Drivers of

Deforestation

in Southeastern Myanmar

Briefing

November 2019

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Table of Contents

Introduction

The southeast of Myanmar is home to remaining charismatic megafauna and some of mainland Southeast Asia's most expansive and intact forests. But this valuable biodiverse region is also under renewed threats from a decade of ceasefire. The Karen National Union (KNU), who is a prominent ethnic armed organization (EAO) in the southeast, signed a ceasefire in 2012 and led the Nationwide Ceasefire Accord (NCA) signatory block since 2015. Despite the fragility of the bilateral ceasefire and a stalled peace process, domestic and foreign investors and some authorities still find plenty of economic opportunities. Economic investment in the region presents growing pressures on forests and related natural resources as well as on those communities whose livelihood depends on these forested landscapes, risking to further undermine peace and security. KNU administered territory contains some of the most endangered and largest remaining natural forest in Myanmar, thereby presenting both challenges and opportunities to improved forest governance that can offer renewed pathways to peacebuilding.
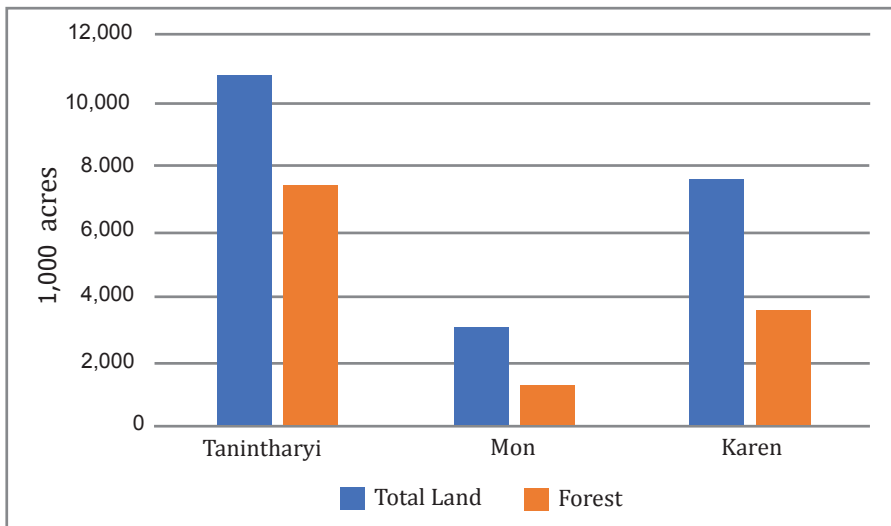
Emerging new drivers of deforestation in the southeast deserve much more careful study and consideration in the research and policy arena, especially because of its climate change vulnerability and importance to Myanmar and the wider region's ecological stability. Based on the literature review and analysis presented here, this policy brief identifies several key drivers of deforestation in the southeast region and specific to Karen State: the expansion of agribusiness and commercial smallholder plantations and the targeting of VFV land, mining, large-scale hydropower dams, and infrastructure development.

Background

Myanmar had the third largest forest loss by area in the world between 2010 and 2015, losing 1.35 million acres per year between 2010 and 2015 – a 1.7% annual rate of loss (FAO 2015a), with more than 1.3 million acres of forest lost each year since 2010 (FAO, 2015b). Over the period 2002-2014, Myanmar lost a total of 5.12 million acres or 11.3% of its intact forest. Approximately two thirds of this was lost from non-reserved forest areas (Treue et. al. 2016:4).

These data illustrate a significant loss of closed forests, while open forests saw a slight increase, and 'other lands' correspondingly increased dramatically. The conversion of forests to other uses over the past two decades is of growing concern. Conversion of these forests and their degradation requires further investigation as to the specific drivers causing this conversion (Kissinger 2017:35).

By 2010, about two-thirds of Tanintharyi region and nearly half of Karen State were still covered with forests, as shown below in **Figure 1**. Now nearly a decade later, these trends are expected to have accelerated, especially with increased pressures from development during ceasefire.

Source:MIMU and PSF (2016)

Figure 1. Land area and forest cover in southeast Myanmar, 2010.

Nearly 40% of Karen State is covered by forest, with over 1.11 million acres of reserved forest, and 1.10 million acres of protected public forest (PPF), for a total of 2.22 million acres of forest under protected state forest status that extend across 86 reserved forests. This does not include KNU's own protected forests, which in part overlap with the government's own demarcation.

According to remote sensing analysis presented by Treue et al. (2016), Karen State recorded a forest loss of 2.8% between 2005-2015, the 8th highest in the nation. According to recent forest cover change analysis conducted by Tun Tun Thein (2019), in Karen State between 2010-2018 there was found to be a 5% loss in forest cover, whereas there was a 3% increase in highly degraded (sparse tree/open forest land) forest during the same period. When looking at forest cover change within each KNU district, the highest rate of forest loss was found in Dooplaya District. Clusters of new non-forest have been found on the border between Karen State and Thailand close to the main road connecting trade and migration between the two countries (Treue et al. 2016:4).
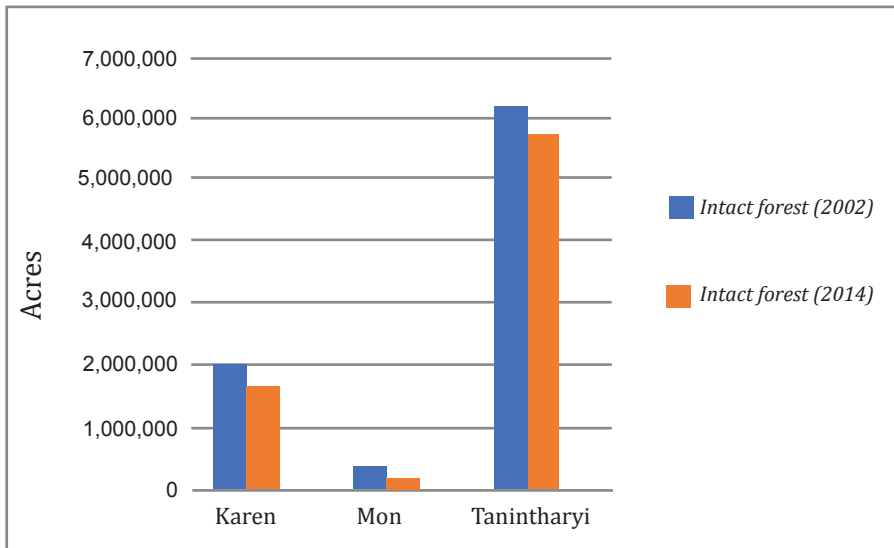
Drivers of Deforestation and Forest Degradation

Industrial Agricultural plantations

Agribusiness expansion is identified as a major driver of forest conversion and the production of conversion timber (Woods 2015). The commercialization of agriculture and the potential to develop land marked as vacant, fallow and virgin (VFV) lands and "other woodlands" puts significant pressure on remaining intact forests. Clearings for agriculture throughout Myanmar have occurred in PFE and outside of it, although there are differences of opinion as to the relative depletions from each category (Kissinger 2017:44). Treue et al. (2016) found that in the country as a whole, agricultural expansion increased non-forest lands by 2.44 million acres. The establishment of 1.32 million acres of agricultural plantations have been found to be the biggest cause of deforestation in the country during 2002-2014. "Unclassified forests", with typically less substantial tree cover, appear to be most vulnerable to being converted to agribusiness concessions (Woods 2015). Agribusiness and expanding smallholder agricultural production
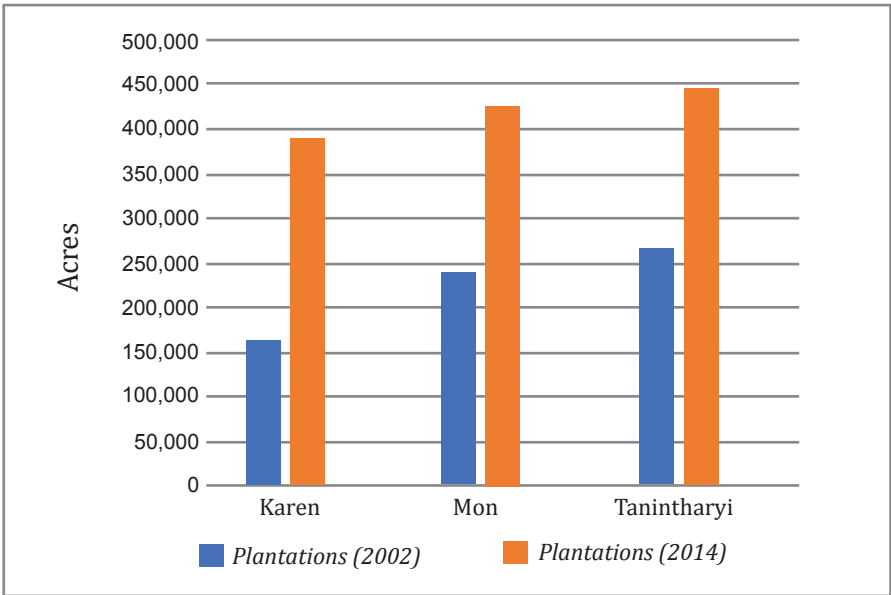
is expected to be an even more significant driver of deforestation in the coming years, especially with the increased connectivity to markets in Myanmar and across the border with Thailand (Kissinger 2017). For example, 50% of respondents to a Karen State investment survey cited agriculture as the investment sector that offers promise in the state, the top selection among participants (DICA 2017:77).

Bhagwat et al. (2017) conducted a remote sensing study examining drivers of deforestation, where **Figure 2** and **Figure 3** below show the change in intact forest cover between 2002 and 2014 as well as that for expanded plantations in Karen State, Mon State and Tanintharyi Region. While these data do not show the direct relationship between expanded plantation area and loss of intact forest, it can be implied.

Source:Bhagwat et al (2017)

Figure 2. Change of intact forest areas between 2002 and 2014 for southeast Myanmar.

Source:Bhagwat et al (2017)

Figure 3. Change in area of plantations between 2002 and 2014 for southeast Myanmar.

Karen State has 3.1 million acres of VFV land ("virgin land" plus "woodland") recorded, 35,000 acres of which have been allocated for agribusiness deals (but only 45% of which have been planted), leaving over 3 million acres of available VFV land (and woodland) available for private agricultural development. This remaining VFV land is expected to be increasingly targeted for agribusiness development. In Karen State, paddy is the most prevalent crop, but the second most commonly grown crop is maize, with over 51,000 acres cultivated in 2016/17 (DALMS 2017).

Rubber

The rubber economy acts as a primary driver of deforestation, although further research is needed to better understand more current trends since the rubber market crash in 2008. The southeast is the main rubber growing area of the country: Mon State, Karen State and Tanintharyi Region accounted for 87% of the country's harvested productive rubber area in 2014-2015. While more of the rubber expansion in the country this past

decade has been in the north (Kachin and Shan States), the planted area in the southeast nonetheless still doubled over the same period.

Rubber expansion in many of these areas has resulted in deforestation (Republic of the Union of Myanmar 2015, Kissinger 2017:112). However, as a woody biomass crop, rubber plantations on degraded land could increase carbon stocks and increase forest cover since rubber trees count as tree cover, even though they do not perform much in the way of ecological services, wildlife habitat, or non-timber forest products (NTFPs) that communities rely upon for food, fuelwood and herbal medicine.

Rubber is by far the most prevalent perennial crop in Karen State, totaling over 250,000 acres concentrated in Hpa'an and Kawkareik Districts. Rubber is mostly established in Kawkareik District (152,000 acres), with a further 103,000 acres grown in Hpa'an District, for a total of more than 260,000 acres. In 2016, two Singapore-based companies invested in technical support for improving the rubber sector in Karen State (DICA 2017:10).

Karen State has a total area of 20,194 acres while Mon State has 59,504 acres of approved land conversion from forest land to rubber plantation as of 2012. Permitted areas per case totaled 98 acres per land allocation in Karen State, and only 8.1 acres per land allocation in Mon State (JICA 2013). This difference in size per land allocation is due to nearly exclusively smallholder rubber plantations in Mon State, whereas both smallholder plots and large-scale rubber concessions in Karen State.

Mining

The most relevant source of information on mining impacts on forests in Myanmar was recently completed by ALARM, providing the first publicly-available, nation-wide inventory of existing and potential mining sites in Myanmar. In a study published by Connette et al. (2016) using ALARM's data set, researchers identified a total of 113,600 acres of mining areas, of which 32% was newly disturbed bare ground where the vegetation had been removed since 2002. The assessment identified an additional 91,400 acres of land that is highly likely to be mining, based on bare ground characteristics, but would require further ground-truthing to verify these. However, the ALARM mining study did not give spatial analysis in relation to whether the mines were located in or outside protected forests.

According to current Union legislation, reserved forest areas need to be degazatted first if mining activities are going to be legally conducted. According to Enters (2017), most mining occurs on forestland, but outside forest reserves and protected areas. Mine establishment also brings associated infrastructure development, such as roads and settlement to the area, in addition to migrant populations, thereby contributing additional impacts of mines on forests (Enters, 2017:11). Further analysis should be carried out to better estimate the extent of forest loss and degradation caused by mineral extraction.

According to the ALARM study, a total of about 3,000 mines were identified in Karen State, Mon State and Tanintharyi Region, but directly affected only 7,700 acres of land (Connette et al. 2016). However, the southeast is not an important mining area of the country, as it only represents just under 4% of the country's total mining area (Enters 2017:12). Of the 63 mineral commodities known to be available in Myanmar, 22 are found in Karen State. Nonetheless, Karen State may be a more upcoming mining hotspot in the country, with 164 mining permits officially granted so far (DICA 2017:40). The most commonly mined minerals in different areas of Karen State include antimony ore (Makatha, Tha Pyu, Kyeik, Pahyarthonezu sub-township, and Kyarinseikkyi Township), gypsum (Hlaingbwe Township), and limestone (mainluy in Myaing Kalay area), granite (Tandaunggyi Township), as well as coal, tin-tungsten and zinc (DICA 2017:15-16).

Hydropower Dams

Hydropower development impacts forests in a variety of ways, including through reservoir flooding, river diversion, facility development, associated access roads and infrastructure, as well as from transmission corridors and access roads to transmit power to markets. Planned and pending hydropower projects will flood areas, and the associated deforestation impacts would depend on each project's design. According to the World Bank's International Finance Corporation (IFC), the inundated (or flooded) area of existing and under construction reservoirs is 343,500 acres, with most reservoirs being located in the Ayeyarwady and Sittaung Basins. Future planned projects would add another 623,400 acres, which are mainly in the Ayeyarwady and Thanlwin (Salween) Basins, the latter of which encompasses the southeast (IFC, MOEE and MONREC 2017).

The area of water bodies has grown mostly within reserved forests and PPFs, increasing 62% between 2002 and 2014, amounting to an increase of 335,600 acres (Treue et al. 2016), suggesting that hydropower development has overwhelmingly occurred within protected state forest areas (Kissinger 2017:54). Woods (2015a) identified that between 2011 and 2012, 110,777 m^3 of timber was cleared for hydropower development (along for roads and mines).

The Thanlwin River Basin has attracted a lot of interest from the hydropower sector for the past two decades, all the more so since KNU's ceasefire. 2,500 acres have become inundated or will be inundated from current construction from 6 hydropower plants that are already existing or under construction. An additional 268,850 acres is planned for inundation from 15 planned dams, including the Weigyi, Hatgyi, and Dagwin dams on the Thanlwin River (IFC, MOEE and MONREC 2017). If these take place, Karen State would incur serious forest loss from the hydropower sector, in addition to further deforestation and forest degradation from associated roads, transmission lines, and migrants, among other impacts.

Physical Infrastructure

There are no figures available in Myanmar for linking deforestation and forest degradation with infrastructure development, such as roads, bridges, energy transmission, and special economic zones (SEZs). However, the spatial location of infrastructure development, which to some degree is available, gives an indication of the degree to which physical infrastructure development acts as a direct and indirect driver of deforestation and forest degradation.

The ADB-funded East-West Economic Corridor (EWEC), also known as the Asian Highway, is a 103-mile long stretch that passes through Karen State, starting at Donthami Bridge on the border between Mon State and Karen State, traveling across Kawkareik Township and ending in Myawaddy Township as it passes over the Moei River through Mae Sot, Thailand. There are government plans to upgrade and extend township-to-township roads in Karen State as well, totaling almost 1,000 miles (DICA 2017:20). Following the first Myanmar-Thailand friendship bridge built in 1997 linking Karen State's Myawaddy town with Thailand's Mae

Sot across the Moei River, a second bridge has been under construction in order to further transport and trade between Thailand and Myanmar. The East-West Economic Corridor (EWEC) is a key road network with the Greater Mekong Sub-region (GMS), and parts of the corridor pass through and connect to Karen State. Two different road complexes are being built in Karen State with ADB funding, and is expected to be completed at the end of 2019.

Relatedly, road development in Karen State has been shown to contribute to armed conflict by facilitating the movement of Tatmadaw troops and their military and territorial expansion of power, as well as increased competition among armed actors to tax and trade along the transportation routes (Jolliffe 2016:56).

Considerations for Stakeholders

This report demonstrates how the increasing pressures on Myanmar's forests is expected to grow in the coming years as the country's economy further expands and globalizes. The major drivers that have been identified in this report are agribusiness and commercial smallholder agriculture and the targeting of VFV land, mining, large-scale hydropower, and infrastructure development. These multiple identified individual drivers also intersect and overlap with each other, with their impacts cumulative over time. Therefore, it is necessary to not just better understand each individual driver, but also to further study and address how they interact and cumulatively impact forests and forest-based tenure security rights and livelihoods.

In addition to the expanding investment targeting the south and southeast, the ongoing armed conflict also must be carefully considered and integrated in the analysis and mitigation of these drivers of deforestation. So far nearly all policy documents, research analysis, and mitigation measures regarding deforestation and forest degradation in Myanmar have ignored armed conflict dynamics, a serious shortcoming given that most of the country's remaining natural forests are located in ethnic armed conflict territories (Woods 2019).

To the Union Government

- Follow and uphold Union laws and policies in government jurisdictions related to the environmental protection, mitigation of environmental impacts, and tenure security rights.

- Follow and uphold the NCA principles related to EAO jurisdictions and cooperation on environmental matters.

- Streamline government's international commitments to forest conservation with development initiatives.

- Forbid any development projects that will significantly adversely affect forest resources and result in forest conversion.

To the KNU

- Follow and uphold KNU policies related to environmental protection, mitigation of environmental impacts, and tenure security rights.

- Promote the implementation of NCA principles related to EAO jurisdictions and cooperation on environmental matters.

- Pressure the government to follow their international commitments to forest conservation.

- Forbid any development projects in KNU jurisdictions that will significantly adversely affect forest resources, forest conversion or tenure security.

To the International Donor Community

- Withhold funding for any development projects that could significantly adversely affect the environment, forest resources and tenure rights and security.

- Support KNU-led initiatives on community-led forest conservation.

- Support more research and analysis on drivers of deforestation and forest degradation, specifically for the commercialization of agriculture, mining, hydropower dams, and infrastructure development.

- Better ensure that the national peace process addresses the good governance of natural resources.

Works Cited

- Bhagwat T, Hess A, Horning N, Khaing T, Thein ZM, Aung K.M. K.H., Phyo, P., Tun, Y.L., Oo, A.H., Neil, A., Thu, W.M., Songer, M., Connette, K.L., Bernd, A., Connette, G., and P. Leimgruber. 2017. "Losing a jewel: Rapid declines in Myanmar's intact forests from 2002-2014." PLoS ONE, 12(5): e0176364.
- Connette, K.L., A. Bernd, Zaw Min Thein, Paing Phyo, Ye Lin Tun, Kyaw Htet Aung, N. Horning and G. Connette. 2016. Mining in Myanmar: Remote sensing of mining change between 2002 and 2015. ALARM/Eco-Dev, Yangon, Myanmar.
- Department of Agricultural Land Management and Statistics (DALMS). 2017. List of Land Transactions on VFV Land in the Union of Myanmar from 1991 to December 2016.
- Ministry of Agriculture, Livestock and Irrigation (MOALI), Naypyitaw. Directorate of Investment and Company Administration (DICA). 2017. Karen State: Investment opportunity survey report. Ministry of Planning and Finance, DICA, Yangon, Myanmar.
- Enters, T. 2017. Drivers of deforestation and forest degradation in Myanmar. UN-REDD Programme, Myanmar.
- Food and Agriculture Organization (FAO). 2015(a). Global Teak Trade in the aftermath of Myanmar's Log Export Ban. Planted Forests and Trees Working Paper FP/49/E, by Kollert, W. and P.J. Walotek, Rome, Italy.
- FAO. 2015(a). Global Forest Resources Assessment 2015: How are the world's forests changing? FAO, Rome.
- IFC, MOEE and MONREC. 2017. Strategic Environmental Assessment of the Myanmar Hydropower Sector. Washington, D.C.
- Japan International Cooperation Agency (JICA). 2013. Preparatory Survey for Integrated Regional Development for Ethnic Minorities in the South-East Myanmar. Ministry of Border Affairs, Naypyitaw.
- Jolliffe, K. 2016. Ceasefires, Governance and Development: The Karen National Union in times of change. The Asia Foundation, Yangon, Myanmar.
- Kissinger, G. 2017. Background Report for Identifying the Drivers of Deforestation and Forest Degradation in Myanmar. UN-REDD Programme and MONREC, Naypyitaw, Myanmar.
- Treue, T., Springate-Baginski, O. and Kyaw Htun. 2016. Legally and Illegally Logged out: Extent and drivers of deforestation and forest degradation in Myanmar. Yangon, Myanmar.
- Tun Tun Thein. 2019. Forest Cover Change Analysis in Karen State and 3D Mapping of Community Forests. Sone Sie, Yangon, Myanmar. Unpublished.
- Woods, K. 2015. Commercial Agriculture Expansion in Myanmar: Links to deforestation, conversion timber, and land conflicts. Forest Trends, Washington, D.C.
- Woods, K. 2019. Natural Resource Governance Reform in the Peace Process in Myanmar. Forest Trends, Washington DC.