils). Currently there are no plans to use it as a biofuel. By 2009/10, the total concession area for oil palm was more than 1 million acres or 404,685 hectares, allocated to about 40 private Myanmar companies. The government owned only a small percentage of those companies, while the majority were controlled by a handful of companies. Meanwhile, the military and smallholder farmers cultivated a smaller area of oil palm, and there was no formal foreign investment injected into Myanmar's oil palm sector. The Government of Myanmar intended to encourage foreign investment in the country, to both profit from the high taxes charged to foreign companies and help fulfill export quotas (Wang et al. 2013).

4.2.4 Infrastructure development

Between 1988 and 2002, at least 23 hydroelectric dams and 129 irrigation dams were constructed in Myanmar. Currently, there are an estimated 48 hydropower projects planned, under construction or already operational in Myanmar. However, development of hydroelectric power generation in the country comes with a price, as claimed by environmental activists. Negative environmental consequences of dam developments are mostly associated with flooding and loss of forest cover, such as in the Chatthin Wildlife Sanctuary (Allendorf et al. 2012). Several dams in Myanmar are located in areas with globally valued biodiversity, but are not yet systematically and properly surveyed. In addition, these large dams will directly affect fish migration routes and upstream spawning grounds. Despite these facts and its potentially harmful effects on forests, hydropower attracted major investment from China and Thailand (about one third of the total FDI went into the hydropower sector in 2010/11).

More recently, the government started to take environmental issues and biodiversity preservation more seriously. The suspension of the Myitsone Dam on the Irrawaddy River supported by China in Kachin State was perceived as an active step toward environmental protection. The dam would have flooded forests upstream and impacted

aquatic ecosystems, threatening hundreds of critically endemic and endangered animal and plant species. The government then passed the country's first comprehensive environmental law, which introduced environmental impact assessments as a prerequisite for approval of development projects. For instance, mining is now banned by a Ministry of Mines decree within 100 m of country's four largest rivers (Wang et al. 2013).

For several years, dam projects were delayed as hydropower was in 'policy purgatory'. However, in mid-2018, the ministry restarted negotiations with project sponsors from Austria France, Norway and the United Kingdom (Kean 2018a). This latest progress may deter the country from achieving its NDC target for the forestry sector. Between 1990 and 2015, the country lost nearly 15 million ha of forests and other wooded lands, and the rate of forest loss increased over the same period. The total land area covered by forests and wooded land in Myanmar is still significant – about 43 and 22 percent, respectively – but time is running out as deforestation continues at a rapid pace (FAO 2016a).

Although road and infrastructure development are identified as one of the major drivers of deforestation and forest degradation, data on actual impacts are unavailable. Efforts to collect data to quantify the development and its actual impacts are much needed.

4.2.5 The Myanmar border trade policy/process

In the late 1980s, Myanmar began cross-border investment and resource extraction in the borderlands as a result of the initiation of partial liberalization of foreign investment and trade laws by the State Law and Order Restoration Council (SLORC) and State Peace and Development Council (SPDC) military government. In Myanmar's ethnic areas, the FDI occurred through both formal (Woods et al. 2013) (large projects such as oil and gas) and informal channels (land deals such as rubber and palm oil). Foreign investors were allowed to acquire land use rights for up to 70 years, according to the 2012 Foreign Investment Law (FIL) (Obendorf 2012). This Law was expected to provide legal support measures for domestic and foreign investment in the agricultural

sector. Meanwhile, foreign companies preferred to obtain land concessions by informally supporting or partnering with local companies due, in part, to greater restrictions and high taxes on foreign investment, (Woods 2012; BEWG 2011). Thus most of the FDI in agriculture was informal and channeled through companies in Myanmar. The situation made it difficult to ascertain the extent of foreign investment in agribusiness, although it definitely played a crucial role in developing Myanmar's agriculture industry.

The border trade remained a very important facet, as bilateral trade rose to over 75% in the first four months of 2010 due to increasing Chinese export goods into Myanmar, despite the high-profile agreements on resource extraction projects. Among other countries, Korea and Thailand provided sample FDI to Myanmar through their massive resource extraction projects. In addition, the 'East-West Economic Corridor' (EWEC) (or 'Asia Highway') plan would establish a land route connecting the Indian Ocean and the South China Sea through Myanmar, Thailand, Laos and Vietnam. The EWEC's main vision was to "create an economic corridor that would stimulate the type of economic growth that reduces poverty and raises the standards of living in the areas covered by the corridor" (ADB 2010, 3). A border economic zone (BEZ), which is part of the EWEC, would be established in Mae Sot in Thailand opposite Myawaddy in Karen State. Asian Development Bank support in designing a regional economic co-operation strategy under the Ayeyawady-Chao Phraya-Mekong Economic Cooperation Strategy (ACMECS) paved the way for a plan for Thai contract farmers to manage and cultivate more than 7 million ha of land in Myanmar for various agricultural products, such as sugarcane, oil palm, cassava, beans and rubber (BEWG 2011).

A majority of Myanmar's income derives from natural resources, selling off billions of dollars from gas and hydropower development. China, India and Thailand (within the region) invest significantly. Meanwhile, Japan, Korea, Malaysia, Singapore and Vietnam are also among the key investors looking to increase investments. Particularly in ethnic areas, these extractive resources investments damage the environment and threaten local resource-based livelihoods. Analysis of development in Myanmar should take into account the role of militarization in

development, and the implications it has for both the land and human populations. Militarization is not only linked with development projects, but also with conservation. The market may open up further to foreign investment. However, without any protections offered to the most vulnerable groups, dire consequences may happen for Myanmar's natural resources, environment and rural populations in both ethnic ceasefire and non-ceasefire areas, where the majority of natural resources remain (BEWG 2011).

4.2.6 Land policies

Lack of clarity on another key economic institution – property rights – might also discourage businesses from making long-term investments. Changes in formal regulatory institutions have already reduced some transactions costs, but Myanmar's economic prospects depend greatly on the continued reform of regulatory institutions and slow changes to informal institutions, such as the hierarchies and control that were shaped over 50 years of socialist and military rule (Bissinger 2014). One much needed reform is with regard to land and rights to land.

In a country with a long history of 'nationalized' land, followed by a military-directed state and recently transitioning to (ostensibly) civilian rule, the issues of land seizure and ongoing conflict raise important questions regarding sovereignty, rent-seeking, the rule of law, and inevitably, the role of the army (Ferguson 2014). Land legislation was designed to improve land tenure security, yet it had harmful effects on the majority of the population employed in agriculture, including smallholder farmers and ethnic communities. The legislation was developed and passed without public debate, and in fact the government's land reforms facilitated further land confiscation and formalized ongoing inequities (McCarthy 2016). The definition of 'wasteland' is especially detrimental to local land rights and is very much defined by political circumstances. While the British Empire sought to territorialize the land and make it profitable for the colonial apparatus, the independent Myanmarese government endeavored not just to wrest control of capital away from foreigners, but also to feed its own army. Once the government established its economic and territorial sovereignty and began more explicitly to open its economy to joint ventures and international

export, foreign investors, no longer considered the threat they were decades ago, were courted, and 'wastelands' led to investment opportunity and profit. Rather than just feeding the local battalions of the army, appropriating the wastelands for large-scale international investment created profits on an unprecedented scale (Ferguson 2014).

The Myanmar 2008 Constitution contains provisions for private property rights (Articles 35 and 36). It maintains that the ultimate owner of all land (Article 37) is the State, thus preserving the government's right to acquire land from its citizens through force. Cozy relationships exist between holders of state power and those who have accumulated capital, as all lands are the property of the State. Thus, the opportunities for elite groups to benefit at the expense of politically and economically marginalized groups is immense, both politically and economically. Most large-scale resource development projects are by SoEs that are wholly or partially financed by governments in the region, further blurring private/public interests (Woods et al. 2013).

The 2012 Farmland Law provides, for the first time, rights of use and alienation, provided that transfers are properly registered. However, in conjunction with the VLV Law and the Foreign Investment Law, this law is also prone to misuse. Although individuals can benefit from it, private companies, both domestic and foreign, more often obtain Land Use Certificates (LUCs) for land purchased or acquired by means of the government granting so-called 'vacant land' or 'wasteland'.

Currently, major land policy and law reforms are underway that will determine how land will be formally used, by whom and for what purposes. Nevertheless, powerful economic interests and influential political forces are creating contestations, constraining reforms of current land policy that are genuinely geared towards promoting more equitable land rights (TNI 2013). This follows patterns among some of Myanmar's regional neighbors of "turning land into capital" and concomitantly, of turning farmers into laborers (Scurrah et al. 2015).

According to Group for Research and Technology Exchanges (GRET) study, the land registration process in the lowlands has been relatively comprehensive and efficient due to the relative

fluidity between existing customary land tenure systems and practices (Scurrah et al. 2015). Without proper recognition and legal protection of customary land tenure, efforts to formalize land through titles may create greater insecurity, as experiences in Laos and Cambodia have shown (Ibid 2015).

In response, Myanmar companies are positioning themselves so that domestic political-economic elites would capture accumulated capital through joint ventures or informal arrangements with foreign investors. This practice is protected by national laws, pending the revised Investment Law (i.e. the FIL). Given the inadequacy of environmental laws and the weak regulatory regime, corporate social responsibility among private sector investors in Myanmar is limited (Lynn and Oye 2014).

As land became the top reform issue in the country during 2010-2015, various donors started land governance programs in the country. Nevertheless, there is no major development agency or international financial institution that has stepped up to provide finance and lead the monumental task of titling the entire country, as in has been done in some other countries in the region such as in Vietnam (Zakout 2016). Under the 2012 Vacant, Fallow and Virgin Lands Management Law and Farmland Law and related laws (Foreign Investment Law), the various government bodies and committees established are vested with considerable power to allocate and revoke rights, but provide no recourse for appealing decisions or assisting people in gaining access to justice. There is a growing interest in participatory action research that has brought together many NGOs and researchers to promote a bottom-up participatory method in research and research uptake to support progressive policy making in the country (Scurrah et al. 2015).

The increase in foreign investments that has accompanied Myanmar's democratic reforms has led to new waves of dispossession and displacement by companies who have acquired large tracts of land for agribusiness and other projects, and also in the name of 'national development', despite the Thein Sein government promising to pay attention to poverty alleviation (Scurrah et al. 2015; Cook 2011). While FDI was a staggering US USD 4.1 billion in 2013/14, the granting of land to large-

scale agribusiness companies has not generated expected revenues or employment opportunities for those whose lands were appropriated. The 2012 land laws and the National Land Use Policy (NLUP) may exacerbate land tenure and food insecurity for many smallholders, particularly the ethnic minority groups who practice shifting cultivation and for whom land titles are not available (FAO 2016).

4.2.7 Ethnic conflict

More than 728,434 ha of land have been awarded for oil palm plantations, often to companies with close ties to the military. Expansion has further increased with the arrival of FDI, and has provoked large human rights abuses and environmental destruction, as the case of the Myanmar Stark Prestige Plantation (MSPP) oil palm concessions shows. The development impacts of the MSPP concession have been documented in detail through a report titled 'Green Desert: Communities in Tanintharyi renounce the MSPP oil palm concession', produced by local CSOs (Green Desert 2016).

Plantations are permitted to convert forested areas, which may be at the disposal of the Forest Department or may be unclassified forests under government jurisdiction. Lacking official monitoring and documentation, timber has been clear-cut, usually followed by significant environmental destruction (Green Desert 2016). Many of the plantation locations coincided with tenure loss (Webb et al. 2014; Jones 2014). For example, Bokpyin and Tanintharyi townships jointly lost more than 75,000 ha of intact forest to oil palm plantation establishment between 2002 and 2014 (Bhagwat et al. 2017).

Indeed, control over natural resources is a major cause of conflict in ethnic areas, where the majority of Myanmar's natural resources remain. Given the lack of sound economic policy and the unwillingness of the State to reconcile with ethnic armed groups, an increase in foreign investment could have a major impact on the environment and communities living in these areas. Upland ethnic populations find themselves stuck in the crossfire of the rough transition to an opening market capitalism, where land is transferred from smallholder farmers to large private companies, both Myanmarese and foreign. Land tenure

remains very weak in Myanmar, especially in the uplands where customary practices are still often followed instead of statutory law. A fundamental problem is that no law formally recognizes traditional upland land use. The Community Forestry Instruction (CFI), while a good opportunity, is often not implemented as a traditional land management strategy, and thus cannot change the way local people use, access and manage land. This, jointly managed with the Forestry Department, often promotes growing timber rather than food. In the lowlands, farmers often rely on informal social systems to secure continued land use and access. However, more well-placed farmers (usually those with higher incomes and connections to authorities) are able to apply for land use certificates, which increase land tenure security – although they certainly don't guarantee against land confiscation (BEWG 2011).

Growing insecurity of land tenure, loss of access to resources by smallholders, increasing food and livelihood insecurity, and human rights abuse result in power imbalances at various levels of society. Several ethnic groups in the border regions felt marginalized in post-independence Myanmar. They launched an armed struggle against the government to press for equal rights and autonomy for their future (Smith 1991). In 1962, the challenges from separatist insurgents caused General Ne Win to stage a military coup against the democratically elected government. The passing of the disposal of Tenancies Law (1963) established the State's right to terminate landlord tenancy arrangements and placed further restrictions on people's right to own or rent land. As part of Ne Win's socialist project, laws that gave added protections to smallholders were also instated, namely the Law Safeguarding Peasants Rights (1963), which aimed to establish protection for indebted farmers from the practice of foreclosing on land by creditors (Oberndorf 2012).

The tensions and ethnic conflict dynamics in the country, by nature, have also influenced the process of negotiating the Forest Law Enforcement Governance Trade (FLEGT) Voluntary Partnership Agreement (VPA) (Naujoks et al. 2017). More specifically, at the national level, there are armed and violent political conflicts between the government, militia groups, and various ethnic armed groups over socio-political grievances, issues of territorial control, the governance structure

and the degree of autonomy or federalism of the Myanmar state. The largest and best organized ethnic armed groups have been providing governance to local communities for 60 years, either in place of the central state or, more commonly, overlapping with state institutions in what have been referred to as ‘mixed-authority’ or ‘contested’ areas. Over the past few decades, violence has spiked in different areas of the country as the Tatmadaw has fought against different ethnic armed groups, particularly in Kachin, Shan, Kayah, Kayin, Mon, and Tanintharyi states/regions. Recently there have been “intense clashes in Kachin and Shan states, while fragile ceasefires mostly hold in other parts of the country” (Naujoks et al. 2017, 10). In 2018, Britain cited

the crisis over Rakhine State – involving the exodus of more than 700,000 Rohingya Muslims to Bangladesh amid accusations that Myanmar security forces committed “crimes against humanity” – in a decision to suspend funding for Myanmar’s effort to join a European Union initiative aimed at combatting illegal logging and promoting effective forest governance (Lynn 2018). The crisis in Rakhine State had prompted a change of priorities in Myanmar that would see it target “those who are persistently left out of economic and social development” (Ibid 2018). Fallout from the crisis in Rakhine State has hurt the national economy, especially with respect to foreign investment and tourism (Naujoks et al. 2017).

5 The REDD+ policy environments: Actors, policy events, and policy processes

In light of the situation elaborated in the previous chapter, there is ample scope for avoided deforestation and improved governance. This chapter focuses on the REDD+ program and Myanmar's engagement with efforts to mitigate climate change.

5.1 Broader climate change policy context

Myanmar is highly vulnerable to climate change. According to Eckstein et al. (2017), it is the third most-affected country on the list for the long-term climate risk index over the past two decades (1997–2016), while the Global Risk Index put Myanmar as the second most vulnerable country in the world (MCCA 2018). Already Myanmar has suffered from extreme weather events, such as Cyclone Nargis, which struck Myanmar hard in 2008, resulting in the loss of 140,000 lives and impacting approximately 2.4 million people. Myanmar's dry season has become longer, with far-reaching implications for communities without access to groundwater (AFP 2015). In the Central part of the country lies an area with an annual average rainfall of 30 inches (762 mm) and certain parts of the coastal region receives an annual average rainfall of 200 inches (5080 mm); water shortages during the dry season have become more common (Aung et al. 2017).

With a forest cover of about 40% of the total land area, however, Myanmar has the potential to contribute to climate change mitigation significantly through sustainable forest management, reducing deforestation and degraded forests, and gaining benefits through REDD+.

As mentioned in Macqueen (2015), 17 million of Myanmar's rural people are dependent on forests for their livelihoods, as well as for a way to cope

with climate change. However, as Myanmar tries to accelerate its economic development, mainly through attracting foreign investment in natural resource exploitation, the resulting environmental change might reduce rural communities' resilience to climate change-related disasters (Webb et al. 2012). Recognizing its high susceptibility to climate change, Myanmar actively engaged in designing and implementing the required policies, governance, financial and programming instruments to address climate change (GOM 2015).

5.1.1 Major climate change mitigation and adaptation activities

Myanmar has been implementing mitigation and adaptation activities in line with the sustainable development goals. It signed the United Nations Framework Convention on Climate Change (UNFCCC) on 11 June 1992, ratified the convention on 25 November 1994 and became accessioned as a non-Annex I party under the Kyoto Protocol on 13 August 2003 (UNFCCC 2005). Myanmar submitted its Initial National Communication (INC) and National Adaptation Programme of Action (NAPA) to the UNFCCC on 5 September 2012 (NECC 2012), signed the Paris Agreement on 22 April 2016 and ratified it on 19 September 2017 (UNFCCC 2016). For the Doha Amendment to the Kyoto Protocol, Myanmar was accepted on 8 December 2012 (UNFCCC 2012), and ratified on 19 September 2017 (Kosolapova 2017). The timeline of major activities related to climate change in Myanmar is summarized in Figure 7.

According to Article 4, Paragraph 12 of the Paris Agreement, Myanmar has to implement its Intended Nationally Determined Contribution (INDC) as a Nationally Determined Contribution (NDC). The following are activities for mitigation

Figure 7. Timeline of major activities related to climate change in Myanmar

and adaptation to deal with climate change that must be implemented as part of the NDC (UNFCCC 2015).

Mitigation activities

In its NDC, Myanmar identified mitigation actions and policies primarily in the forestry and energy sectors, complemented by supporting policies in other sectors.

a. Forestry sector

In the forestry sector, the main activity for mitigation is to fulfill the national permanent forest estate (PFE)² target. The target is to increase forest land to 30% of the total area dedicated as Reserved Forest (RF)³ and Protected Public Forest (PPF)⁴, and 10% of total land area as Protected Area System (PAS)⁵ by 2030. In total, 40% of the country's total area has to be demarcated as RF, PPF and PAS (ICIMOD 2018a). However, forest cover has continued to decrease, as shown in Figure 8.

The area demarcated for RF and PPF, is reported by the Forest Department (FD), to be 24.79%; and PAS to be 6.84%. Thus currently, only 31.63% of the total country is designated as RF, PPF and PAS. In fact, between RF/PPF and PAS

Figure 8. Forest cover status in Myanmar, 1990–2015

Source: FAO 2015

there might be some overlap. As an example, Alaungdaw Kathapa National Park is comprised of Patolon RF and Taungdwin RF (Oo, Oo, and Kyi 2006). Therefore, if the overlapped areas are excluded, the percentage of forest reservation will be reduced. Several threats to protected areas are reported by Beffasti and Galanti (2011), with the common threats within the 30 protected areas being hunting, logging, agriculture and human settlements, while 16% of threats from commercial plantations were incidents outside protected areas (Beffasti L and Galanti 2011).

In addition, the rapid forest conversion associated with business concessions, especially rubber, oil palm, and mining, are a main constraint to achieving targets. As discussed in earlier sections, rubber and oil palm are perennial industrial crops managed under the agricultural sector, not the forestry sector, resulting in overlapping claims and constraining efforts to increase forest land cover. According to Woods (2015), 1.77 million acres or 716,293 hectares of forests (including protected

² PFE is forest area that is designated to be retained as forest and may not be converted to other land uses

³ Land constituted as a Reserved Forest under Forest Law 1992

⁴ Land declared to be Protected Public Forest under Forest Law 1992

⁵ National parks and sanctuaries

forest reserves, unclassified forests, and “other” forests) were degazetted for resource extraction, energy infrastructure development, agricultural expansion, and military compounds. This means the reservation target in Myanmar might be difficult to achieve while forestland covers only 42.92% of the country’s total area left. In fact, a feasibility analysis for the implementation of mitigation activities by the forestry sector in NDC targets is needed.

The United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (UN-REDD) was joined by Myanmar in 2016 and will run until 2020 with a total budget of over USD 5.5 million provided through the Government of Norway. The program includes activities to enhance the capacities of government departments, communities, and other actors to conserve forests and manage them in a sustainable manner, as well as to develop technical, and governance systems to support this (UNDP 2017).

b. Energy sector

In the energy sector, the identified actions for mitigation are different for different subsectors. The actions aim mainly at contributing to both renewable energy and energy efficiency. In the case of renewable energy, Myanmar will try to increase the share of hydroelectric power generation within the limits of technical hydroelectric potential, whereas it will also try to increase access to clean sources of electricity among communities and households currently without access to the national electric power grid system. By 2030, Myanmar will try to share 9.4 GW from hydroelectric generation, and to supply at least 30% of rural electrification through renewable sources (Emmertson et al. 2015). In addition, Myanmar will have to mitigate GHG emissions in the rapidly developing industrial production sector by improving energy efficiency, managing the systems incompatible with ISO 50001, and optimizing the energy system. It will also have to increase energy efficiency in rural areas by providing energy-efficient cooking stoves to reduce fuelwood consumption. For that, Myanmar will have to realize a 20% electricity saving potential of total forecast electricity consumption by 2030, and distribute about 260,000 cooking stoves between 2016 and 2031 (Emmertson et al. 2015).

Regarding the energy sector, the Government of the Republic of the Union of Myanmar instituted the National Energy Management Committee (NEMC) on 9 January 2013, as a multi-ministerial coordinating body for addressing all energy-related issues in Myanmar comprehensively. The National Energy Policy 2014 was adopted on 6 January 2015, and the Myanmar Energy Master Plan formalized by NEMC in December 2015 (Emmertson et al. 2015). The Master Plan provides the supply strategies by viable energy mix scenarios to secure a stable and reliable energy supply over the long term. It also takes into account ways to ensure the efficient use of energy resources, create an effective investment environment, employ innovative technologies and minimize environmental and social impacts, contributing to the 2009 National Sustainable Development Strategies.

The National Energy Efficiency and Conservation Policy, Strategy and Roadmap for Myanmar was established by NEMC in 2015 (Gooneratne 2015). JICA supported the formulation of the National Electricity Master Plan (NEMP) in 2013 (JICA 2015a). The Master Plan, issued in December 2015, aims at harmonizing the medium- and long-term decisions of primary energy source selection and transmission system planning. The Myanmar National Electrification Program (NEP) Roadmap was issued in September, 2014 (Castalia 2014). The Rural Electrification Plan was approved in 2015 under the Myanmar National Rural Development and Poverty Alleviation Programme (GIZ 2015).

In 2011, domestic gas consumption in Myanmar was used mainly for gas-fired power plants (60%), fertilizer production (12%) and compressed natural gas (10%). According to the National Energy Policy (2014), the electricity sector is expected to achieve its distribution target of 45% electrification by 2020/21 and 100% by 2030 (JICA 2015a)⁶. However, the feasibility of energy sector mitigation activity implementation needs to be assessed within the NDC targets.

Adaptation activities

Myanmar, due to its geographic location and characteristics – especially in the Delta and Dry

⁶ This target is slightly different from the target in NDC.

Zone areas – is inevitably exposed to severe natural weather events such as cyclones and associated strong winds, storm surges and heavy rain-induced floods, as well as droughts. As 70% of the population of Myanmar resides in rural areas and depends on rain-fed agriculture, livestock and fisheries, and forest resources as reported in the National Determined Contribution (UNFCCC 2015), climate conditions and climate change are highly influential. The economy of Myanmar and its society are highly vulnerable to climate change. Consequently, adaptation to the changing climate must be a priority.

Myanmar identified adaptation actions by sector: (i) agriculture, (ii) early warning systems, (iii) forestry, (iv) public health, (v) water resources, (vi) coastal zones, (vii) energy and industry, and (viii) biodiversity. These adaptation actions were prioritized into four levels as follows (NECC 2012):

- First priority level – resilience in the agricultural sector, development of early warning systems, and forest preservation measures;
- Second priority level – public health protection and water resource management;
- Third priority level – coastal zone protection;
- Fourth priority level – energy and industry sectors, and biodiversity preservation.

Research and analysis are needed on the above-mentioned adaptation activities and plans, especially on their appropriateness, the challenges to implementing them, and stakeholders' views on these priorities.

Agriculture contributes about 30% of the country's GDP and provides employment to approximately 60% of the population (OECD 2016). The impacts of climate change on agriculture will have repercussions on the livelihoods, food production and the overall economy of Myanmar. The country's mangrove forests, along its rivers and coastlines, have experienced rampant logging for charcoal and fuelwood (see Chapter 2). Mangrove forests conversion for rice production also contributes significantly to carbon emissions.

However, the agricultural sector also holds significant potential for climate change mitigation through the reduction of GHG emissions. In 2018, the Global Environment Facility (GEF) started to support a program on climate smart

agriculture, which also included activities in support of sustainable forest management, and sustainable land management. This five-year project is focused on building the capacity of farming and forestry stakeholders to develop appropriate policies and practices.

It is still too early to show the effectiveness of the adaptation policy on the ground. Yet, as shown in the political economy chapter, the influx of foreign investment and government preference toward agribusiness development and energy security (hydropower development) has reshaped land and forest governance in the country and is constraining both adaptation and mitigation efforts. Currently, there is little information to indicate how the adaptation policy might unfold. If the scenario inclines to forest conservation or a moratorium is placed to limit the growth of business entities, this will likely generate resistance from powerful actors, especially military-backed national businesses that could hamper adaptation and climate mitigation efforts. In addition, while Myanmar is now considered a democratic country, the military are still powerful and retain their influence over national business entities.

5.1.2 National policies related to climate change

Myanmar has many climate change-related policies, and these are described in this section.

National Environmental Policy of Myanmar 1994. This is the first environmental policy in Myanmar, issued by the National Commission for Environmental Affairs (NCEA) in 1994 in order to conserve the environment and prevent its degradation. The objective of Myanmar's environmental policy is achieving harmony and balance through the integration of environmental considerations into development processes in order to enhance the quality of life for all its citizens. Every nation has the sovereign right to utilize its natural resources in accordance with its environmental policies, but great care must be taken not to exceed its jurisdiction or infringe upon the interests of other nations. It is the responsibility of the State and every citizen to preserve its natural resources in the interest of present and future generations. Environmental protection should always be the primary objective in seeking development.

Myanmar Forest Policy 1995 (Ministry of Forestry 1995). This policy was issued on 23 February 1996 by the Ministry of Forestry⁷ in order to provide the policy intervention necessary for coping with the changing socioeconomic environment and ensuring the sustainability of benefits from forests in perpetuity. The policy is also the formal document of the government's commitment and intent to ensure the sustainable development of forest resources, for both environmental and economic purposes.

Six imperatives were identified in line with the basic forestry principles adopted at the United Nations Conference on Environment and Development (UNCED), and the political commitments and statement of goals and objectives of the national development policy:

- Protection: Safeguarding soils, water catchments, ecosystems, biodiversity and plant and animal genetic resources, scenic reserves and national heritage sites;
- Sustainability: Managing the forests to ensure in perpetuity the level of benefits, both tangible and intangible, for present and future generations. It also implies the maintenance and rational use and enhancement of the forest resources base to ensure ecological resilience and its contribution to socioeconomic growth on a continuous basis.
- Basic needs: Providing fuel, water, fodder, shelter, food and recreation from the forest;
- Efficiency: Harnessing the full economic potential of the forest through increased productivity, income tax revenue, foreign exchange earnings, employment and other benefits, while controlling unacceptable social and environmental side effects and encouraging domestic processing;
- Participation: Enlisting people's participation in forestry, wildlife and national park activities so that the community becomes actively involved, in appropriate ways, in national and local efforts towards forest conservation and development, and in growing trees to meet their own needs and to increase non-farm incomes through the adoption of community forestry/ agroforestry practices;

- Public awareness: Educating the community, in general, and in particular the politicians, decision makers and others who mould public opinion about the vital role of trees and woody vegetation, wildlife and national parks in national socioeconomic development, as well as the importance of forests in the conservation of soil and water, which constitute the life support system of the planet;

To achieve these imperatives, it is necessary to deal with policy measures, strategies and actions to fulfill the strategic objectives identified to minimize or overcome constraints. One important policy measure directly related to climate change mitigation is:

“Thirty percent of the total land area of the country should be gazetted as reserved forest and 5% as protected areas system.” (Myanmar Forest Policy 1995: page 22)

To implement this policy measure, the strategies with short-, medium- and long-term actions are also mentioned in the policy document.

Myanmar Agenda 21 was developed in 1997 as one of the collaborative efforts by various line government agencies including NCEA to mobilize and focus national efforts to achieve sustainable development. It calls for a national framework legislation on the environment to be created to improve coordination and cooperation between ministries on issues related to the environment (Forest legality Initiative 2016).

National Sustainable Development Strategy (Ministry of Forestry 2009). The strategy was laid down in 2009 in accordance with the World Summit of Sustainable Development mandate. It aims at reducing pressures from habitat loss, land-use change and degradation, and unsustainable water use. It also jointly developed a draft action plan to control desertification and reduce pollution and its impact on biodiversity. The strategy also takes into account addressing challenges to biodiversity from climate change and pollution.

National Energy Policy 2014 (NRGI 2014). This is the principal national policy providing the framework for energy development and planning in Myanmar. Myanmar needs to explore and exploit various energy resources, which are the

⁷ The name for the Ministry of Forestry was changed to the Ministry of Natural Resources and Environmental Conservation on 25 May 2016.

main driving sources for economic development systematically. The policy aims to explore the country's available energy resources in order to supply domestic demand and export value-added products from surplus resources, with the ultimate goal of sustainably improving living standards for Myanmar's population. This policy also emphasizes measures to minimize environmental impacts resulting from energy resource exploration.

National Land Use Policy 2016 (GoM 2016). This policy was issued in January 2016, and is associated with the conservation, utilization and allocation of land resources. It also aims at ensuring sustainable environmental conservation. This policy is linked with Myanmar Forest Policy 1995, in order to contribute to implementing the strategic policy measures and actions laid down in that policy.

National Environmental Policy of Myanmar 2019 (UNDP 2019). This policy was recently drafted by MoNREC. The policy reaffirms and builds on the 1994 National Environmental Policy, the 1997 Myanmar Agenda 21 and the 2009 National Sustainable Development Strategy, to achieve environmental protection and sustainable development objectives in Myanmar. In addition, it has been prepared to mitigate and adapt to climate change and natural disasters.

A timeline of the development of policies and regulations on climate change in Myanmar is illustrated in Figure 9.

The Myanmar Climate Change Strategy and Action Plan (MCCSAP) 2016–2030 was issued in January 2017 (MoNREC 2017).

The Government of Myanmar has made significant efforts to improve the management of environmental conservation (Htun 2009; UN-REDD 2013; Linn and Liang 2015). The National Environmental Policy of Myanmar 1994 was issued by the NCEA and served as the first environmental policy to conserve the environment and prevent its degradation. The Myanmar Forest Policy 1995 served as the formal document of the government's commitment and intent to ensure the sustainable development of forest resources, for both environmental and economic purposes; an important policy measure directly related to climate change mitigation.

Under the MoECAF (now MoNREC), the Forestry Department, issued new policies to reduce annual allowable cut rates substantially and established a logging ban on valuable timber species in areas of the country previously under heavy pressure from logging. To support the policies, the government also developed national strategies in line with the objectives of REDD+. For example, in 2009, the National Sustainable Development Strategy (NSDS) was developed to address challenges to biodiversity from climate change and pollution by reducing pressures from habitat loss, land-use change and degradation, and unsustainable water use. One of the main objectives of the Community Forestry Instructions (CFI) is to increase the ecosystem services that contribute to climate change mitigation and adaptation by reducing deforestation and forest degradation. Another objective is to implement the REDD+ program to try to reduce emissions from deforestation and forest degradation, and enhance forest carbon stocks.

Figure 9. Timelines of development of policies related to climate change in Myanmar

The Myanmar Climate Change Alliance (MCCA) developed the Myanmar Climate Change Strategy and Action Plan (MCCSAP) 2017–2030 with a vision for achieving climate-resilient, low-carbon, resource-efficient and inclusive development as a contribution to sustainable development (MCCA 2017). A Climate Change Unit has been established under MoNREC to provide the technical support related to climate change mitigation and adaptation. Related to that, the Green Economy Strategic Framework is under development (WWF 2017).

Other policies related to climate change mitigation include the National Transport Master Plan and National Implementation Plan on Environmental Improvement in the Transport Sector, the National Urban and Regional Development Planning Law, the National Housing Policy, National Urban Policy, the National Waste Management Strategy and Action Plans. The Ministry of Agriculture, Livestock and Irrigation (MoALI) is conducting several studies on alternative wet and dry paddy production techniques to mitigate and, at the same time, adapt to climate change. In addition, the Myanmar Sustainable Development Plan (2018–2030) was issued in August, 2018 (MoPF 2018).

Despite mining being one of the major drivers of deforestation, as explained in the previous section, there are no specific points regarding deforestation in the Myanmar Mines Law 1994, except for articles 13 and 32.

Section 13: The holder of permit shall comply with the rules prescribed under this Law (The Myanmar Mines Law 1994) in respect of the following matters: (e) making provision for the environmental conservation works that may have detrimental effects due to mining operation.

Section 32: The holder of a permit who violates any of the rules relating to section 13 shall, on conviction be punished with imprisonment for a term which may extend to 1 year or with fine which may extend to Kyats 10,000 (approximately USD 7) or with both.

The National Environmental Conservation Committee (NECC) is responsible for guiding national activities to tackle climate change-related problems. In 1990, it was established as

the National Commission for Environmental Affairs (NCEA) to advise the government on environmental policies, to act as a coordinating body for environmental affairs, and to promote environmentally sound sustainable development. In 2011, it was reorganized as the NECC based on Notification No. 21/2011 (issued on 20 April 2011) of the Office of the President so that it could manage and coordinate all climate change-related activities in Myanmar, including the development of climate change-related policies and strategies and corresponding programs of action (e.g. NAPA). The NECC is in a position to establish working committees at the union level and sub-committees at the state and division levels. This includes the development of corresponding Terms of Reference. The NECC submits reports to the Cabinet when appropriate (REDD+ Myanmar 2017).

The work of the multi-sector NECC and the development of cross-ministry plans such as the NAPA for Climate Change or the National Biodiversity Strategy and Action Plan (NBSAP), provided lessons learned and working models for the development of the REDD+ Readiness Roadmap. The Environment Thematic Working Group (ETWG) provided an important model for a multi-stakeholder coordination and consultation mechanism in which government, CSOs and development partners contribute to planning and policy development. Multi-stakeholder consultation for national-level policy processes is not common practice in Myanmar, thus the REDD+ Readiness Roadmap development represents an example for policy and strategy development in the forestry sector. The MoECA has demonstrated a willingness to recognize the rights of ethnic minority groups and local communities, for instance, by acknowledging their rights to FPIC, by engaging in community forestry development, or by engaging them at all levels (UN-REDD 2013).

To support the implementation of the policies and strategies since 2006–2007, the government also launched the Private Forest Plantation Program, which is a long lease of forest land to involve the private sector in natural resource management for the purposes of developing a green economy, increasing job opportunities for local communities, and reducing the overexploitation of forest products from natural forests. The FD also created programs to establish forest plantations and

support the development of a green economy and rural housing, by providing seedlings to each household (3 teak trees and 20 hardwood trees), and by establishing 1 acre or 0.4 ha of forest plantation per village in order to supply rural people with timber, posts and poles for housing and farming purposes.

Further, 0.43 million teak seedlings were planted on roadsides and 7.93 million teak and hardwood seedlings were distributed to institutional organizations. However, further assessment is needed to evaluate the effectiveness of the programs in relation to the implications for REDD+.

The energy sector also plays an important role, as energy development could also contribute to the success of REDD+. The National Energy Policy (2014) is the principle national policy that provides the framework for energy development and planning in Myanmar to explore and exploit various energy resources systematically as the main driving sources for economic development. According to the policy, the electricity sector is expected to achieve a target of 45% electrification by 2020–2021 and 100% by 2030.

To support the policy, a rural electrification plan was drafted in September 2014 under the Myanmar National Rural Development and Poverty Alleviation Programme. To mitigate GHG emissions, Myanmar will improve energy efficiency from the industrial sector and increase energy efficiency in rural areas by providing energy-efficient cooking stoves to reduce fuelwood consumption. In addition, the new government has suspended new mining exploration so that, for the time being, the land area under the influence of mining will likely stay stable at around 0.4% over the coming years, although illegal mining will still be an issue.

Myanmar, under MoNREC, developed the 30-Year National Forestry Master Plan for the period 2001–2030, and this could support the framework for REDD+. The Master Plan covers all areas of forestry policy and the development and welfare of rural communities, including defining targets and priorities for the establishment of forest plantations, fuelwood plantations as community forests, production of non-timber forest products, development of human resources, and forestry extension activities. Recently, in 2016,

the Myanmar Reforestation and Rehabilitation Programme (2017–2018 to 2026–2027) was compiled and approved. The program is intended to contribute to sustainable forest management, and tackle climate change. Although further assessments on the success of the programs have still to be carried out, the Master Plan could contribute to the implementation of REDD+.

To support the Master Plan, the government also developed national strategies that would have an effect on the implementation of REDD+. In the NBSAP, with the target to increase protected areas by 10%, it was reported that around 7.3% of the total national land area was protected. In 2015, the National Strategy Action Plan (NSAP) was formulated to conserve terrestrial and underwater resources through forest plantations, agroforests, community forests, mangrove forests, while also reducing the risk of climate-related disasters for local communities through collaboration and cooperation with international organizations and local NGOs, especially through the provision of technology and funding.

Myanmar is committed to contributing to the betterment of forest management in the country by developing policies and regulations that would have an impact on the success of REDD+. The National Land Use Policy (2016) and the National Environmental Policy of Myanmar (drafted by MoNREC in January 2018), for instance, were built upon old regulations in order to address underlying issues and update them with current issues, including climate change mitigation and adaptation and natural disasters. In addition to forestry-related policies, other policies and programs related to climate change also were created, such as the National Transport Master Plan and the National Implementation Plan on Environment Improvement in the Transport Sector, the National Urban and Regional Development Planning Law, the National Housing Policy, National Urban Policy, the National Waste Management Strategy and Action Plans.

Myanmar developed the Initial National Communication (INC) under UNFCCC and the National Action Plan for Adaptation (NAPA). The INC aims at analyzing all climate change issues, including GHG emissions, associated risks, potential measures for mitigation, climate change scenarios and awareness. The NAPA is

Table 16. Bilateral and multilateral spending on climate-related projects in Myanmar

Year	Type of project (USD millions)			Total funding (USD millions)
	Mitigation	Adaptation	Adaptation and mitigation combined	
2013	23	9	5	37
2014	63.9	426.7	27.7	518.3

Source: OECD 2014

designed to prepare national sectoral and multi-sectoral activities for climate change adaptive capacities at national and local levels (BEWG 2013). Further, Myanmar also developed the Nationally Determined Contribution (NDC) consisting of climate change mitigation and adaptation activities.

5.1.3 Funding and donors for climate change-related activities

There are bilateral aid accounts for the majority of climate finance which flows to Myanmar (MoNREC 2017). Based on the OECD (2015), MoNREC (2017) stated the amounts of funds spent for climate-related activities, as shown in Table 16.

According to the GEF (2018), funds allocated for a climate change program in Myanmar amounted to USD 16,950,753 in 2018. Key donors included Japan, Germany, the United Kingdom, Norway, Switzerland and France. Multilateral climate finance sources included the Asian Development Bank Special Fund, International Development Association, and the Global Environmental Facility (MoNREC 2017).

5.1.4 Clean development mechanism (CDM)

- Regarding the CDM, Myanmar has very limited experience so far. The Designated National Authority (DNA) was established in 2006 with the following objectives:
 - To approve the proposed projects at the national level;
 - To coordinate and facilitate implementing CDM projects in various sectors of Myanmar;
 - To provide information on CDM projects to related ministries, organizations and private sector actors.
- At that time, the DNA was led by the Ministry of Forestry. However, since the country's

baseline emissions are relatively low in many sectors, CDM projects on GHG emissions reduction are fewer than those on sequestration (Nyunt 2008).

- According to UNFCCC (2019), until now, three CDM projects have been registered in Myanmar.
 - The Clean Energy Program Supported by Republic of Korea (PoA 10415);
 - The Installation of Energy Efficient Cookstoves in Myanmar (PoA 10008);
 - The Household Energy Appliance Program (PoA 10030)

While not related to CDM, the government has been implementing the following activities:

- Afforestation and reforestation activities*
With the objectives of rehabilitating and restoring degraded forest areas, while also increasing timber yields, plantation forestry has a complementary role to natural forests in Myanmar. Reforestation in Myanmar gained momentum in the early 1960s and large-scale plantation forestry began in the 1980s. A Special Teak Plantation Program with a 40-year rotation was launched in 1998, in addition to the normal teak plantation scheme.
- Greening of the Dry Zone of Central Myanmar*
In 1997, the Dry Zone Greening Department (DZGD) was formed to restore the environment, prevent desertification and mitigate climate change in the Dry Zone of Central Myanmar by establishing forest plantations. Four major tasks assigned to the DZGD included: (i) establishment of forest plantations for local supply and greening; (ii) protection and conservation of remnant natural forests; (iii) promotion of wood-fuel substitution; (iv) development of water resources. The government developed the 30-year Integrated Plan for the period 2001–2030 in order to green the Central Dry Zone of Myanmar by increasing closed forest coverage from 19.7% to 35% by including the support of international organizations in establishing forest plantations.

- *Greening Activities of the Bago Yomas Range*
The Bago Yomas Greening Project, the first phase of which was from 2004/05 to 2008/09, implemented conservation and protection of natural forests, enrichment planting, natural regeneration and establishment of plantations. Intended to cover six divisions with a total area of 50,700.23 km², the project included among its activities the establishment of community forests and a teak seed production area, extension services and research activities.
- *Conservation of mangrove forests*
The loss of mangroves has led to a weakening of coastline protection, decreased crop production, and a decline in fish and prawn catches. The FD implements rehabilitation tasks, such as regeneration improvement felling in remaining mangrove forests, establishment of plantations in depleted areas and abandoned paddy fields, and community forestry. In cooperation with international organizations, the UNDP/FAO project located in the Ayeyarwady Delta aimed to raise awareness among communities on the importance of conserving mangrove forests, as well as to promote community forestry. Further, in collaboration with JICA, an Integrated Mangrove Management Plan was formulated.
- *Social tree planting program*
The FD launched the Nation-wide Tree Planting Programme in 1997/98 to raise public awareness and rehabilitate non-forest areas to enhance environmental services, including provision of basic needs for local people, preventing wind erosion, and regulating local climate conditions. The FD has distributed various types of seedlings, increasing in amount each year, particularly in the Dry Zone area. With the active participation of multiple stakeholders, the program has planted 17 million trees over the past decade, and the FD plans to enhance the planting rate by implementing one seedling per person in the future.
- *Watershed conservation*
Since the early 1980s, restoration of watershed areas has started to improve forest conditions in upland watersheds for sustainable agricultural development. The FD rehabilitated 53 important dams in a total watershed area of 3.6 million ha in response to a request from the Ministry of Agriculture and Irrigation (Oo 2013).

5.2 REDD+ policy actors, events and policy processes

In Myanmar, the potential for climate change mitigation through reducing deforestation and forest degradation is comparatively high. The annual forest loss over the last 10–15 years has been between 0.31% and 1.59% (depending on the observation periods and datasets), while the rate of loss of closed forests (largely due to conversion to open forests or degradation) has been between 2.61% and 3.97% annually (see Chapter 2).

According to the Myanmar REDD+ Programme (2016), annual payments of USD 51 million during 2025–2030 are expected, assuming a reduction of 30% of GHG emissions by 2030. While uncertainties regarding finances remain, Myanmar has decided to embark on the REDD+ process and started developing the necessary building blocks, including the NSAP, NFMS, SIS and FRELs (REDD+ Myanmar 2017).

5.2.1 Policy actors

Government and state agencies

MoNREC is in charge of developing forest policy and legal frameworks, and coordinates climate change-related policy analysis and development. Realizing the complexity of climate change and the involvement of many stakeholders, the government established the National Environmental Conservation and Climate Change Central Committee (NECCCC), which includes almost all ministries in the government. This committee meets regularly under the patronage of the Vice President.

The NECCCC receives regular updates on REDD+ progress in Myanmar from the Chair of the National REDD+ Taskforce. Documents directly related to the Warsaw Framework on REDD+ are also referred to the NECCCC for review.

Myanmar also established the necessary institutional structures to manage the REDD+ readiness processes, as described:

REDD+ Task Force: The NECCCC created a REDD+ Task Force (REDD+ TF) in 2010, and placed it under the overall inter-ministerial guidance of the NECCCC and the immediate supervision of MoECAF/MoNREC. The REDD+ TF includes Director General-level representation from: MoNREC; the Ministry of Agriculture, Livestock and Irrigation (MoALI); the Ministry of Home Affairs (MoHA); the Ministry of Planning and Finance; and representatives from MERN, POINT, the Myanmar Rubber Planters and Producers Association (MRPPA) and Kanbawza Bank. The TF meets at monthly intervals, and although all are invited, usually only staff from the MoNREC are present.

The TF undertakes the following tasks:

- Supervising the implementation of all REDD+ readiness activities, including the development and monitoring of consolidated work plans and corresponding reporting by the TWGs, the REDD+ TF Office and whoever is involved in Roadmap implementation;
- Coordinating and monitoring all REDD+ relevant initiatives in the country to ensure new initiatives or projects are “nested” into the implementation of the REDD+ readiness phase and contribute to the development of national REDD+ systems and approaches;
- Consolidating and/or validating technical reviews and proposals generated by TWGs, the REDD+ TF Office, REDD+ projects or the National REDD+ Network and submitting them to the NECCCC for further review and endorsement if required;
- Providing guidance on overall capacity building and adherence to safeguards under REDD+;
- Advising on issues brought to the attention of the TF by key stakeholders through TWGs, consultations and other channels;
- Ensuring that community-level concerns are heard and acted upon, that FPIC principles are applied and that community partners are given due recognition in benefit sharing;
- Facilitating NECCCC meetings by: preparing meeting agendas; presenting summaries of work plans, progress reports and technical reports; and summarizing policy-level recommendations as required;
- Monitoring the implementation of NECCCC recommendations and decisions by line

ministries, and reporting back to NECCCC for further action when needed;

- Advising the NECCCC and MoNREC on resource mobilization for REDD+ readiness implementation and piloting of selected REDD+ strategies, if needed;
- Informing the NECCCC about the latest international agreements and developments related to REDD+ implementation and recommending possible feedback to the UNFCCC through the NECCCC.

Until January 2019, the REDD+ TF has held six meetings (see Table 17).

REDD+ Task Force Office: The REDD+ Taskforce is supported operationally by a REDD+ Taskforce Office located at the premises of the Forest Research Institute of Myanmar within the Forest Department with an interim mandate to support the development of the Myanmar REDD+ Roadmap and national strategies. However, it was proposed to enlarge future working arrangements, involving key technical representatives from the Forest Department (FD), Dry Zone Greening Department (DZGD), Myanmar Timber Enterprise (MTE), Department of Environmental Conservation, Ministry of Environmental Conservation and Forestry (MoECAF, now MoNREC), Ministry of Agriculture and Irrigation (MoAI) and Department of Meteorology and Hydrology (DMH) for effective implementation of REDD+ readiness (Oo 2013). The current and potential roles of government ministries in REDD+ readiness are detailed in Table 18.

Technical working groups: Three technical working groups were established to provide a forum for multi-stakeholder debate, and to ensure that the National REDD+ Taskforce has access to relevant technical information. These working groups are:

- The Drivers and Strategy TWG (D&S TWG);
- The Stakeholder Engagement and Safeguards TWG (SES TWG);
- The Measurement, Reporting and Verification TWG (MRV TWG).

Each TWG meets independently and holds joint meetings when required. To date there have been several meetings held by each TWG (see Table 19).

Table 17. REDD+ Task Force meetings in Myanmar

Meetings	Date	Venue	Objectives	No. of attendees
1 st	27 Apr 2017	Forest Department (FD)	To introduce the Myanmar REDD+ Programme; To finalize and approve TOR for the TF; and To update the progress of the REDD+ Readiness Roadmap Implementation with the support of UN-REDD and other initiatives	25
2 nd	15 Dec 2017	FD	To update the TF on progress in REDD+ initiatives in Myanmar and discuss the way forward for the TF	22
3 rd	23 Mar 2018	FD	To update the TF on progress in REDD+ initiatives in Myanmar and to discuss the way forward for the TF	25
4 th	6 Jul 2018	Royal Kaytumadi Hotel, Taungoo	To update the TF on progress in REDD+ initiatives in Myanmar and to discuss the way forward for the TF	23
5 th	19 Sep 2018	FD	To update the TF on progress in REDD+ initiatives in Myanmar and to discuss the way forward for the TF	17
6 th	31 Jan 2019	FD	To follow up on decisions taken at the 5 th TF meeting; and determine priorities for implementation and sources of financing	20

Source: REDD+ Myanmar 2019

Members of TWGs are drawn from relevant ministries, civil society, and the private sector (REDD+ Myanmar 2017).

Partners for REDD+ implementation in Myanmar are:

- Asia Indigenous Peoples Pact (AIPP)
- International Tropical Timber Organization (ITTO)
- Korean Forest Service (KFS)
- UN-REDD Programme
- United Nations Development Programme (UNDP)
- United Nations Environment Programme (UNEP)

Non-state actors

Several non-state sectors have actively participated in REDD+ activities in Myanmar.

Promotion of Indigenous and Nature Together (POINT)

Since 2012, POINT has worked for indigenous peoples' issues in Myanmar. In addition, POINT has been active in REDD+ related activities in Myanmar since 2014.

POINT organized the 'Workshop on Indigenous Peoples' engagement in National REDD+ Program', held in Yangon on 1 October 2015, and conducted a 'National Workshop on the Role of Indigenous Peoples' Shifting Cultivation Practices for REDD+ Engagement in Myanmar' at the Micasa Hotel on 14–15 February 2017.

Korea Forest Service (KFS)

Korea has been developing a capacity building project to implement a REDD+ project in Myanmar since 2013. The Ministry of Natural

Table 18. Current and potential roles of government ministries in REDD+ readiness

Ministry	Current REDD+ relevant roles	Potential role in REDD+ readiness
Ministry of Environmental Conservation and Forestry (MoECAF, currently MoNREC)	<ul style="list-style-type: none"> • Hosts current REDD+ Task Force • Responsible for national forest estate • Coordinates climate change policies • Drafts forest laws • Technical climate change policy analysis and recommendations to MoFA for UNFCCC negotiations 	<ul style="list-style-type: none"> • Leads the National REDD+ Task Force • Coordinates REDD+ readiness • Coordinates REDD+ strategy and leads strategy development • Drafts REDD+ relevant laws • Continues to conduct technical climate change policy analysis and make recommendations to MoFA for UNFCCC negotiations
Ministry of Agriculture and Irrigation (MoAI, currently MoALI)	<ul style="list-style-type: none"> • Agricultural land management • Responsible for forested areas outside of MoECAF (Now, MoNREC) designation • Drafts agricultural laws • Carries out land demarcation (Department of Land Reform) • Responsible for meeting agricultural production targets 	<ul style="list-style-type: none"> • Department of Land Reform -responsible for land demarcation during REDD+ implementation • Drafts agricultural laws relevant to REDD • Representation in the National REDD+ Task Force • Contribute to REDD+ strategy
Ministry of National Planning and Economic Development (MNPED)	<ul style="list-style-type: none"> • Coordinates between ministries on development issues • Responsible for meeting national economic and development targets (e.g. poverty reduction targets) 	<ul style="list-style-type: none"> • Representation in National REDD+ Task Force • Ties in REDD+ with national development plans/planning process • Contributes to REDD+ strategy
Ministry of Foreign Affairs (MoFA)	<ul style="list-style-type: none"> • Represents Myanmar at a political level in UNFCCC negotiations • Coordinates with ASEAN 	<ul style="list-style-type: none"> • Represents Myanmar at a political level in UNFCCC negotiations • Representation in National REDD+ Task Force • Contributes to REDD+ strategy • Coordinates and communicates with ASEAN
Ministry of Home Affairs (MoHA)/ Attorney General	<ul style="list-style-type: none"> • Responsible for law enforcement • Administration at state/region level 	<ul style="list-style-type: none"> • Representation in National REDD+ Task Force • Contributes to REDD+ strategy
Ministry of Finance (MoF)	<ul style="list-style-type: none"> • Auditing donor aid • Budget control/allotment 	<ul style="list-style-type: none"> • Representation in National REDD+ Task Force • Manages budget for REDD+ readiness activities
Ministry of Mining (MoM)	<ul style="list-style-type: none"> • Management of mining companies (private and government) 	<ul style="list-style-type: none"> • Representation in National REDD+ Task Force
Ministry of Energy (MoE)	<ul style="list-style-type: none"> • Oversees biofuel policy and program implementation 	<ul style="list-style-type: none"> • Representation in National REDD+ Task Force
Ministry of Fisheries and Livestock (MoFL)	<ul style="list-style-type: none"> • Management of fisheries resources within mangrove zones • Rural development and livelihoods initiatives within mangrove zones • River management within forested areas 	<ul style="list-style-type: none"> • Representation in National REDD+ Task Force

Source: Oo 2013; UN-REDD 2013

Table 19. Meetings held by the Technical Working Groups in Myanmar

TWG	Meeting	Date	Venue	No. of attendees
D&S	1 st	05 Feb 2016	Hotel Amara, Nay Pyi Taw	25
D&S	2 nd	07 Apr 2016	Thingaha Hotel, Nay Pyi Taw	n/a
D&S	3 rd	30 Jun 2016	Hotel Amara, Nay Pyi Taw	27
MRV	1 st	04 Mar 2016	Thingaha Hotel, Nay Pyi Taw	20
MRV	2 nd	03 Jun 2016	Thingaha Hotel, Nay Pyi Taw	24
MRV	3 rd	18 Aug 2016	Thingaha Hotel, Nay Pyi Taw	n/a
SES	Pre-	29 Oct 2015	Hotel Amara, Nay Pyi Taw	n/a
SES	1 st	05 Feb 2016	Hotel Amara, Nay Pyi Taw	26
SES	2 nd	07 Apr 2016	Thingaha Hotel, Nay Pyi Taw	19
SES	3 rd	30 Jun 2016	Hotel Amara, Nay Pyi Taw	n/a
SES	4 th	01 Sep 2016	Grand Amara Hotel, Nay Pyi Taw	29
SES	5 th	10 Nov 2016	Hotel Amara, Nay Pyi Taw	21

Source: REDD+ Myanmar 2017

Resource and Environmental Conservation (MoNREC) and KFS signed the MoU for the project ‘The Cooperation on Investment in Forest Plantation and Climate Change’ in December 2014. In addition, KFS has been implementing the REDD+ project ‘Capacity Building of Relevant Stakeholder for REDD+ Readiness of Myanmar’ in cooperation with the Forest Department and Forest Research Institute after signing a Record of Discussion on November 2015. The project site was selected in one of the reserve forests in Bago Region, which has high forest cover but is also at high risk of deforestation. The region is the site of teak (*Tectona grandis*), mainly in the North Zarmari Reserve Forest.

The project has the following objectives:

- to assess socioeconomic conditions as well as conservation of biodiversity;
- to enhance the participation of relevant stakeholders and their quality of life through improvement of livelihoods;
- to build capacity among relevant stakeholders for REDD+ readiness and effective REDD+ pilot project implementations;
- to support REDD+ policy formation related to safeguards and co-benefits; and
- to develop a Verified Carbon Standard (VCS) Project Design Document (PDD).

The expected outputs of the project are to contribute to the implementation of the REDD+ Readiness Roadmap, to develop policy on

Safeguard Information Systems (SIS), to establish a coordination mechanism for line ministries, NGOs, CBOs and local people, and to develop VCS PDD in Myanmar. Table 20 details the milestones of the Korea – Myanmar joint REDD+ project, and Figure 10 shows the locations of REDD+ activities.

The Center for People and Forest (RECOFTC)

RECOFTC is one of the active non-state actors supporting REDD+ related activities in Myanmar. It has mainly supported community forestry development in Myanmar since its establishment. Between July 2012 and August 2013, Myanmar undertook a process to develop a REDD+ Readiness Roadmap in partnership with RECOFTC and with the support of the Government of Norway and UN-REDD targeted funds (Ferrand et al. 2018). Also, RECOFTC and its partners conducted a national-level expert panel discussion in Myanmar on gender mainstreaming in national forestry and REDD+ programs (RECOFTC 2015). In addition, RECOFTC supported local facilitators and trainers to promote better understanding of social equity and climate change issues at the grassroots level (RECOFTC 2014, 2016).

International Centre for Integrated Mountain Development (ICIMOD)

The regional project “REDD+ Himalayas: Developing and using experiences in implementing REDD+ in the Himalayas” covers the four Himalayan countries

Table 20. Progress of the Korea–Myanmar joint REDD+ project

Milestones		Activities	Location
Year	Month		
2016	March	• Consultation meeting for the establishment of community forestry (CF) and site selection	
	July	• Tree planting campaign	
	August	• REDD+ knowledge sharing seminar (FD and line ministries)	• Tharyarwady District, Myanmar Forest School
	September	• Training of Trainers (ToT) for improving capacity (climate change and REDD+)	
	November	• Basic bamboo processing training for rural development	
	Nov-Dec	• Livelihood improvement training • Training on socio-economic surveys	• Bago District and Tharyarwady District
	Dec	• Socioeconomic survey	• Kyauktaga, Min Hla and Oakpho townships
2017	January	• Training on CF through agroforestry practice	
	May	• ToT for improving capacity (REDD+ safeguards)	
	June	• Tree planting campaign	
	July	• ToT for improving capacity (Global Mapper and ArcGIS software)	
	August	• Livelihood improvement training	• Bago District
	November	• REDD+ knowledge-sharing seminar (FD and line ministries)	• Myanmar Forest School
	Nov-Dec	• Livelihood improvement training	• Tharyarwady District
2018	January	• Training on biodiversity survey • ToT for improving capacity (REDD+ safeguards)	
	February	• Biodiversity survey	• North Zarmari Reserved Forest
	May	• Basic forest management training (local communities)	
	March	• ToT for improving capacity (Global Mapper and ArcGIS software)	

of Bhutan, India, Nepal and Myanmar. This regional project is jointly implemented by ICIMOD and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, to improve conditions for implementing socially and environmentally sound REDD+ measures to mitigate climate change and to build a regional REDD+ learning platform to foster South-South learning. In a kick-off and planning meeting entitled “REDD+ Himalayas: Developing and using experience in implementing REDD+ in the Himalayas” held on 16–17 May 2016 at the Forest Research Institute (FRI) in Yezin, Myanmar, ICIMOD’s REDD+ Himalaya Initiative was

formally launched. A Letter of agreement (LoA) between Myanmar’s Forest Department and ICIMOD for the REDD+ project was signed on 29 March 2016 (ICIMOD 2017). The project period was from 29 March 2016 to 31 December 2018. In Myanmar, the project supported the national REDD+ readiness Roadmap by implementing different activities related to gap analysis and capacity development (Oo et al. 2018; Mg et al. 2018). Table 21 shows the project objectives and activities, and Table 22 details progress on the project’s implementation. Figure 10 shows the locations of REDD+ activities. The final project report is available at (ICIMOD 2018a).

Table 21. Objectives and activities of the International Centre for Integrated Mountain Development (ICIMOD) REDD+ project

Project overall objective	Project activities
To support the national REDD+ Readiness Roadmap by implementing a gap analysis	1.1 Produce a stock-taking report on free, prior and informed consent (FPIC), Strategic Environmental and Social Assessment (SESA) and biodiversity
	1.2 Conduct a gap analysis on REDD+
	1.3 Provide support in developing a biodiversity monitoring system for measuring impacts on biodiversity
	1.4 Conduct a value chain analysis on timber
	1.5 Conduct an analysis on deforestation and forest degradation
	1.6 Set up a demonstration site and strengthen forest governance at township and local levels
To support the national REDD+ Readiness Roadmap by implementing capacity development	2.1 Conduct a needs-based assessment for capacity development
	2.2 Form REDD+ working groups and hold 12 meetings
	2.3 Hold national-level workshops on REDD+ (once a year)
	2.4 Produce information, communication and education materials as well as knowledge products
	Conduct training on FPIC and SESA across different levels
	2.5 Conduct community orientation in REDD+
	2.6 Review benefit-sharing mechanisms in community forests
	2.7 Provide support to develop a framework for FPIC for REDD+ projects

Source: ICIMOD 2018a

Center for International Forestry Research (CIFOR)

CIFOR has engaged with REDD+ activities in Myanmar since 2017. A first workshop, which was held on 23 February, 2017, focused on the REDD+ Country Profile for Myanmar with the following objectives:

- to update the progress of the writing of a REDD+ Country Profile for Myanmar;
- to go over the initial review from CIFOR's team and identify gaps;
- to come to agreement on the timeline of the writing and the date for the verification workshop for the document produced.

A workshop on benefit-sharing options in Myanmar related to REDD+ was also held on 16-20 October, 2017. In this workshop, lessons were shared from other countries related to benefit sharing, identifying existing mechanisms and determining indicators for the mechanism. The workshop established agreement on who will be responsible for developing the document and the timeline for future activities was set. The final consultation workshop was held on 4 March 2019 in the Forest Research Institute, Yezin, Nay Pyi Taw.

Asia Indigenous Peoples Pact (AIPP)

The AIPP is an actor in REDD+ initiatives by indigenous peoples in Asia. AIPP (2013)⁸ reported that indigenous peoples should have a permanent representative in a partnership of 75 countries that aim to decrease the global carbon footprint through REDD+. AIPP also shared methodological issues related to non-carbon benefits resulting from the implementation of REDD+ related activities⁹ (AIPP 2014). With the support of the UN-REDD Programme, AIPP worked with local organizations to promote closer collaboration and cooperation among indigenous peoples and with the UN-REDD Programme and government agencies implementing REDD+ in Bangladesh, Myanmar and Vietnam.¹⁰

8 <https://aippnet.org/update-on-indigenous-peoples-issues-in-asia-7-11-oct-2013/>

9 <https://aippnet.org/asia-indigenous-peoples-pact-aipp-submission-on-methodological-issues-related-to-non-carbon-benefits-resulting-from-the-implementation-of-redd-activities/>

10 <https://aippnet.org/regional-report-of-the-partnership-between-asia-indigenous-peoples-pact-and-the-un-redd-programme/>

Table 22. Progress on REDD+ project implementation within the first fund disbursement (November 2016)

Milestones		Activities	Location
Year	Month		
2016	March	• Signing of LoA	
	May	• Kick-off meeting	• FRI, Nay Pyi Taw
	July	• Financial workshop • Monitoring, reporting and verification (MRV) training	• Nepal • FRI, Nay Pyi Taw
2017	January	• Inception and consultation workshop • Consultancy work on drivers of deforestation forest degradation analysis	• Taunggyi Township, Shan State • Pindaya Township, Shan State
	February	• REDD+ Core Unit meeting • Public talk, demo-site preparation	• Pway Hla, Shar Pyar and Nan Kone villages in Shan State
	March	• Consultation meeting on drivers of deforestation and forest degradation (DDD)	• Shan State
	April	• Basic forest inventory, carbon measurement and forest management training	• Pway Hla village, Pindaya Township, Shan State
	May	• Livelihood improvement training	• FRI, Nay Pyi Taw
	June	• Socioeconomic survey for DDD Analysis • Nursery establishment, agroforestry, participatory tree planting	• Pindaya, Ywangan, Lawksawk, Hopong and Mabein townships in Shan State • Shar Pyar and Nan Kone villages in Shan State
	July	• Training on GPS, Global Mapper and ArcGIS application • Study visit to Nepal	• FRI, Nay Pyi Taw • Nepal
	August	• REDD+ Core Unit meeting	
	Sep–Oct	• Benefit-sharing survey in community managed forests • Capacity building training on REDD+ safeguards and FPIC	• Ywar Ngen and Nyaung Shwe townships, Shan State • FRI, Nay Pyi Taw
	November	• Study tour to Yaw Ngan Township • Awareness raising training for the youth on REDD+ and forest conservation and REDD+ basic concept training	• Yaw Ngan Township, Shan State • Pindaya Township, Shan State
	December	• Biodiversity survey	• Nan Kone, Pway Hla villages, Pintaya Township, Shan State
2018	February	• Regional Workshop on the role of the SDGs and NDCs • REDD+ Core Unit meeting	• FRI, Nay Pyi Taw
	March	• REDD+ gap analysis meeting • Public talk on climate change and the role of forests • Benefit-sharing survey to Ayeyarwady Delta • Wundwin Community Forestry for livelihood Development	• FRI, Nay Pyi Taw • Pindaya Township, Shan State • Phyar pon and Bokalay townships, Ayeyarwady Region • Wundwin Township, Mandalay Region
	May	• Trip to Inn-Ni and Lwal Khot villages for community-based tourism	• Nyaung Shwe Township, Shan State

Continued on next page

Table 22. Continued

Milestones		Activities	Location
Year	Month		
2018	June	<ul style="list-style-type: none"> Capacity building training on REDD+ safeguards and FPIC Visit to Taung Lay Lone Nursery REDD+ Core Unit meeting Public talk on the role of forests and climate change Visit of Bhutan delegations to project sites 	<ul style="list-style-type: none"> FRI, Nay Pyi Taw Taung lay Lone Nursery, Shan State FRI, Nay Pyi Taw Pway Hla Village, Pindaya Township, Shan State Pway Hla, Sha Pyar and Nan Kone villages, Pindaya Township, Shan State
	July	<ul style="list-style-type: none"> Community orientation (tree planting campaign and awareness raising) 	<ul style="list-style-type: none"> Pway Hla, Sha Pyar and Nan Kone villages, Shan State

Source: ICIMOD 2018a

Figure 10. Locations of REDD+ projects by the International Centre for Integrated Mountain Development (ICIMOD) and the Korea Forest Service (KFS)

The Food and Agriculture Organization of the United Nations (FAO), the United Nations Development Programme (UNDP), and UN Environment Programme (UNEP)

REDD+ is an initiative for developing countries under the United Nations Framework Convention on Climate Change (UNFCCC) aimed at climate

change mitigation in the forest sector. REDD+ is adopted on a voluntary basis to reduce net emissions from forests and secure payments from international sources such as the Green Climate Fund or other funding mechanisms for results achieved. FAO, UNDP and UNEP are jointly implementing the UN-REDD Programme in Myanmar. Myanmar developed the REDD+ Roadmap in July 2013 with the technical support of the UN-REDD Programme. Myanmar's National REDD+ Programme was launched in 2016 in collaboration with the Forest Department, Ministry of Natural Resources and Environmental Conservation (MoNREC).

Myanmar is currently in the Readiness Phase of REDD+ implementation. The scope of REDD+ activities includes: reducing emissions from deforestation; reducing emissions from forest degradation; conservation of forest carbon stocks; sustainable management of forests; and enhancement of forest carbon stocks. The scale is national.

There are six components to Myanmar's REDD+ Roadmap to implement its REDD+ Readiness activities:

- Component 1: Management of REDD+ readiness
- Component 2: Stakeholder consultation and participation
- Component 3: Development and selection of REDD+ strategies
- Component 4: Implementation framework and safeguards

- Component 5: Development of a national forest reference emission level and/or forest reference level (FREL/FRL)
- Component 6: Development of a national forest monitoring system

According to the Warsaw Framework, there are four REDD+ design elements that must be developed in order to qualify for results-based payments under REDD+ in Myanmar: (i) a national strategy and/or action plan; (ii) a national forest monitoring system; (iii) forest reference (emission) levels; and (iv) a safeguards information system.

Current progress in each of the four REDD+ design elements

National REDD+ Strategy and/or Action Plan – The draft REDD+ National Strategy was developed in 2017, and various consultation meetings on the draft strategy engaged relevant high-level ministers as well as ethnic groups. Consultations were completed with the Danu, Mon and Pa-O peoples and ongoing with 10 other ethnic minorities. It was expected that most of these consultation processes would be completed by the end of 2018.

Forest Reference (Emission) Level – The Forest Reference (Emission) Level Action Plan

was developed in 2015 and was endorsed by the government in 2016. The initial Forest Reference (Emission) Level was submitted to UNFCCC on 8 January 2018, and the process of Technical Assessment (TA) was completed in November 2018.

National Forest Monitoring System – The Action Plan of the NFMS was developed in 2015 and was endorsed by the government at the same time as the Forest Reference (Emission) Level Action Plan. Planning for the National Forest Inventory was approved and published in September 2015 (MoNREC 2015).

Safeguards Information System – A draft National Clarification of the Cancun Safeguards has been produced and is undergoing public consultation. The analysis of the policy and legal framework have been completed, and recommendations for improvement have been produced. The Myanmar Safeguards Information System (SIS) process is ongoing.

5.2.2 Policy processes

Myanmar became a partner of the UN-REDD Programme in December 2011. During 2012 and 2013, a REDD+ Readiness Roadmap

Table 23. Myanmar REDD+ Programme outcomes and activities

Outcomes	Activities
Outcome 1: Relevant stakeholders engaged and their capacities developed	REDD+ Task Force, REDD+ Office and TWGs supported
Outcome 2: National institutions have capacities to implement effective and participatory governance arrangements for REDD+	Institutional measures for REDD+ awareness raising and information flow defined and operationalized Legal and policy framework reviewed, and adapted and reinforced, as necessary
Outcome 3: REDD+ safeguards defined in the national context and national safeguards information system developed	Define REDD+ safeguards and safeguard information system for the context of Myanmar Develop and implement Myanmar's Safeguards Information System (SIS)
Outcome 4: Development of Myanmar's national forest monitoring system (NFMS) and preliminary FRELs/FRLs supported	Build capacity and develop national action plans on NFMS and FRELs/FRLs Develop Myanmar's Satellite Land Monitoring System and web-GIS portal Design and pilot a multipurpose National Forest Inventory
Outcome 5: National REDD+ Strategy developed	REDD+ Strategy analysis Formulation and approval of National REDD+ Strategy

Source: UN-REDD 2013

was developed through a national multi-stakeholder consultation process in partnership with RECOFTC, and with the support of the Government of Norway and UN-REDD targeted funds (Ferrand et al. 2018). In July 2013, the Government of Myanmar approved the REDD+ Readiness Roadmap (UNDP 2017), which sets out how Myanmar will implement its REDD+ Readiness activities. This roadmap then formed the basis of an application to develop a full REDD+ National Programme. Additional targeted support of USD 1,115,000 from UN-REDD was used in 2014 and 2015 to support implementation of the Readiness Roadmap. Myanmar prepared its Expression of Interest to become a UN-REDD National Programme in 2015; this was approved at the 15th meeting of the UN-REDD Policy Board in November 2015. The UN-REDD National Programme was launched in early 2017 and will run until 2020.

Myanmar has made reasonable progress on the development of its REDD+ National Strategy. A strategy has been elaborated outlining key interventions to address the various drivers of deforestation and forest degradation. The assessment of the safeguard impacts of the REDD+ National Strategy is being developed and published, which will lead to the identification of the key safeguard components to be integrated into the SIS (MoNREC 2017c).

A stakeholder engagement process has been established and a safeguards roadmap has been developed, with the objectives of clarifying safeguards in the national context and setting the ground for a future Safeguard Information System (SIS).

Myanmar submitted its Forest Reference Emission level (FREL) to the UNFCCC in November 2018. As suggested by Decision 12/CP.17, Myanmar prepared its FREL using a stepwise approach (MoNREC 2018), whereby this initial FREL submission would be the benchmark for assessing Myanmar's performance in implementing REDD+ activities in contribution to climate change mitigation. Due to the lack of data and national 'wall-to-wall' forest and land cover maps, the FREL made use of conservative assumptions for emission factors, estimated based on a sampling approach that integrates both global forest cover datasets with available national datasets and extrapolating

trends limited to deforestation only (Ferrand et al. 2018; MoNREC, 2018)

Subnational consultations on the REDD+ strategy began in the last quarter of 2017 and were completed in April 2019. Action plans for a National Forest Monitoring System (NFMS) and FREL/FRL were developed during 2015, and implementation is ongoing.

A national forest inventory (NFI) will be conducted over the next several years as part of the UN-REDD programme, even though a Myanmar National Forest Inventory Draft Methodology Workshop was organized back in December 2018 (FAO 2019). While historical data are available on which to build the NFMS, a lack of financial resources and limited technical skills in national institutions has impeded progress. These institutions are currently undertaking the analytical steps to develop the National REDD+ strategy, develop Forest Reference Emission Levels (FREL), finalize the safeguard assessments and develop the NFMS.

REDD+ is further supported by several other policy processes:

Land-use and socioeconomic development planning:

Since July 2012, the Ministry of National Planning and Economic Development (MNPED) has switched to broadly bottom-up planning, with responsibilities devolved to townships, districts and regions/states. The Inter-ministerial Land Scrutiny groups, chaired by the Minister of MoECAf, devise national-level regulations for land-use planning. At state/region, district and township levels, the establishment of land-use advisory committees includes civil society and private sector representatives. There are Agricultural Oversight Committees, consisting of representatives of sector ministries, which meet once a month or more often during the rainy season to resolve land-use conflicts. Civil society engagement has been actively sought on the reform of the planning process, and recommendations from the Land Core Group and the Food Security Working Group are forthcoming.

Community Forestry Instruction revision: The Community Forests Instruction of 1995 (CFI 1995) requires revision to address the omission of community forests from the Forest Law of

1992. Currently, amendments to the Forest Law are being drafted by FD to include clear references to CF, and the technical content of the CFI is being reviewed. Although external consultation is not being explicitly sought in these processes, the Environmental Technical Working Group (ETWG) submitted suggestions through informal channels.

Private sector investment in forestry: The government recently relaxed previously strict controls of ownership of teak plantations, leading to a spurt in private sector-supported plantation establishment. The Korean International Cooperation Agency (KOICA) recently initiated a project to improve rehabilitation capacity of the deforested Nyaung U region through private sector involvement.

Forest law enforcement: Prosecution of serious forest crime is highly effective (EIA 2019), with a reported 100% conviction rate of crimes referred to the prosecution service in the district visited by the team (Thaungnoo District) during 2011 (Oo 2013).

Moreover, the Government of Myanmar, especially the Forest Department under MoNREC, has set the implementation plan for the 30-Year National Forestry Master Plan (2001–2030). As part of the implementation of this Master Plan, each Forest Management Unit (FMU) at the district level has been drawing on and implementing the 10-year management plan so that the overall goals and objectives can be met by 2030. In addition, the National Biodiversity Strategy and Action-Plan was also drawn up as a complementary strategy to

the Master Plan in order to increase the Protected Areas to 10% of the total national land cover. Myanmar also joined the UN-REDD Programme (the United Nations collaborative initiative on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries) in 2011. The REDD+ Core Unit was established at MoNREC, and has the responsibility for coordinating and guiding REDD+ related actions at the national level. In addition, Myanmar joined the European Union's Forest Law Enforcement Governance Trade (FLEGT) Programme in 2014, which will provide capacity building on legal aspects related to forestry.

5.2.3 Consultation processes

REDD+ is simple in concept but complex in implementation. Major areas in need of modification in existing national programs are: human resource development, capacity building, law enforcement, credible policy, secure finance, and a comprehensive master plan (Oo 2013).

Table 24 describes the mechanisms for stakeholder consultation at various levels.

National REDD+ Fund and Financing

Implementing Phases 1 and 2 of REDD+ requires funding known as 'investment finance'. This can come from many sources:

- Domestic funding of current initiatives such as the Myanmar Reforestation and Rehabilitation Programme (MRRP);
- Domestic funding from re-programming of finance, e.g. the elimination of perverse

Table 24. Stakeholder consultation mechanisms or levels

Level of consultation	Description
First level	Meetings are organized by the multi-stakeholder TWG and aim to propose or provide information, not to take important decisions.
Second level	Meetings of the multi-stakeholder REDD+ Task Force are open to all TWG members.
Third level	In order to actively seek feedback from all members of the National REDD+ Network, 'electronic consultation' is used by the REDD+ Task Force or TWGs when consolidating and validating draft reviews, studies or proposed decisions.
Fourth level	This is conducted through a National Consultation Workshop with invitations to all members of the National REDD+ Network, to discuss elements of REDD+ readiness that require stakeholder discussions as part of the review and validation process.
Fifth level	A National Consultation Process is undertaken, including a National Consultation Workshop, Regional Consultation Workshops and a Final National Validation Workshop.

Source: UN-REDD 2013

incentives that lead to deforestation or forest degradation;

- New and additional domestic funding from government budget allocations;
- Domestic private sector finance, such as private sector investment in reforestation;
- Funding from international donors, such as from Norway, through the UN-REDD Programme, for Phase 1.

Under Phase 3 of REDD+, Myanmar will qualify for results-based payments from the international

community, possibly through mechanisms such as the Green Climate Fund. A system to receive, manage and allocate results-based payments will be required; the UN-REDD Programme is currently assisting with the analysis of issues associated with design of such a system. Most countries have decided to create a National REDD+ Fund for this purpose – either a stand-alone fund, or a sub-fund of an existing environmentally-related fund (such as Myanmar's Environmental Management Fund, created under the Environmental Conservation Law of 2012).

6 Implications for the 3Es

The preceding five chapters lay out the context of Myanmar as related to the development of REDD+ policies. In this final chapter we discuss the implications of REDD+ in terms of achieving effectiveness, efficiency and equity (the '3Es'). In accordance with Luttrell et al. (2013), we understand 'effectiveness' as the volume of emissions reduced, 'efficiency' as the cost of reducing those emissions, and 'equity' as the extent to which benefits are distributed and the extent to which participation is conducted. We discuss both opportunities and challenges for Myanmar to achieve 3E outcomes, and highlight areas that need special attention from Myanmar stakeholders.

6.1 Effectiveness

Myanmar stands at the crossroads of economic development and conservation. This resource-rich country is attracting foreign investments from neighboring and Western countries. At the same time, Myanmar adopted the global trajectories of sustainable development, which includes efforts to mitigate climate change. Thus, Myanmar faces the all-too-common dilemma of how to develop its economy while, at the same time, curbing environmental degradation and contributing to carbon emissions reduction.

As discussed in Chapter 1, the direct and indirect drivers of deforestation and forest degradation in Myanmar are analyzed separately. The main direct causes of deforestation include: (i) poorly regulated agricultural land expansion; (ii) expansion of mining in forests; (iii) dam construction for hydropower and irrigation; (iv) urban development, settlements and infrastructure; and (v) expansion of aquaculture (fish and shrimp farming).

The main direct drivers of forest degradation consist of: (i) timber harvest (over-exploitation), legal, illegal and legalized (timber laundering); (ii) fuelwood/charcoal extraction/overharvesting, chipping of standing trees (pine forests); (iii) shifting cultivation/pioneering encroachment in forest areas; (iv) overgrazing and browsing by livestock; and (v) forest fires.

These drivers of deforestation and forest degradation occur in the context of: (i) high and increasing demand from national and international markets; (ii) weak or insufficient coordination, both intra- and inter-sectoral; (iii) weak land tenure security; (iv) administrative limitations (budgets, human resources) (v) population growth; and (vi) internal resettlement and migration of displaced people (refugees, conflict areas).

More specifically, indirect causes of deforestation are: (i) increased influx of FDI for agricultural commodities; (ii) lack of comprehensive and participatory land-use planning; and (iii) lack of a comprehensive and consistent land database. Most significant, however, is weak law enforcement and forest governance, including a lack of enforcement for sustainable forest management.

Figure 11 presents both opportunities and challenges for addressing the above-mentioned drivers of deforestation and forest degradation to achieve REDD+ effectiveness in Myanmar.

As shown in Figure 11, there is potential for REDD+ to be further developed and implemented due to a large number of new environmental, climate change and forestry laws and to the existing institutional setting. In particular, in 2016, Myanmar established a new institution to govern development and the environment, namely

Opportunities	Challenges
<ul style="list-style-type: none"> • New Forest Law (2018) • New Biodiversity and Protected Area Law (2018) • Landuse Policy (2016) • Climate Change Policy and Strategic Action Plan (2018) • Logging Ban in Bago Yoma for 10 years • Reduce logging below AAC • REDD+ infrastructure • Forest as a main compinent of INDC/NDC linked to CF • MRRP (2017-18 to 2026-27) • FLEG-T program • New GIS technology for monitoring • Restructured environmental management (MONRFC) and improving coordination through various mechanism (eg. NECCCC and Central Coastal Management Committee) 	<ul style="list-style-type: none"> • Implementation under pressure from economic development, globally nationally and locally • Impact of issues of natural resource governance (weak law enforcement, tenure issues, corruption) • Ethnic conflict • Contradictory policy and weak coordination • No rigorous impact assessment of policies • New methodology is still to be evaluated to ensure reliable data for REDD+, eg. deforestation easy to see but reforestation not so visible • Limited research and capacity to quantify ecosystem services provided by forest (non-carbon benefits) • Limited awareness about REDD+ (also establishment of protected areas)

Figure 11. Opportunities for and challenges to achieving REDD+ effectiveness in Myanmar

MoNREC. To be effective, however, MoNREC needs to be positioned equal to, for example, the ‘China Council’, which has the authority to oversee environment and development issues and enforce environmental policies. In this way, governance might be more aligned to the Convention on Biological Diversity (CBD), the Ramsar Convention (RC), the United Nations Framework Convention on Climate Change (UNFCCC) and to Myanmar’s own special national environmental protection laws and measures that align with these treaties. In addition, the potential for climate change mitigation through the forestry sector is reflected through the National Forestry Master Plan. The commitment of the Government of Myanmar at the international level was also conveyed through its NDC to achieve the target of the Master Plan as the main activity. However, as shown in Chapter 3, implementation of these environmental and zero-deforestation policies are challenged by strong pressure for economic development.

The Government of Myanmar has initiated and developed policies and programs to support economic development, for which natural resources extraction has become an important sector, especially for foreign investment. However, these policies and programs are likely conflicted with the objectives of REDD+, particularly effectiveness, efficiency and equity. Several (or many) policies, regulations, initiatives and programs that were created and (are being) established, in particular to increase the economy of the country, undermine environmental goals (reducing deforestation and

forest degradation). For example, in the period 2010–2013, few concessions on large-scale oriented agriculture (such as oil palm, rubber, maize, sugarcane and jatropha) were able to achieve their intended purpose of developing ‘modern’ agriculture after they received permits. Further, the establishment of mining (particularly gold) may bring associated infrastructure development (such as roads, settlements) that can increase the opening of forest areas. The mining establishment has also increased land grabbing, especially in upland and montane forests (e.g. in Shan State), causing land loss (Andersen 2015). Development of hydropower has also increased clearing of timber, including teak trees for dam sites (Woods 2015). The expansion of aquaculture, either as an alternative livelihood or for tourism, especially in the Delta Region, might inevitably cause the destruction of mangrove forests; however, an assessment of the degree of potential destruction is needed.

Chapter 2 and Chapter 3 also highlight that effective implementation of these policies and programs requires political commitment and actions to address contradictory policies, weak governance, ethnic conflicts, corruption and tenure conflicts. Myanmar has a long tradition of forest management and a historically strong forestry legal framework. However, systematic issues in implementation, enforcement and compliance (RECOFTC 2018) resulted in weak governance in general. **Further, in areas of conflict**, illegal logging is rampant as it provides funds for both sides in the civil conflict in several states (NEPCon, 2013). The size of this unofficial and illegal trade has been

estimated to be as large as the legal trade (Global Witness 2009). Indeed, civil conflicts greatly impact forest governance. Arbitrary taxation and land grabs can lead to open conflict, which in turn undermines the rule of law (RECOFTC 2018). Corruption remains widespread, although it varies significantly between different regions within the country (NEPCon 2013; RECOFTC 2018).

Many policies, significantly those related to land-based investment affecting forests – such as the teak and mining industries and the allotment of wastelands – were made in silos and might have resulted in the policy disharmony, explained in Chapter 4. Moreover, despite the international treaties on environment protection and biodiversity conservation that Myanmar has ratified, enforcement of these provisions is challenging due to the persistent lack of inter-ministerial coordination. Until 2016, there was no ministry that had overall authority over environmental and development issues. Neither were more funds invested to carry out and enforce environmental policies.

Meanwhile, development of plantations for commercial timber and fuelwood remains high on the agenda, even though it is clear that failed plantations have been a major cause of forest loss and degradation (Than 2015), especially in the states and regions that are designated to support this program. Without proper and clear regulations, fuelwood extraction (firewood, charcoal) could be an obstacle to achieving the objectives of REDD+ since the demand for domestic and industrial use is increasing. Focusing on issues of shifting cultivation, a relatively minor issue, rather than on the large-scale drivers of deforestation, will not help REDD+ to be more effective. Providing tenure security, for example through community forestry programs, could increase REDD+ effectiveness since communities that have rights to manage and use forests are incentivized to avoid clearing new land, especially in the montane and hill forests. As all forests are owned by the State, although local communities have the usage rights (extendable lease system), such tenure systems are less likely to recognize customary land tenure. Other issues reducing the effectiveness of REDD+ are: unrestricted fuelwood extraction (firewood, charcoal); increasing the number of livestock without alternative non-forest fodder sources; and the establishment of dams

for hydropower and irrigation. Clearing timber for hydropower development, such as occurred in upriver areas such as Kachin, Shan, and Kayah States, not only reduces forest cover but also affects the livelihoods of local communities (Woods 2015). As mentioned above, the expansion of aquaculture may cause the destruction of mangrove forests, although more research is needed on this.

As written in the Myanmar REDD+ Readiness Roadmap (2013), Myanmar established and developed a national forest monitoring system for REDD+ following UNFCCC guidance and modalities. Through national forest monitoring system/reference emission levels (NFMS/RELS), the Technical Working Group (TWG) was proposed with MoECAF as the national communication ministry, and institutional arrangements were made among relevant institutions and stakeholders (such as MoAI). The NFMS action plan mentioned that the country will provide financial resources, technical and technological support, including capacity building to implement its National Forest Monitoring System for REDD+ activities. Although the institutional and action plan have been set up and developed, national mechanisms or tools are not yet in place to share forest information openly and transparently. Further, forest monitoring activities have not been carried out at the community level, even though there are legal provisions for community forest management in Myanmar. While the NFMS/RELS TWG was designed to assess baseline national technical and institutional arrangements related to forest monitoring and measurement, reporting and verification (M&MRV), it is important to evaluate the baseline with the current situation in the country for the implications of REDD+.

Nevertheless, despite political and geographical constraints, remote sensing and GIS were employed in order to improve the availability and quality of data for forest monitoring. In 1982, the government set up a National Forest Inventory (NFI) to produce forest cover and land-use maps. However, the NFI methodology needed to be redesigned for the assessment of emission factors for the land use, land use-change and forestry (LULUCF) sector GHG inventory using Intergovernmental Panel on Climate Change (IPCC) guidance and guidelines. The FD, as lead institution, designed and developed a

new methodology, together with other involved stakeholders through a series of consultations. The new methodology has yet to be evaluated to ensure reliable data for REDD+. The Forest Law (2016) mentions the FD also has the responsibility to provide necessary assistance and monitoring in support of community forestry. Moreover, the REDD+ Readiness Roadmap has been implemented at the national level since January 2015, with the coordination of UN-REDD agencies (Than et al. 2013). However, in the last 10–15 years, the highest rates of deforestation are occurring in regions where current economic development relies on forest. This makes REDD+ challenging, especially related to negative impacts on people's livelihoods. Thus, further evaluation is needed to assess the achievements of the program and understand the challenges that have occurred and will occur in attempting to meet the 2030 target. Evaluation and decision making also needs to be based on rigorous assessment of policy impacts; however, national technical capacity to quantify ecosystem services benefits and non-carbon benefits are underdeveloped in Myanmar. During a CIFOR consultation workshop on the country profile on 4 March 2019, one government participant highlighted the lack of accurate data on charcoal collection and energy consumption patterns in Myanmar. There are no systematic studies to collect data on energy consumption or charcoal use. Available information only shows household-level data based on production figures. Further, different ministries and agencies report different sets of data; data sharing is not common. At the same workshop, a UN-REDD representative highlighted that the source of fuelwood is unclear, leading to difficulty in identifying the right policies and measures to address drivers of deforestation and forest degradation. To date, according to an UN-REDD interviewee, the program has finished an survey on industrial wood consumption, but there are no available data on domestic consumption. Similarly, there is almost no information on the impacts of infrastructure development on deforestation and forest degradation. Some data are available from an EIA policy report on economic development zones, but there are no data available from non-economic development zones.

The effectiveness of REDD+ in Myanmar also depends on what reference emissions level (REL)

is used. According to a UNDP participant in the consultation workshop, the effectiveness of REDD+ in Myanmar has only been measured since 2016, as the REL provided by government is for 2015. Taking 2015 as a reference level, Myanmar has carried out many policies and measures, such as approval of a logging ban, reducing the allowable cut, release of the CFI and launch of the MRPP – all actions required to implement REDD+. However, further research is needed to indicate the level of emissions that can be reduced from reforestation, a one-year logging ban and reduction in allowable cuts.

In relation to the private sector, recently the Government of Myanmar has begun mainstreaming the production of zero-deforestation commodities, with a focus on increasing productivity rather than expanding forest encroachment, and is inviting more private sector actors such as the Myanmar Rubber Planters and Producers Association and banks for consultation. For example, the government is preparing a proposal to decrease rubber plantation expansion while increasing productivity through the provision of subsidies. These efforts aim to address rubber expansion as a major driver of deforestation.

Chapter 3 discusses mitigation options, although there is no available data or analysis on the feasibility of these options, which might hinder actual implementation. Similarly, Chapter 3 discusses the political economy of deforestation and forest degradation. However, information on the macro-economy and the export-import of commodities identified as drivers of deforestation is not available, leading to difficulties in estimating both the impacts and the effectiveness of current policies and measures.

6.2 Efficiency

Implementation of REDD+ policy in Myanmar requires funding for government and stakeholders to implement the activities described in the REDD+ strategy and to balance the costs and benefits of REDD+ in order to incentivize actors to change business-as-usual practices. Both opportunities for and challenges to ensure REDD+ efficiency are presented in Figure 12.

Efficiency	Challenges
<p>Opportunities</p> <ul style="list-style-type: none"> • Secure REDD+ start-up cost <ul style="list-style-type: none"> • REDD+ program adopted • National REDD+ strategy drafted • National Forest Monitoring System initiated • Forest Reference Emission Level and Forest Reference Level developed, and submitted • Safeguard Information System initiated • Capacity building program (eg. REDD+ Academy) implemented • Consultation with different stakeholders (including line ministries, CSOs, NGOs, EAOs, private sector) • CF programs adopted • MRRP adopted 	<ul style="list-style-type: none"> • No cost-benefit analysis as yet • Benefit-sharing mechanism not ready • Limitation for financial mechanism (eg. how to receive results-based payments, how to distribute/manage them, etc.) • Weak monitoring and evaluation on MRRP including CF • Limited capacity to quantify “emission reductions from forest degradation” • Limited capacity to quantify carbon enhancement of “+” activities (Sustainable management of forest and forest conservation) • Sub-national level implementation • Conflict between ministries over utilization of unclassified land and inefficiency of wood processing industry increase transaction costs • Corruption • Private sector needs different approach compared to government or civil society • Trade-off between national REDD+ (result-based payments) and carbon trading mechanism (eg. Voluntary Carbon Market)

Figure 12. Opportunities for and challenges to achieving REDD+ efficiency in Myanmar

To date, the start-up costs for REDD+ have been secured through support from donors such as the United Nations Programme on Reducing Emissions from Deforestation and Forest Degradation (UN-REDD). These funds have helped Myanmar to initiate REDD+ strategies, a national forest inventory system, a REL and safeguard information system (SIS), and to conduct a large number of consultation workshops on REDD+ strategies. Community forestry and MRRP programs have been adopted, creating enabling conditions for stakeholders across the country to be recognized as legal entities and provide them with opportunities to participate in REDD+.

As discussed in Chapter 3, Myanmar has great potential to contribute to climate change mitigation and can be compensated for its reducing emissions from deforestation and forest degradation. However, interviewees from government agencies interviewed and stakeholders who participated in the workshop asserted that government agencies lack the technical capacity to quantify both emissions reduction from forest degradation and carbon enhancement from sustainable forest management. Moreover, there is a lack of detailed analysis of costs and benefits for each of the policies and measures listed in the REDD+ strategy, as well as of the full costs and benefits of implementing the strategy. There is also no REDD+ benefit-sharing mechanisms established in Myanmar.

In 2012, the FD delivered a document on the status of readiness preparation, in accordance with the components of the REDD+ readiness process. Some weaknesses were identified, among others the establishment of the REDD+ fund and the benefit-sharing system (Oo 2013). For benefit sharing, Oo (2013) suggested exploring lessons learned from community forestry. CF-related activities, such as awareness-raising and capacity-building programs provide benefits to REDD+ forest management by supporting capacity development of local communities in forest management and plantation establishment. However, there was uncertainty among interviewees in one government office about how they should interpret and receive result-based payments.

Although start-up costs for REDD+ have been mostly secured, Chapters 3, 4 and 5 show that transaction costs in implementing REDD+ policies in Myanmar are high due to overlapping mandates among government agencies, widespread corruption, and conflicts over land. Primarily with regard to forest management, forests have been systematically over-logged for decades, as the military government was focused on export-oriented timber exploitation (particularly by favoring specific tree species) (Springate-Baginsky 2015). Unless forest resource extraction-based activities are drastically reduced, funds spent on REDD+ will be wasted. Conflict between MoNREC and the Ministry of Agriculture, Livestock, and Irrigation (MoALI) over the use of

unclassified land, and the inefficiency of the wood processing industry both increase transaction costs that would also affect the efficiency of REDD+.

Moreover, some of the most important policies, such as the Vacant, Fallow and Virgin Land Law and policies on FDI that aim to build the economy not only undermine environmental goals (reducing deforestation and forest degradation) but also favor large-scale operators. Government policies respond more to the high demand of national- and international-based investments for natural resources extraction rather than considerations for overall sustainability or even feasibility. Further, the establishment of mining (particularly gold) may bring associated infrastructure development (such as roads and settlements). However, it may also increase land grabbing (e.g. in Shan State), causing land loss and heavy pollution (Andersen 2015), especially in upland and montane forests (although it is still unclear the degree to which these have resulted in exploration or concessions being granted). Demand for specific timber species, such as rosewood and teak, influences the composition of forest cover at a national scale; however, further forest inventory data are needed because Landsat images cannot identify the full extent of forest degradation (Treue et al. 2016).

There is clearly a need for the Government of Myanmar to weigh the trade-offs between economic development goals and REDD+ objectives carefully for environmental sustainability outcomes. The government is requesting further information and analysis on comparative potential between the voluntary carbon market and a compulsory market. The transaction costs of REDD+ and/or community forestry should be carried out as inputs for policy makers. Finally, although quantification of “+” activities (e.g. carbon sequestration of MRRP and non-carbon benefits) is on the political agenda, government agencies are still uncertain about how to carry out these tasks.

6.3 Equity

Figure 13 shows both opportunities and challenges for Myanmar to obtain equitable REDD+ implementation. The Government of Myanmar is working toward this through the establishment

of SIS and FPIC standards, as well as a grievance handling system for ethnic peoples.

The Ethnic Rights Protection Law (2015) mentions that all development projects, extraction of natural resources, and business affairs to be implemented in the regions of ethnic groups, require the FPIC of the local ethnic communities. The Law also mentions a grievance mechanism for ethnic groups at regional and national levels. The MoECAF (now MoNREC) has demonstrated a willingness to recognize the rights of ethnic minority groups and local communities, e.g. through FPIC or community forestry. While there is commitment in Myanmar to the application of FPIC, the implementation of this in practice remains unclear. Concerns were raised that, should FPIC be conducted too early in the process, communities would lack sufficient capacity to make informed decisions. There are a number of detailed guidelines for conducting FPIC (UN-REDD 2013). REDD+ needs to ensure that gender equality and respect of indigenous peoples’ rights are included in REDD+ readiness activities and in future implementation. However, experience in both of these aspects, in particular forest resource management, is still nascent (UN-REDD 2013).

Moreover, development of the REDD+ Readiness Roadmap involved five levels of multi-stakeholder consultation. For example, reviews and validation of national FPIC guidelines were carried out during the fifth level of consultation (national consultation process) through a national consultation workshop, regional consultation workshops and a final validation workshop (UN-REDD 2013). These consultation mechanisms showed that Myanmar has started to involve many related stakeholders in decision-making processes. However, clear information on the extent and results of involvement from stakeholders is needed to assess the effectiveness and efficiency of these processes.

Another important challenge to implementation of the policies is limited access to land by local communities. All land is owned by the State, although communities are allowed usage rights via leases. While a strong central government might result in effective implementation of a policy such as REDD+, the limited access to land might lead to encroachment and/or reclaiming of forest land.

Figure 13. Opportunities for and challenges to achieving equitable REDD+ implementation in Myanmar

Community forestry is adopted as one strategy to implement REDD+ and has potential to address the problem. The CFI, as the legal basis for the CF, grants local communities use and management rights to land for up to 30 years, which is extendable. In support of CF, the 1992 Forest Law is being revised, creating more enabling conditions for CF. The new Law will allow extraction of forest products from community forests and creates spaces for the private sector to become involved in plantation establishment and timber trading. However, as explained above, communities remain at a disadvantage, because the need to attract more investment means that private sector actors may be given more opportunities to use land. This will likely compromise the effectiveness and equity of REDD+. Thus, clear policies that would ensure community rights to land are crucial, as one of the main outcomes of the CFI is to increase ecosystem services by reducing deforestation and forest degradation. The CFI includes provisions to recognize the customary rights and use rights of local communities, thereby installing a sense of ownership, legal security and incentives for increased participation. Community forestry thus complements the social safeguard development of the REDD+ program.

The government has also been trying to enhance local people's welfare through ensuring 100% of the population has access to electricity by 2030. To achieve this target, the government has initiated the construction of dams for hydropower. However, large-scale dam construction could potentially hinder the implementation of REDD+. Not only does it require the destruction of large areas to build the dams (effectiveness), but also needs to relocate local communities living in the surrounding area, which is not easy in terms

of their willingness (equity) since they have to abandon their village and start from the beginning again (efficiency). Without appropriate investment planning from the government, it will likely lead to more conflict.

As Chapters 3 and 4 have shown, poverty and job scarcity in rural areas would affect the equity aspect of REDD+, as would the various kinds of corruption related to timber production and commercialization, leading to inequitable benefit sharing from timber harvesting and forest management. As all forests are owned by the State, although local communities have use rights (extendable lease system), recognition of customary land tenure remains a core issue in the country (Ferguson 2014). Overall, land policies in Myanmar do not promote equity. The CFIs are an attempt to improve equity, forest management and well-being. The main constraint to community forestry is lack of access to the latest developments in the concepts and directions of the CFIs and restoration techniques by rural communities. People who practice swidden cultivation in the uplands have less access to the latest technology and assistance, due to the remoteness of their villages (Richards and Friess 2016). Thus, more dialogue is needed among stakeholders, including guidance from the government on how to deal with shifting cultivation in the REDD+ context. For example, taking into account ethnic minorities in the implementation of REDD+ could reduce risks of the displacement of emissions by shifting cultivation.

In conclusion, Myanmar stands at the crossroads of economic development and conservation. This resource-rich country is attracting foreign investment from neighboring and Western

countries. At the same time, Myanmar has adopted the global trajectories of sustainable development, which include efforts to mitigate climate change. Thus, Myanmar faces the all-too-common dilemma of how to develop its economy while at the same time curbing environmental degradation and contributing to carbon emissions reduction. Myanmar has great potential to implement REDD+, and is actively engaging with actors in

the international arena and refining its policies and practices for REDD+. However, implementing REDD+ requires political commitment to address direct and indirect drivers of deforestation, an adequate funding mechanism that is based on thoroughly analyzed costs and benefits, a transparent and equitable benefit-sharing mechanism, and a participatory decision-making approach in which all stakeholders can take part in REDD+.

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The Republic of the Union of Myanmar is a forest resource-rich country, but is also facing serious deforestation and forest degradation problems. Currently, Myanmar's forest still covers more than 40% of the country's land area (Aung (2001) but 70% of its population live in rural areas, and the agricultural sector is the main contributor to the country's gross domestic product (GDP) (30%) (World Bank 2014). The country faces the all-too-common dilemma of how to develop its economy while at the same time curbing environmental degradation and contributing to carbon emissions reduction. In 2013, Myanmar adopted a REDD+ program and started its preparatory phase. Myanmar established and developed its National Forest Monitoring System (NFMS) and Reference Emission Levels (RELs) for REDD+ following the guidance and modalities set out by the United Nations Framework Convention on Climate Change (UNFCCC). Implementing REDD+ requires political commitment to address direct and indirect drivers of deforestation, an adequate funding mechanism that is based on a thorough analysis of all costs and benefits, a transparent and equitable benefit-sharing mechanism, and a participatory decision-making approach in which all stakeholders can take part in REDD+. The Global Comparative Study on REDD+, together with its country partners, is compiling profiles of 14 countries to better understand the socioeconomic contexts in which REDD+ policies and processes emerge.

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