Development of Timber and Oil Palm Industries in Southeast Asia and International Policy for Tropical Forest Conservation

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Dr. SAMEJIMA Hiromitsu mainly conducted research on the sustainable management of tropical forests at Kyoto University after obtaining his Ph.D. in 2005. Since moving to IGES in 2015, he has been researching REDD+, illegal logging, and the deforestation risk caused by agricultural crops.

ABSTRACT

Southeast Asia is home to one of the three major tropical forests in the world, and the region boasts valuable biodiversity. However, these tropical ecosystems have faced degradation and decline mainly due to commercial timber production in the late 20th century and the expansion of oil palm cultivation in the 21st century.

The rapid increase in commercial timber production after World War II, particularly in the Philippines, Indonesia, and Malaysia, was primarily fueled by imports from Japan. Although selective logging methods were adopted, they often caused irreparable damage to forest ecosystems and local communities. This problem was further exacerbated by the rapid increase in illegal logging during the political and economic crisis era in Indonesia around 2000. In response, timber-importing countries, including Europe, the United States, and Japan, introduced policies restricting imports of illegally logged timber. At the same time, timber-producing countries also introduced measures such as timber legality assurance systems and mandatory forest certification. Meanwhile, in regions such as Vietnam and Java, smallholders have cultivated fast-growing trees, which have become an integral part of the timber supply chain.

In Malaysia and Indonesia, the expansion of oil palm cultivation has been a significant factor in deforestation in these decades, often resulting in land conflicts with local communities. It should be noted, however, that not all oil palm plantations were established by destroying natural forests, and many suffer from low productivity. In addition, an increasing number of small-scale farmers are turning to oil palm cultivation as their main source of livelihood. Along with cattle and soybean cultivation, oil palm is a significant contributor to deforestation and a primary target of the EU Deforestation Regulation (EUDR) introduced this year. Some Japanese companies have also voluntarily engaged in sustainable sourcing. Nevertheless, the due diligence requirements imposed by the EUDR and similar initiatives have been criticized for having a negative impact on small farmers with complex supply chains. Given this situation, stakeholders advocating sustainable sourcing in consuming countries should aim to create supply chains that not only promote due diligence but also contribute to the sustainable development of local communities in the producing countries.

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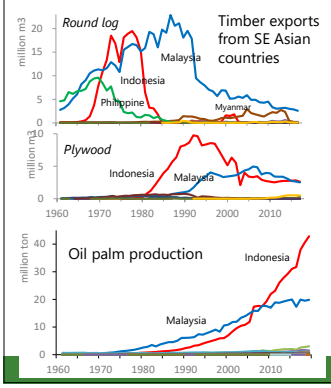
Primary forest
2014 East Kalimantan

- Southeast Asia is one of the three major regions in the world covered by tropical forests with rich biodiversity
- The forests have provided various ecosystem services to local and global societies

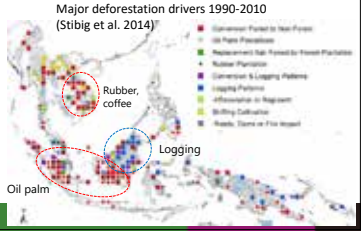


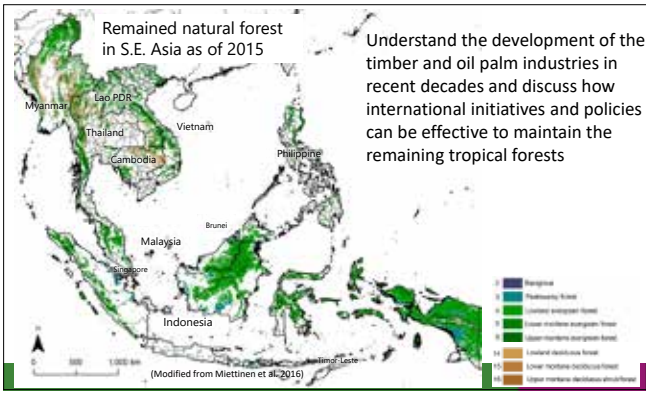
Timber exports from SE Asian countries

However, the tropical forests have faced degradation and decline mainly due to,

- **Commercial timber production** in the late 20th century →exported to Japan, etc.
- Expansion of **oil palm** cultivation in the 21st century →exported to India, China, EU, etc.

Major deforestation drivers 1990-2010
(Stibig et al. 2014)





Remained natural forest in S.E. Asia as of 2015
(Modified from Miettinen et al. 2016)

Understand the development of the timber and oil palm industries in recent decades and discuss how international initiatives and policies can be effective to maintain the remaining tropical forests

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Sarawak

Commercial logging

- Vast areas of the natural forests in the region are state-owned and managed by licensed concession holders
- Selective logging methods (harvested only with a diameter >60 -45cm) were adopted, but often caused irreparable damage to forest ecosystems and local communities.
- During the political and economic crisis era in Indonesia around 2000, forest degradation was further accelerated by widespread illegal logging.


Forest after "selective logging"
2000 Sarawak


Degraded forest after repeated commercial loggings
Sarawak

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Development of sustainable forest management practices for logging concessions and the promotion with third-party verification (Forest Certification) since 1990s

International interest in tropical forest destruction (Sarawak, Amazon etc.) during 1980-90s

1993 FSC established
1999 PEFC established
} Voluntary initiatives
2002 PHPL introduced -> 2009 mandatory (Indonesia)
2017 Obligation to obtain forest certification in Sarawak (by 2024)

Whole area resource survey

Calculation of Annual Allowable Cut

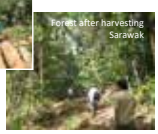
Long-term management plan

Annual harvesting plan

All trees to be harvested are mapped before harvesting

Reduced Impact Logging (RIL)

Minimize collateral damage to non-target trees during harvesting



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Timber importing countries have introduced regulations to control illegally harvested timber since 2000s

Illegal logging after the Asian Financial Crisis 1997 (Indonesia), etc

EU	Timber Regulation (2010)
	Deforestation Regulation (2023)
USA	Revision of Lacey Act (2008)
Australia	Illegal Logging Prohibition Act (2012)
Japan	Revision of Act on Promoting Green Procurement (2006)
	Clean Wood Act (2016, revised in 2023)
S. Korea	Act on the Sustainable Use of Timbers (2017)
China	Revision of Forest Act (2019)

Most of these regulations require their timber importers to conduct **Due Diligence** checks on the legality of harvest

Illegal logging?

Forest owners Concession license holders → Distributors Processors → Exporter → Importers

Some timber exporting countries (e.g. Indonesia, Malaysia, Vietnam) established **Timber Legality Assurance Systems** to link legality information

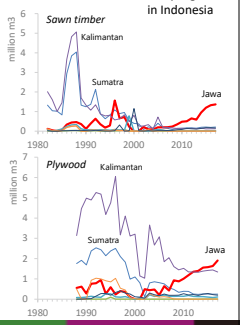
Growth of small-holders tree farming

Density of tree farming small-holders in Indonesia

Sumatra Kalimantan Jawa

Expanding cultivation of fast-growing trees for building materials (e.g. falcata) in Java has changed major production areas of timber products in Indonesia

Production by region in Indonesia

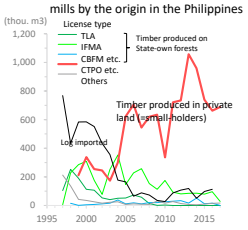



Planted falcata East Java

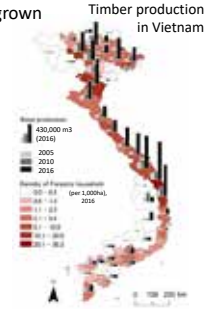

Sawmill and veneer factories in villages

Small-holder tree farming has grown in several regions of SE Asia

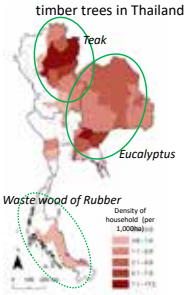
Volume of round logs delivered to timber mills by the origin in the Philippines



Timber production in Vietnam



Households cultivating timber trees in Thailand



Small-holder tree farming is suitable for protecting the remaining natural forests and for social welfare. However, supporting it by forest certification and Due Diligence of timber legality is not easy.


Sarawak


2023 Central Kalimantan

Oil palm

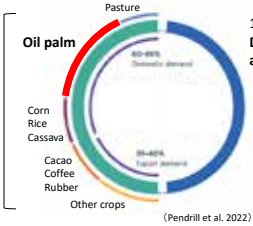
- Palm oil is the most consumed vegetable oil in the world (35% in 2022).
- The high productivity and low cost contribute to global food security
- However, the development of oil palm plantations has caused severe deforestation and land grabbing from local communities in Indonesia and Malaysia


2016 East Kalimantan
Oil palm plantation developed by clearing natural forest

- **Oil palm is the largest deforestation driver** in South & SE Asia.
- However, **there are also vast areas of land deforested for agricultural development but not yet in production**.

Deforestation area in South & SE Asia during 2011-2015

>1.1 M ha/year Deforestation Resulted in agriculture production

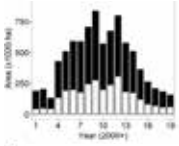


1.1-1.2 M ha/year
Deforestation without expansion of agricultural production

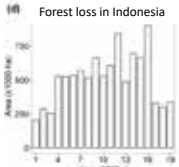
- Unrecorded agriculture area and production
- Crop booms and bursts
- Land speculation
- Low suitability land or inadequate management
- Unclear or contested land tenure
- Fire spreading from forest clearing and land management

(Pendrill et al. 2022)

Annual oil palm expansion in Indonesia



Forest loss in Indonesia



(Gaveau et al. 2022)

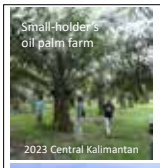
- The expansion of oil palm has been Indonesia's **most significant deforestation driver** in the past 20+ years.
- However, the **plantations were not always developed with deforestation**.
  - ➢ One-third of the deforested area was converted into oil palm plantations (industrial plantations + small-holders)
  - ➢ The expansion and deforestation peaked in the late 2000s and early 2010s (more than 500,000 ha per year)
  - ➢ However, **the area of new plantations developed from non-forests was larger than the area from forests through the time**

➔ Improving land use efficiency is important to increase oil palm production without deforestation

Expansion of oil palm farming by smallholders

- Oil palm cultivation started with industrial plantations and has caused negative impacts on local communities in various places in SE Asia
- However, small-holders started to cultivate oil palm by themselves

Drastic transition of major livelihood from land-rice farming (+ rubber and pepper) to oil palm farming in rural areas of Borneo



Collectors of the fruits

- Oil palm farming by small-holders has grown (about 25% of the total planted area in SE Asia in 2019*) with flexible networks of fruit collectors and **contributed to the well-being of communities**
- However, the expansion sometimes causes deforestation.

*: Calculated from Descals et al. 2021

Deforestation by agriculture commodities in tropical regions

- Voluntary initiative by private companies in importing countries (e.g. using RSPO)
- Governments pledged to end deforestation by 2030
  - 2014 New York Declaration on Forests
  - 2021 Glasgow Leaders' Declaration on Forests and Land Use

2023 EU Deforestation Regulation (EUDR)

- Prohibit to place six forest-risk commodities (cattle, cocoa, coffee, oil palm, soya, and wood) derived from **illegal production** and/or **deforestation from 2021** onward from being placed on the EU market.
- Obligate all the importers to submit a Due Diligence Statement, including **geolocation coordination** of the production sites

Nevertheless, the DD requirements have been criticized that they could negatively impact the small-holders with complex supply chains

Conclusion

- Timber and oil palm have been major deforestation drivers in SE Asia in these decades
- Timber
  - Sustainable forest management has been promoted to reduce the negative impacts of logging
  - Timber production by small-holders is partially replacing timber production from large companies concessions
- Oil palm
  - Land use efficiency is important to enable palm oil production without deforestation.
  - Small-holder farming of oil palm can contribute to the well-being of the local communities
- Initiatives in consuming countries for forest conservation in the producing countries can only be effective by considering the sustainable development of the local communities.