



Landscapes, Livelihoods & Smallholder Welfare

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Welcome to Asian School of the Environment

The Asian School of the Environment (ASE) at NTU is an interdisciplinary School that will be a world leader in environmental research focused on Asian environmental challenges. The ASE integrates earth and environmental life science, ecology, engineering and technology, human ecology, humanities, and the social sciences to address key issues of the environment and sustainability. The School offers a Ph.D. in Earth Sciences, a Bachelor of Science degree in Environmental Earth Systems Science, a Bachelor of Science degree in Environmental Earth Systems Science and Public Policy and Global Affairs and a minor open to all students at NTU in Environmental Sustainability.



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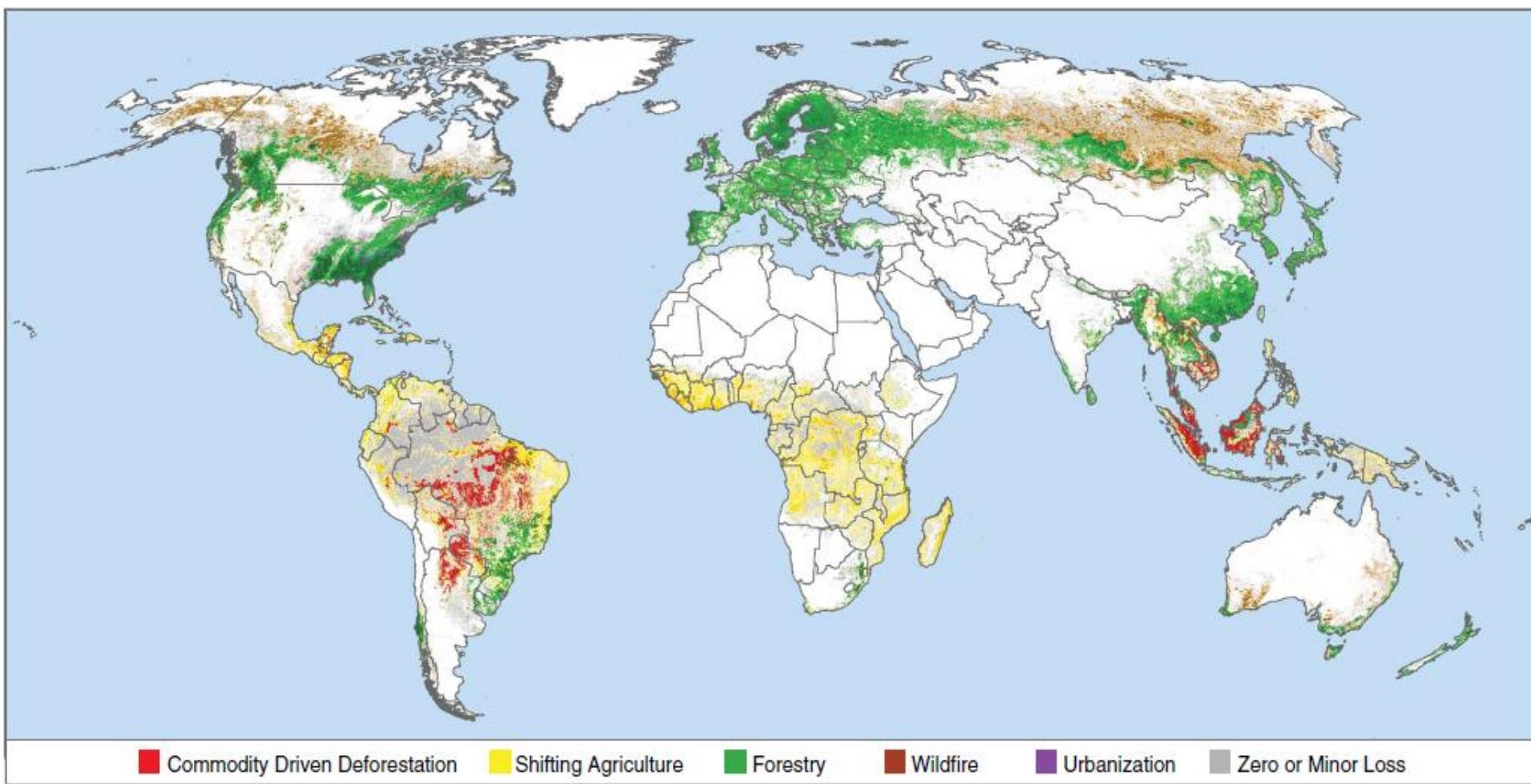


To celebrate the end of the semester and to encourage ASE students to study hard for the upcoming exams, ASE club held an Exam Welfare Pack (EWP) giveaway on 18th April 2018! The students were



<http://ase.ntu.edu.sg/>

Commodity production drives deforestation

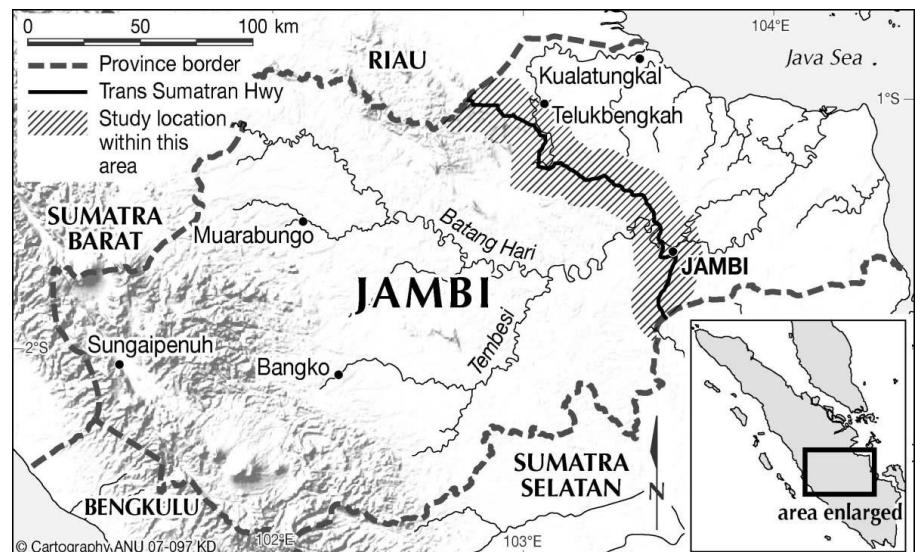


Curtis et al. (2018) *Science*

Adaptation to changing landscapes

"It argues that the paths of agrarian change are highly uneven and depend on how changing livelihood strategies are enabled or constrained by economic, social and political relations that vary over time and space. In contrast to simplifying narratives of inclusion/exclusion, it argues that outcomes depend on the terms under which smallholders engage with oil palm."

McCarthy (2010)



McCarthy (2010)



Oil palm farm household, Riau

Adaptations are not new...

"Trade brings both humans and nonhumans in and out of the mountains. Trade in this area is hundreds of years old, indeed as old as human occupation. ... While some trade is relatively local, most trade extends outward from the Meratus Mountains, sending rare products to China, Europe, and around the world. Most of the trade concerns forest products: the resins, rubbers, and incense woods of the tropical rainforest: ..."

Tsing (2005)

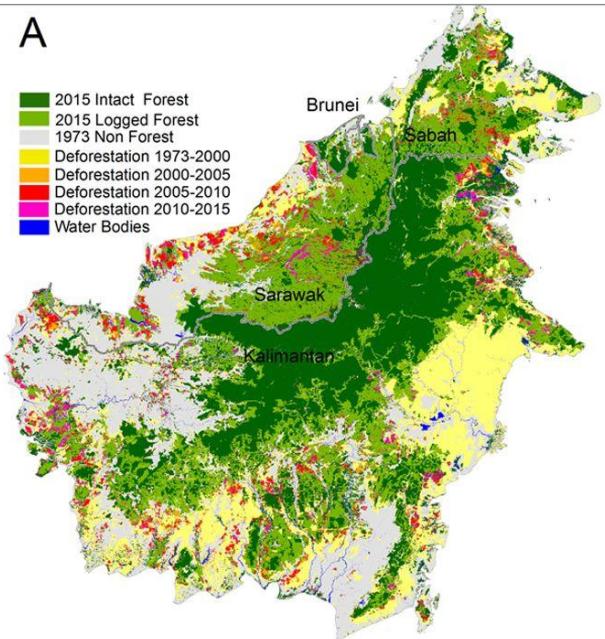


Meratus Mountains
South Kalimantan
Source: Wikipedia

Adaptation to rapidly changing landscapes

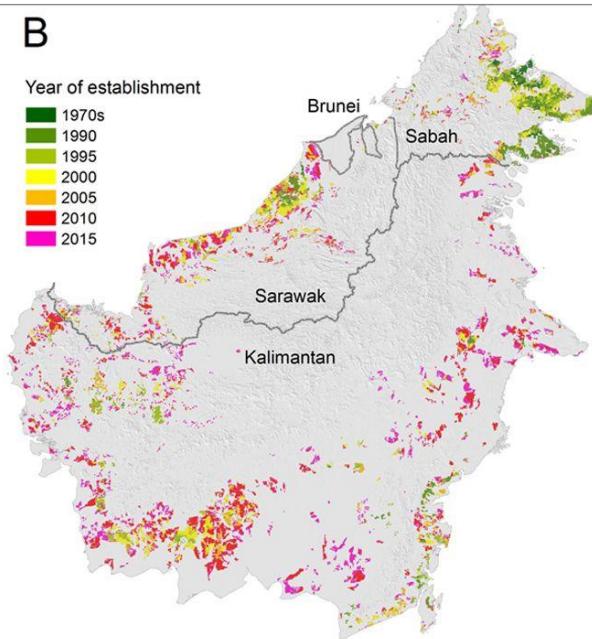
A

- 2015 Intact Forest
- 2015 Logged Forest
- 1973 Non Forest
- Deforestation 1973-2000
- Deforestation 2000-2005
- Deforestation 2005-2010
- Deforestation 2010-2015
- Water Bodies



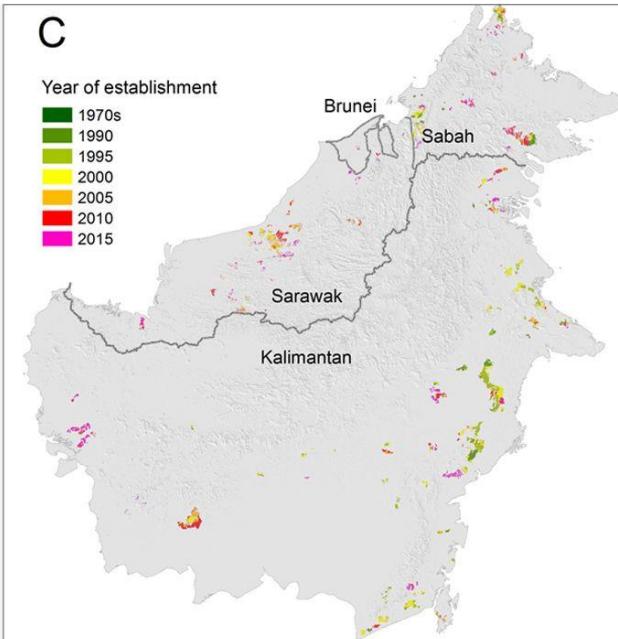
B

- Year of establishment
- 1970s
 - 1990
 - 1995
 - 2000
 - 2005
 - 2010
 - 2015



C

- Year of establishment
- 1970s
 - 1990
 - 1995
 - 2000
 - 2005
 - 2010
 - 2015



A. Total deforestation and remaining old-growth and selectively logged forest in Dec 2015

B. Expansion of industrial oil palm plantations

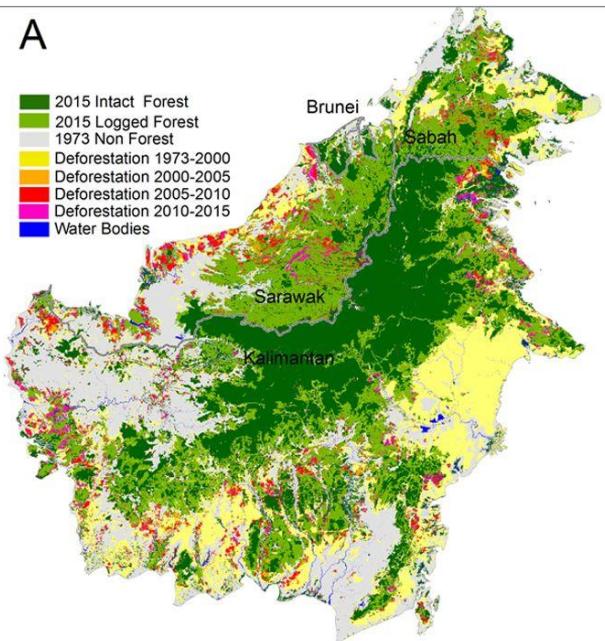
C. Expansion of industrial pulpwood plantations

Gaveau et al. (2016) Sci Rep

Adaptation to rapidly changing landscapes

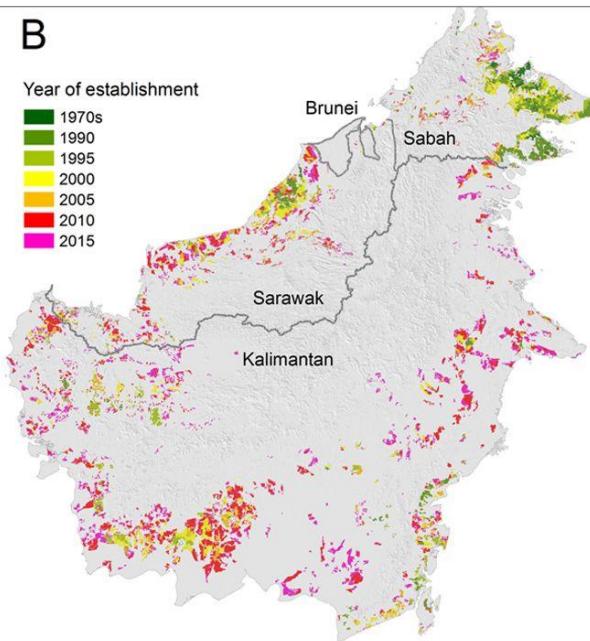
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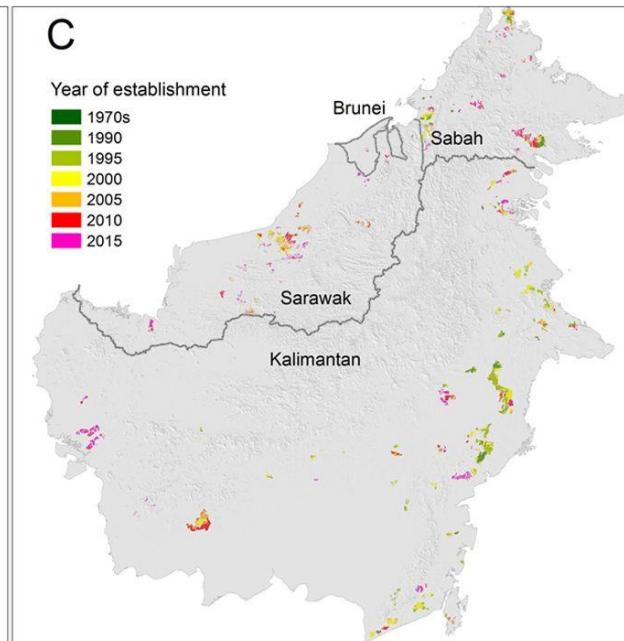
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A. Total deforestation and remaining old-growth and selectively logged forest in Dec 2015

B. Expansion of industrial oil palm plantations

C. Expansion of industrial pulpwood plantations

Gaveau et al. (2016) Sci Rep

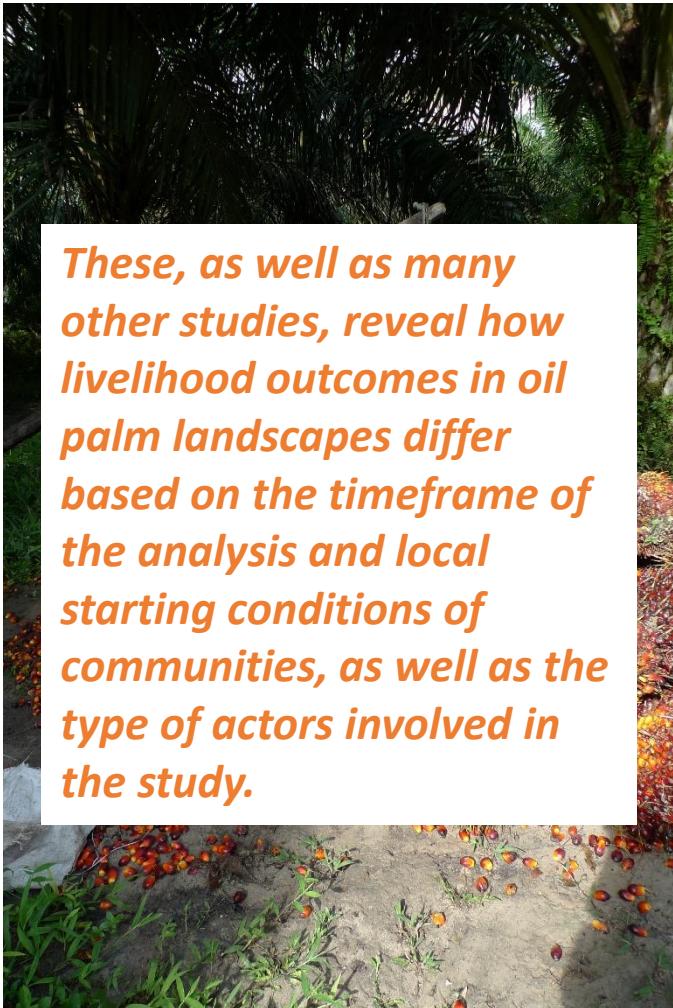
The rapid loss of forest cover and emergence of new crops such as oil palm means that local communities have to adapt rapidly to these changes either by their own will, or not.

Heterogeneous effect of oil palm on livelihoods



- In Jambi, farm and non-farm households in villages with larger share of land under oil palm are better off than in villages with more rubber or other crops grown
- Oil palm contributes to increasing inequality among fam households, but decreases income inequality among non-farm households
- Oil palm adoption improves household living standards and nutrition.
(Dib et al. 2018 For Pol Econ, Euler et al. 2017 World Dev)
- In Kalimantan, oil palm improved welfare for plantations developed in market-based villages, but reduced welfare for plantations developed in subsistence-based villages.
(Santika et al. 2019 World Dev)

Heterogeneous effect of oil palm on livelihoods



These, as well as many other studies, reveal how livelihood outcomes in oil palm landscapes differ based on the timeframe of the analysis and local starting conditions of communities, as well as the type of actors involved in the study.

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Identifying actors in the oil palm industry



MONGABAY.COM



- **Industrial plantations:** managed by a company, possess their own oil palm mill, occupy thousands of hectares
- **Medium-scale operators:** operate medium to large plantations (generally greater than 25 ha in Indonesia, but up to several thousand hectares) without formal company status
- **Smallholder plantations:** family farms, rely on other actors for processing fresh fruit bunches, and occupy smaller areas (typically < 50 ha as defined by RSPO). Categories of smallholders include independent/scheme/managed
- **Smallholder plantations in agroforestry settings:** harvest semi-wild plantations of oil palm, largely in central African countries and the oil produced is mainly for local consumption

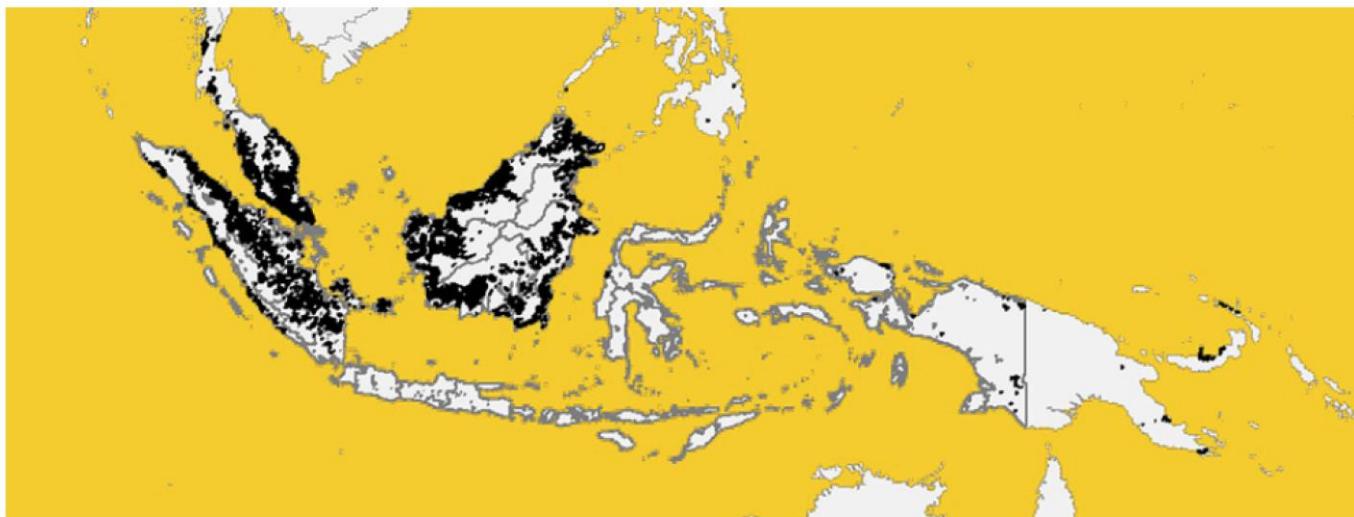
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Variation

South-East Asia



Indonesia

A minimum extent of 6,000 ha is required for a mill to be developed but plantations can be as large as 20,000 ha.

Oil palm plantations which are less than 25 ha are considered smallholdings in Indonesia.

(32)

Malaysia

Large-scale private commercial plantations can range from 40 ha to more than 100,000 ha in Peninsular Malaysia, Sarawak and Sabah. In Sarawak, state-mediated private company plantations require a minimum size of 5,000 ha.

Smallholder oil palm plantations in Peninsular Malaysia are generally less than 4 ha and typically support mixed-age stands, where oil palm is intercropped with other commercial plants (e.g., bananas, cassavas, coffee or indigenous fruit trees).

(33, 34)

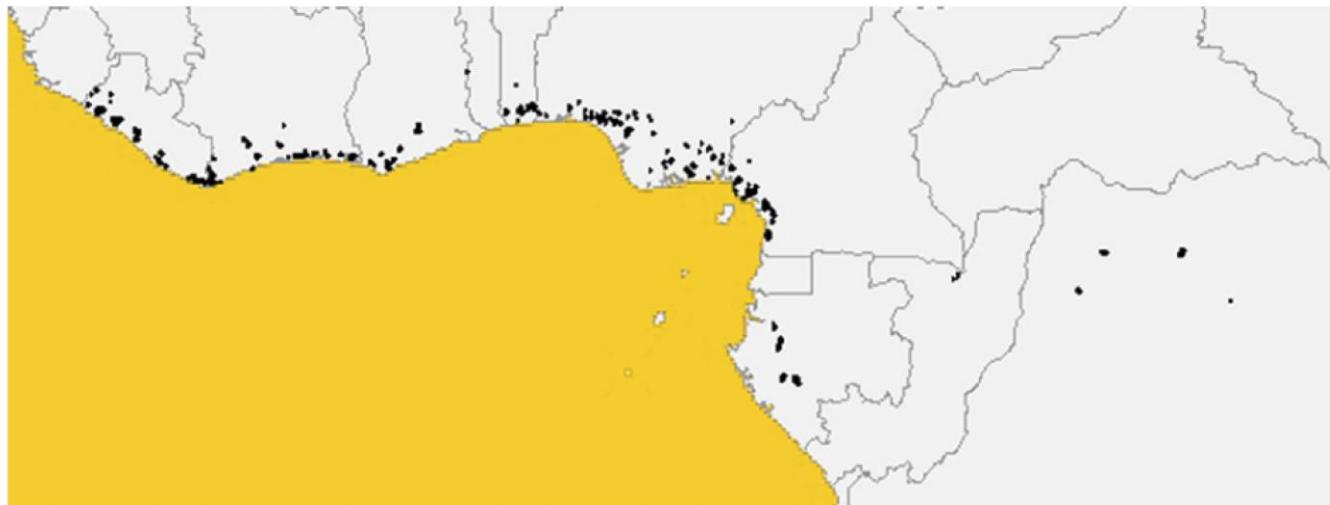
Papua New Guinea

The reported size of industrial estates ranges from 5,600 to 23,900 ha.

The average size of smallholdings ranges from 2 to 4 ha.

(35)

West & Central Africa



Ghana

Industrial monoculture estates are usually at least 40 ha in size but have been reported to reach a size of 6,500 ha.

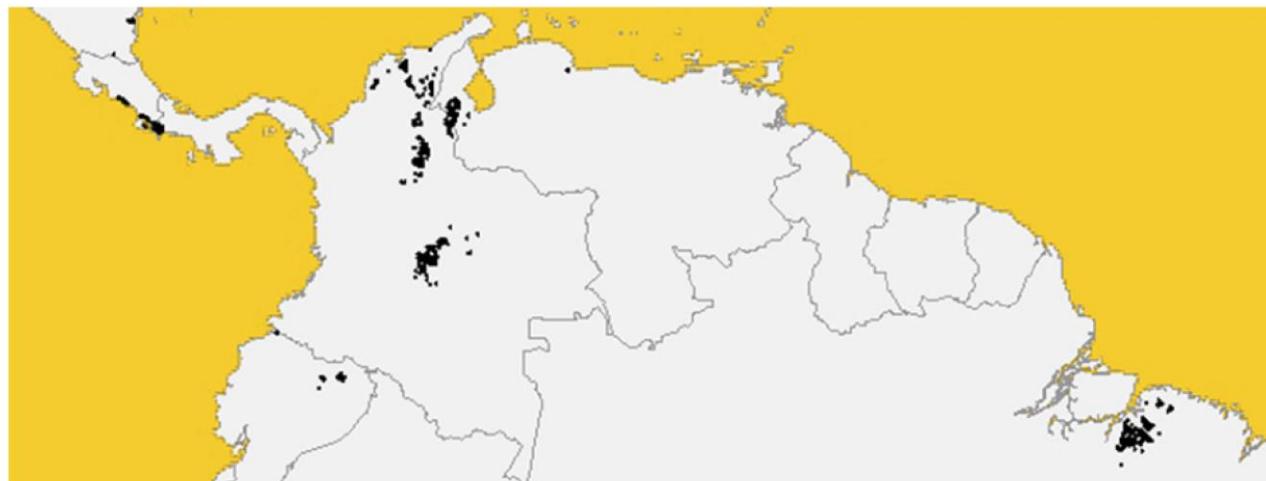
Smallholder plantations range from 0.5 (36-38) to 5 ha.

Cameroon

Oil palm estates above 100 ha are described as 'agro-industrial estates'.

The reported average size of smallholdings ranges from 8 to 40 ha. (9, 35, 39)

Central & South America



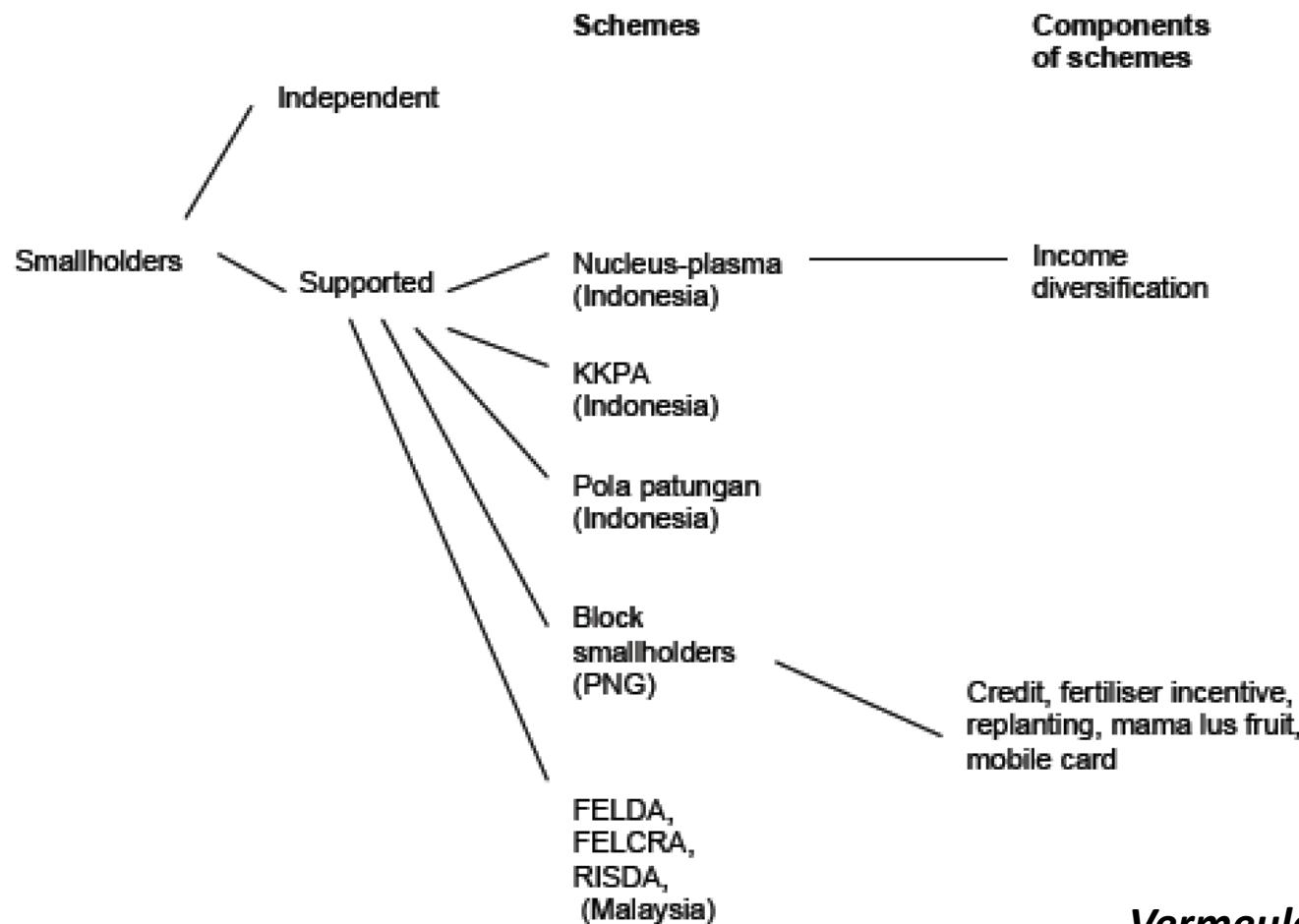
South & Latin America

Remote sensing studies classify oil palm plantations greater than 50 ha as 'industrial, medium-large-scale oil palm plantations'.

Smallholder oil palm plantations vary in size: Ecuador (<50 ha), Colombia (8-12 ha), Honduras (<10 ha), Brazil (2-10 ha), Guatemala (2 ha). (24, 40, 41)

Developing typologies for oil palm smallholders

Indonesian example

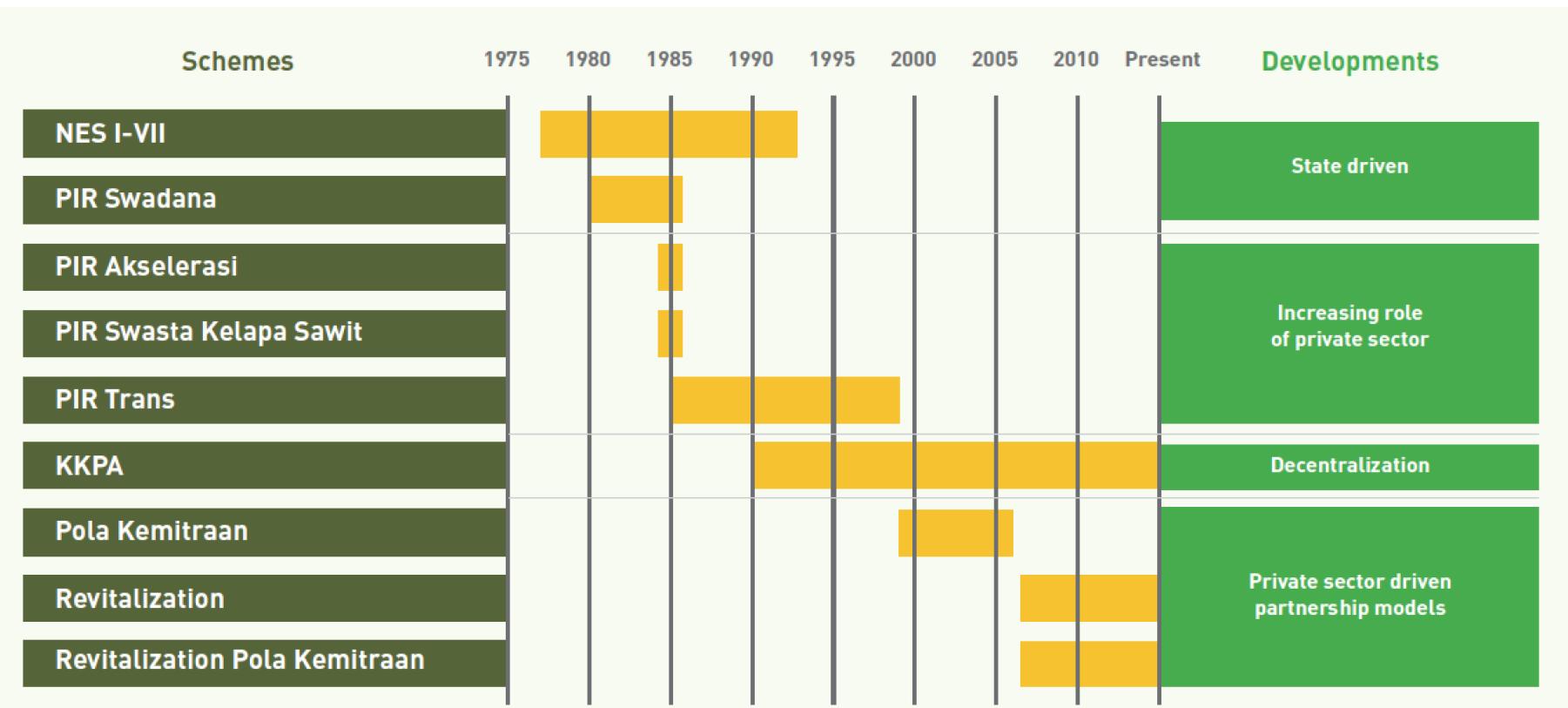


Vermeulen & Goad (2006)

Developing typologies for oil palm smallholders

Indonesian example

Figure 4. Overview of government schemes to promote smallholder development



Daemeter (2015)

Developing typologies for oil palm smallholders

Indonesian example

Unpacking Indonesia's independent oil palm smallholders: An actor-disaggregated approach to identifying environmental and social performance challenges

Idse Jelsma^{a,b,*}, G.C. Schoneveld^c, A. Zoomers^a, A.C.M. van Westen^a

^a International Development Studies, Geosciences Faculty, Utrecht University, Heidelberglaan 2, 3584 CS, Utrecht, The Netherlands

^b Centre for International Forestry Research, Jalan Cipor, Situ Gede, Sindang Barang, 16115, Bogor, Indonesia

^c Centre for International Forestry Research, c/o World Agroforestry Centre, United Nations Avenue, Gigiri, P.O. Box 30677-00100, Nairobi, Kenya

Size of landholding

Origin of farmer

Residence of farmer

Land status

Soil type

Ethnicity



Smallholder Typology

Small local farmer

Medium local farmer

Large resident farmer

Small migrant farmer

Medium migrant farmer

Small and medium peat farmer

Large investor farmer

Jelsma et al. (2017)

Developing typologies for oil palm smallholders

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Having more studies in different geographies on smallholder oil palm will help to clarify who stands to gain the most in oil palm landscapes.

Smallholder Typology

Small local farmer

Medium local farmer

Large resident farmer

Small migrant farmer

Medium migrant farmer

Small and medium peat farmer

Large investor farmer

Jelsma et al. (2017)

Research directions on social impacts of oil palm

**Who are 'smallholders'
and what is the system
of governance in these
landscapes?**

**Why do the effects of
oil palm livelihoods
differ across space
and time?**

**What are the
effects of oil palm
on livelihoods?**

**What is the effect of
recent sustainability
initiatives on local
communities in oil palm
landscapes?**

**How can local
communities be
incorporated into
sustainable palm oil
production?**



Research directions on social impacts of oil palm

Why do the effects of oil palm livelihoods differ across space and time?

What are the effects of oil palm on livelihoods?

Who are 'smallholders' and what is the system of governance in these landscapes?

What is the effect of recent sustainability initiatives on local communities in oil palm landscapes?

How can local communities be incorporated into sustainable palm oil production?



Thank you!