

A photograph of a tractor pulling a trailer loaded with harvested oil palm fruit bunches through a palm grove. The tractor is seen from behind, moving away on a dirt road. The trailer is overflowing with large, dark brown, spiky fruit bunches. The surrounding area is filled with tall palm trees and lush green vegetation. The scene is captured in a way that emphasizes the scale of the harvest and the rural setting.

Indonesian Oil Palm Smallholder Farmers

Sustainability Challenges and Recommendations for the Design of Smallholder Support Programs

November 2016

This document summarizes the findings, conclusions, and recommendations of three Working Papers on organizational, financial and sustainability challenges affecting smallholder oil palm farmers in Indonesia. The goal of the series is to (1) improve the understanding of smallholder farmer challenges in Indonesia, and (2) foster more informed discussion on how smallholder farmer support programs can be designed, and investments could be channelled, to promote high yield, low impact smallholder oil palm farming.

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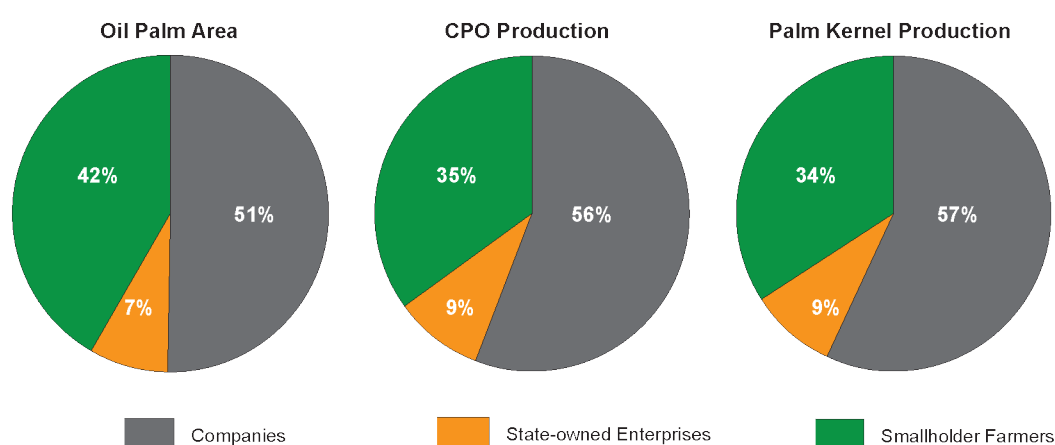
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Smallholder Oil Palm: A Driver of Rural Development and a Cause of Deforestation

Oil palm (OP) is an almost ideal crop for rural households living on the larger, forest-rich Indonesian islands where land is relatively plentiful and many soils are unsuitable for annual cash crops. Oil palm trees are tolerant to a wide range of soil conditions, require less labour than annual crops, are not difficult to grow at low to moderate productivity levels, and are less prone to disease or pests. There is a ready market for OP fresh fruit bunches (FFB) and the trees produce fruit year-round, providing a steady but variable income stream. The benefits of growing OP are also enticing for rural households. Families in many OP growing regions have been lifted out of poverty, or even entered the middle class, through becoming OP farmers. The incentive to establish new farms is even stronger where land can be obtained with low or no financial cost, from community land holdings or government-controlled state forest lands. Indonesia's often-conflicting spatial plans create ambiguity over where small scale agriculture is allowed, which further reduces barriers to farm expansion, especially in remote areas.



Indonesian smallholder oil palm farmers own and/or manage an estimated >3.1M ha of oil palm, accounting for around 40% of the total planted area and generating an estimated 35% of total crude palm oil production. They operate in all OP growing provinces, with significant areas of smallholder-managed farms in at least 18 provinces (Figure 1).¹ Based on planted area and number of households involved, the 10 highest priority provinces are: *Aceh, Bengkulu, Jambi, Riau, West Sumatra, South Sumatra, North Sumatra, West Kalimantan, East Kalimantan and Central Kalimantan*. These provinces have large smallholder managed farms (> 150,000 ha each) and significant numbers of smallholder farmer households (>20,000 households each). Taking into account both smallholder planted area and environmental factors (e.g. forest, deforestation, fires and peat), the highest priority provinces for smallholder engagement are Riau, North Sumatra, West, Central and East Kalimantan. North Sumatra supports less forest and peat than the other priority provinces, but has the largest number of smallholder farmer households and third largest farmer area of all provinces.

Notwithstanding the contributions of OP to rural economies, its rapid expansion over the past two decades has made it a leading contributor to deforestation and peat conversion in Indonesia. Historically, company-owned plantations were a much larger cause of deforestation than smallholder farmers. More recent studies on the deforestation impact of farmers provides varied and largely indirect accounts of their potential role as drivers of deforestation and fires, but data are scarce, since the spatial patterning of smallholder deforestation is more dispersed, making it more difficult to map farmer impacts compared to those of companies. It has become challenging to hold meaningful discussion on how to mitigate farmer impacts on forests, due to both political dimensions of the debate and the significant geographic variation in the magnitude and nature of farmer impacts. Yet, a holistic approach to palm oil sustainability

¹ Defined as >10,000ha of planted oil palm

must include consideration of farmer impacts on forest, since where farmers are numerous their cumulative impact on forest can be significant, especially in where OP is well established.

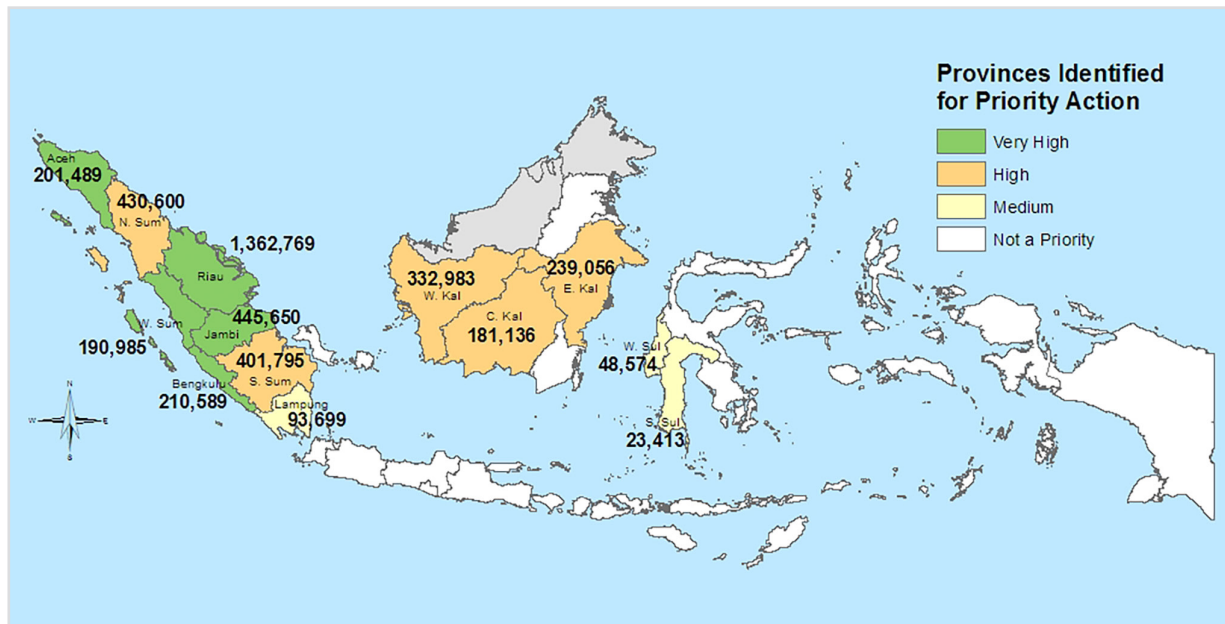


Figure 1. Smallholder farmer areas across major palm oil producing provinces in Indonesia.

Diversity of Farmer Organizational Models

The definition of ‘smallholder farmer’ under Indonesian law is a land holder with plantations totalling <25 hectares. Most farming households manage between 2-6 ha, with the majority of labor and capital inputs provided by family. Smallholder households working in close proximity are heterogeneous, and may differ in terms of: socio-economic status; ethnicity; length of residence in the area; and access to the four types of capital described below. They form part of the fabric of the local society, economy, and politics, and together with plantations represent the first link of the global palm oil supply chain. In regions where oil palm is well established, there is an emerging class of local ‘elite’ farmers with sufficient capital to buy larger tracts of established farms, accumulating up to several hundred hectares of farms. These ‘large scale farmers’ typically avoid commercial licensing rules by registering 25 ha parcels under multiple names or avoiding registration all together. Such farmers are effectively an emerging ‘landlord’ class that employ farm labourers, and they frequently hold local positions of social and political power.

The business characteristics of smallholder oil palm farmers in Indonesia vary widely, but can be classified into five major organizational models (Figure 2).

1. **Model 1. Small-scale independent farmers** are linked to the supply chain via local traders and agents. Farmers typically manage 2-6ha parcels of land. They commonly sell their FFB to one agent to ensure that they can sell promptly, given the need to process FFB within 24-48 hours to avoid diminished quality.
2. **Model 2. Larger-scale independent farmers** are linked to the supply chain via local traders or sell directly to mills. These farmers tend to be local middle-class actors managing plantations greater than 10 hectares and often up to 100s of hectares. This group is attracting greater attention due to allegations of illegal developments and links to deforestation and fires.
3. **Model 3. Farmer groups or farmer-managed cooperatives** aggregate member FFB and sell it directly to mills. They may also facilitate access to fertilizer and/or finance, and in some cases provide additional services like creating funds for replanting or to guarantee minimum revenues during periods of low yield or volatile prices.

4. **Model 4. Smallholder farmer managed plots** linked with company plasma schemes under which a mill and/or plantation company holds farmer land titles during repayment of loans for developing oil palm plots. The company typically also provides fertilizer, training, extension support and other services, with farmers required to sell their FFB to the company.
5. **Model 5. Company-managed, smallholder-owned plantations** under which a company leases land from farmers and manages it on their behalf, treating them as shareholders and providing a dividend commensurate with their stake in the plantation.

It is not known how many smallholder farmers operate under the different models, and how this varies geographically. The IFC (2013) estimated that roughly one-third of farmers in their diagnostic study sample were company affiliated, compared with two-thirds independent farmers.

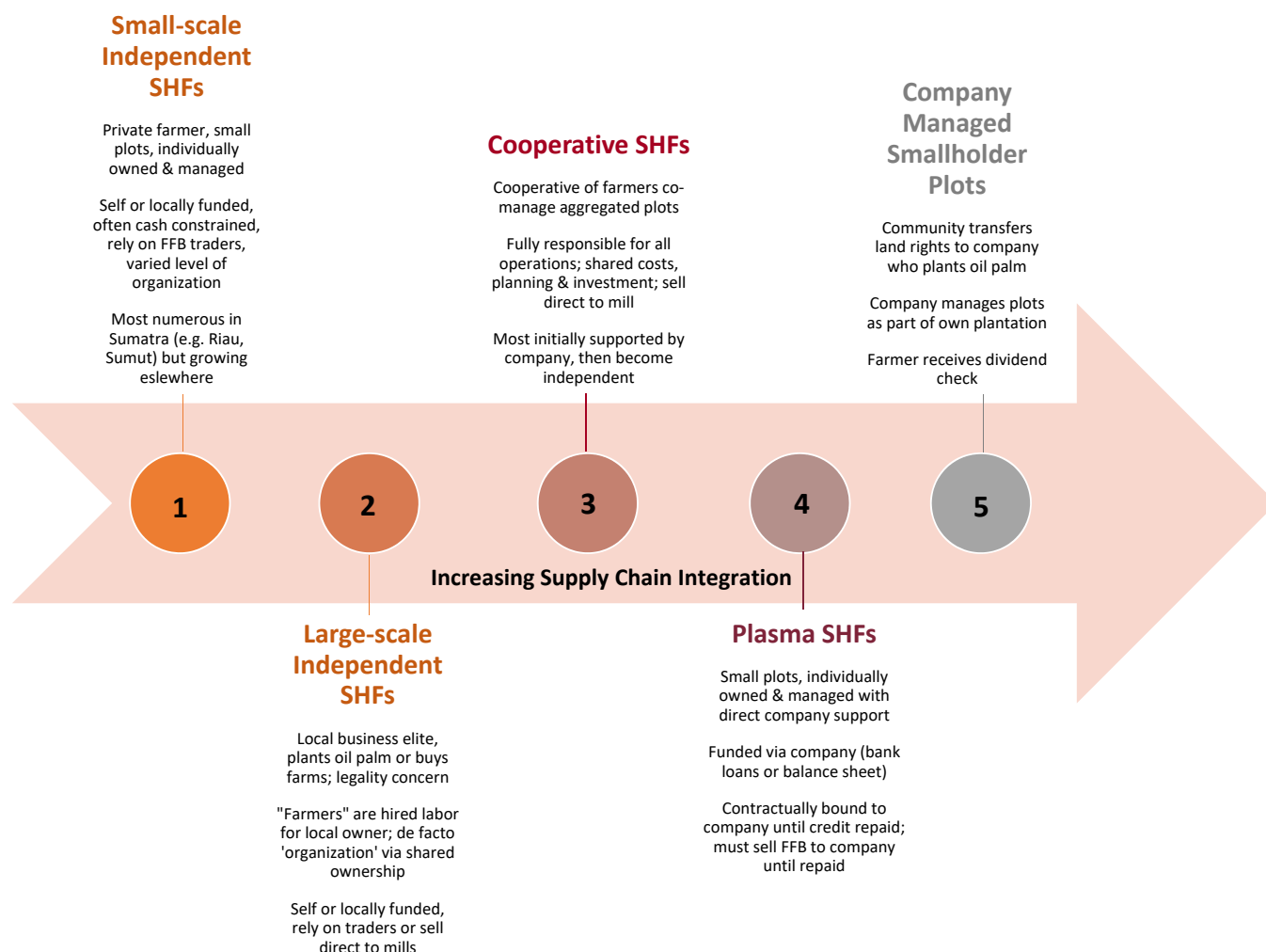


Figure 2. Typology of organizational models for smallholder oil palm in Indonesia. See explanations above, and fuller detail in Working Paper 1.

Economics of Smallholder Oil Palm Production²

Like companies, smallholder farm households are rational economic actors within the scope of the information available to them, but they weigh business decisions differently than companies or even larger independent farmers. They are typically motivated more strongly by cost minimization, avoiding risk and maintaining livelihood resiliency than by increasing profit margins. Limited access to resources, relative lack of information and market power, and the absence of a social safety net forces them to be

² See Working Paper 2 for a fuller discussion of topics under Sections 3 and 4.

cautious in committing resources to an enterprise that will not begin providing returns until four years after planting. For some, it may make more sense to invest less capital and labour into their OP plantation at the beginning, even if this means lower productivity over the 25-year plantation cycle.

Oil palm smallholder farmer investment and operational costs, as well as revenues and associated profits, are highly variable. Reported upfront investment to establish plots ranges nearly 10-fold from USD450-4000 per ha over four years, with ongoing annual operating costs ranging from USD450-2700 per ha. Farmers' costs are relatively fixed, so their operating profits are significantly impacted by FFB price volatility. Daemeter's initial pilot survey in East Kalimantan found that farmer profits ranged from break even to around USD2300 net profit per ha per annum, with typical profits at around USD1100 per ha. Land acquisition is a significant part of initial investment costs. Forested land is generally the cheapest to purchase, which poses a challenge for creating incentives to develop new plots on already deforested land. Other major costs include seedlings and fertilizer, the quality and quantity of which are highly variable and directly impact productivity and profitability over time.

Preliminary field data suggests that agricultural practices are directly impacted by variation in FFB prices, with low prices commonly leading to significant under-investment and poor management practices, which in turn causes a cycle of low yields and low profitability.³ Consequently, farmers tend to be stuck at either higher or lower ends of the productivity-profitability spectrum. Higher performing farmers can earn well in excess of monthly minimum wage salaries and more readily save money to finance better management of existing plantations, replanting, and establishment of new plots. Farmers at the lower end of the spectrum are likely to experience narrow profit margins and possibly even negative returns when FFB prices are low. Smaller-scale independent farmers are most likely to be at the lower end of the productivity-profitability spectrum compared with farmers that are part of other organizational models, but initial fieldwork also documented instances of failed cooperatives and company partnerships plagued by similar under-performance.

The resources farmers need to succeed as OP growers can be classified into four types of capital:

- **Natural.** The amount, quality, tenure status, and location of land available for conversion to OP farms. Farmers that have free access to land under customary rights or through encroachment into the Forest Zone are greatly advantaged compared to those who must buy land. This advantage is significantly diminished if land is far from a road, of low fertility, or on steep slopes.
- **Financial.** Access to financing on favourable terms is of prime importance, both for short-term operational credit and long-term investment finance. Other factors confer financial benefits, such as association with a large plantation company or proximity to a mill or good quality roads.
- **Social.** The availability of technical, marketing, and labour support from the community, farmer groups, a cooperative, a company, or a collaborating NGO. Social capital takes many forms.
- **Human.** The level of agricultural and business knowledge present in the household, especially previous oil palm cultivation experience and/or relevant technical training. Availability of unpaid labour from family members or on a reciprocal basis from nearby farmers is also important.



³ An IFC smallholder farmer diagnostic study (2013) found that on average, independent smallholder farmers produce 40% less FFB than predicted and 116% below company plantations, which themselves lag behind international production norms. Company-supported smallholder farmers produce 46% below company plantations.

Natural, financial, and human capital can be substituted for each other up to a point, although a mix of all three is required for farming to be profitable. Smallholders can operate with very limited social capital but this exposes them to greater risk in the face of unpredictable events like declines in FFB prices or sickness of family members. Reliable access to financial capital, whether short-term operational credit or long-term investment finance, enables farmers to leverage greater returns out of the other three forms of capital they deploy.

Access to Credit

Sufficient upfront investment in plantation establishment, and adequate cash flow to support good agricultural practices throughout the plantation lifecycle, are critical to fostering more sustainable and productive smallholder plots. Yet, in many cases, farmer access to finance is insufficient to meet this goal. Innovations in smallholder finance are therefore needed for Indonesia to meet palm oil production targets, and to realize more fully the crop's rural development potential.

All smallholder organizational models have some level of access to operational and investment credit through formal and informal lenders, as well as government subsidized programs. A key finding from our initial field research is that loan size, terms, repayment period and formality are on a continuum. For nearly all farmers, however, there is a significant gap in access to longer-term investment capital necessary to finance new farm development and replanting.⁴ Most existing schemes or sources of investment capital provide loans at relatively high interest rates (12% or more), with loan terms and tenor not well suited to farm establishment or replanting, which requires an extended grace period of 4+ years before farmers generate revenues sufficient to make loan repayments. Farmers with higher incomes and longer term banking relationships, or those participating in company partnerships, appear better equipped to meet loan terms and manage financial risk associated with higher interest rates. Smaller operators outside the formal banking system have persistent difficulty participating in government schemes designed to provide credit, which have had limited uptake (e.g. the recently discontinued Revitbun). It's increasingly clear that smallholder finance mechanisms must provide more targeted support, with special focus on the role of intermediaries such as traders, agents, mills, or cooperatives, to function as aggregation points for pooling risk and channelling formal credit to smallholders through distributed models of loan servicing. Ideally, this would also be paired with customized extension services.



A second key challenge relates to loan eligibility requirements, in particular the need for land title as collateral or (in the case of various government subsidized loan programs) possession of an appropriate micro, small or medium enterprise (MSME) business licence. Larger-scale independent farmers, cooperatives or farmer groups are more likely to meet these requirements, and are often able to manage loan repayments with less than optimal grace periods (<4 years) by leveraging income from multiple plots or other sources. Farmers without land certificates or with single source incomes face significantly greater challenges in accessing investment capital for replanting or new farm establishment. They're often unable to gain access to financing schemes or formal bank loans, or where they do gain access, loans are typically capped at levels insufficient for replanting a 2-ha plot. This is especially true for smaller-scale independent farmers who often have lower yields, lower profitability and are less likely to hold formal land titles or other assets for collateral.

⁴ Nearly 30% of smallholder farms in Indonesia will require replanting by 2025, with estimated cost of USD 5–6.5 billion. Failure to replant could increase pressure to deforest new areas in frontier regions (see Working Paper 1).

Sustainability Performance & Supply Chain Risks⁵

Where farmers face limitations in any of the four types of capital describe above – natural, financial, social, human – farm productivity and profitability will be constrained by one or more of the following challenges: inadequate access to short- or long-term finance; unreliable access to quality inputs at affordable prices; chronically low yields; constraints on ability to market their product; and weak business management. Long-term profitability can be further jeopardized by future difficulties of integrating into sustainable supply chains increasingly averse to sourcing unsustainable or illegal FFB, since many farmers (especially new ones) are unaware that many common smallholder practices are unsustainable and/or illegal. Some challenges faced by smallholder farmers impose significant direct economic costs, while others create legal or sustainability risks that will require structural or institutional adjustments to overcome. Three forms of legal risks faced by smallholders are described below, including: illegal deforestation, use of fire to establish farms, and lack of formal land title.

- (i) Legality of deforestation.** A Forest Trends study suggests that 80% of commercial agriculture plantations in Indonesia were deforested illegally.⁶ The extent of illegal clearing of OP smallholder farms is not known, but a global study found that from 2000-2010, 73% of tropical and sub-tropical deforestation was caused by agriculture, with 40% linked to large-scale agriculture and the remainder to smallholder farming.⁷ Combined, the two studies suggest that smallholder farmers contribute to deforestation in Indonesia, and that a large portion of such clearance is illegal.
- (ii) Illegal use of fire to clear or manage farms.** There is increasing evidence suggesting that smallholder farmers are significant contributors to GHG emissions and smoke. Recent analysis shows that 59% of land-based emissions in Sumatra and 73% in Kalimantan occur outside the boundaries of company owned concession areas.⁸
- (iii) Few smallholders have government-issued land title for their farms, many of which are in the state Forest Zone where oil palm is not allowed.** Small-scale independent farmers are least likely to have clear land tenure, although some have informal title issued by their village head. As discussed, this limits farmer's ability to use land as loan collateral or invest in productivity or sustainability, given the risk of expropriation. Companies often assist their affiliated smallholders to obtain land title, but for independent farmers obtaining legal title requires a lengthy bureaucratic process and significant expense, discouraging most farmers from beginning the process. This is especially difficult where farmers have established plots in areas where formal spatial plans prohibit agriculture.

Building Inclusive, Sustainable Palm Oil Supply Chains

A holistic approach to building inclusive, environmentally sustainable palm oil supply chains must recognize that: (i) smallholder farmers are a component driver of forest loss and fires, albeit a smaller contributor than companies, and (ii) solving this includes farmer support programs aimed at increasing farmer yields through better planting material and use of good agricultural practices, including reduced use of fire to establish or replant plots. Further, it's clear that investment support programs must be deployed in a way that increases productivity but manages the risk of creating incentives for farmers to expand new farms into forested lands. We highlight a set of approaches and tools that can be used to manage this risk and to promote wider uptake of more sustainable farming practices.

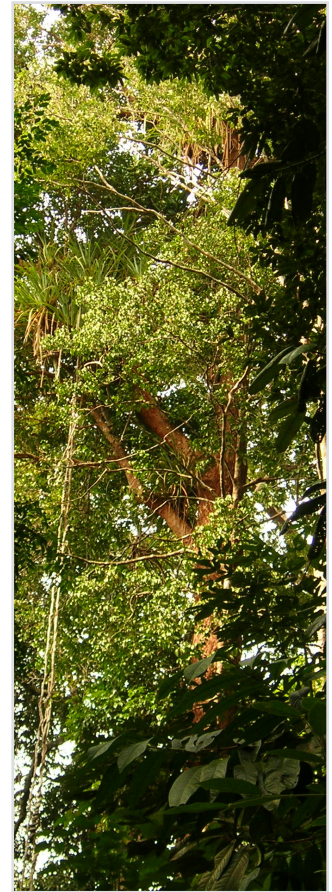
⁵ See Working Paper 3 for a fuller discussion of topics under Sections 5 and 6

⁶ Illegality can include: use of fire to clear; improper license; clearance without timber permit; clearance on deep peat; clearance without plantation permit; clearance in river area; clearance outside concession boundaries (including in protected areas). Forest Trends (2014)

⁷ Hosonuma et al. (2012)

⁸ Including oil palm, timber, logging and mixed company concessions.

We define **“approaches”** as the engagement strategies for working with farmers, community members and related actors on sustainable land use, and **“tools”** as systems or processes for verifying performance, rewarding good practice, or imposing sustainability requirements on farmers.



Prominent approaches include:

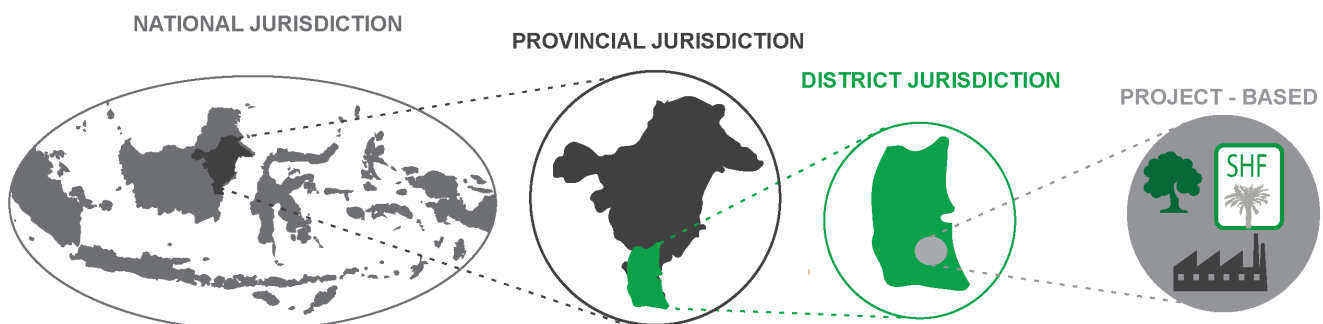
- Promoting farmer organisation (e.g. farmer groups)
- Participative village mapping and development planning
- Systems of payment for ecosystem services

Key tools include:

- Sustainability certification schemes (e.g. RSPO and ISPO)
- Conditional cash transfers based on meeting performance standards
- Carbon trading (or other credits) where communities protect forest
- Loan or contractual conditions (where finance is extended)
- Selective award of land title

Each tool presents challenges with respect to smallholder engagement, monitoring, and enforcement, particularly at a scale sufficient to have an impact on landscape level deforestation. The approaches and tools are not mutually exclusive, and are likely to be bundled as ‘blended strategies’ pursued by government, business and civil society to promote smallholder sustainability.

Smallholder strategies being trialled in Indonesia are at varied stages of design, piloting and implementation, and are being applied at a variety of scales, from site-based projects through supply shed, landscape or jurisdictional scales. Scale is an important factor in determining the level of impact of the various approaches and tools in meeting targets for transformation. Smaller scale projects have the benefit of being rooted in local engagement, but can only mitigate contained impacts within the boundaries of the project area. Interventions at the landscape or jurisdictional level have greater prospects for delivering environmental benefits across larger areas at lower unit costs, but involve a far more complex array of actors in order to be implemented effectively. Actions at different scales are generally complementary and can be implemented simultaneously at multiple scales in a ‘nested’ approach (see inset).



In the medium to long term, we suggest that scaling smallholder support programs towards the jurisdictional (i.e. district or provincial) level provides the most durable framework for delivering widespread net positive impacts across multi use landscapes where OP is cultivated. A phased approach operating at two levels would be necessary to achieve this, beginning first at local levels with participative village planning as the entry point, subsequently fostering farmer organisation aimed at integration with sustainable supply chains, and finally shifting toward payment for ecosystem services to reward responsible land management and forest and/or peat land protection. In parallel with local efforts, engagement with government (and possibly the private sector) at larger spatial scales should be pursued to put in place land use change

monitoring systems and tenure normalization and farmer support programs as part of a holistic strategy for improved land governance. While complex, early analysis suggests this multi-scale blend of approaches has potential to be most effective in managing environmental impacts at scale, while also supporting improved farmer livelihoods and local development on the ground. Pilots to achieve this are underway in Central Kalimantan, South Sumatra and East Kalimantan, among others.

For this phased approach to be successful, significant upfront investment in institutional development and training is required to provide a foundation for building larger programs over time. This investment is frequently underestimated and undervalued. Further, while certification, carbon trading and contractual conditions may all have a useful role to play, deeper consideration of the future role for performance-based conditional cash transfers is needed. In the short to medium term, conditional cash transfers appear to have relatively high potential to support more sustainable and productive oil palm smallholder farming through: (i) providing incentives for private sector to deliver better agricultural extension services, and (ii) providing jurisdictions with performance based budgetary allocations that can be re-invested in proactive environmental management. Such cash transfers could be financed through central government budget allocations, Indonesia's Crude Palm Oil Fund or bilateral donors, among others.

Conclusions

There are significant opportunities to improve oil palm smallholder productivity in support of meeting Indonesia's sustainable development and environmental goals. Many constraints on smallholder farmer productivity and net income could be alleviated by investment finance, but increased deforestation risks linked to yield improvements must be managed to ensure sustainable outcomes. To deliver net positive social and environmental impacts, smallholder farmer support programs need to be designed carefully to balance farmer's economic and operational needs with sustainability goals and to foster proactive management of high value ecosystems. Building such programs will likely require compromises and trade-offs between environmental protection and rural development goals, which in turn means that farmer support programs need to be iterative and collaborative, and should be tailored to local conditions rather than pre-determined as one-size-fits-all interventions.



The design of programs to support farmer integration into sustainable supply chains would be simplified by development of a toolkit to help farmers self-select the most appropriate model for their local context that will deliver the greatest livelihood and sustainable development benefits. All models have scope to be optimized and may be suitable under different conditions. It is, however, likely that in the process of strengthening transactional and organisational models, farmers will generally become more closely affiliated with companies or agricultural service providers that facilitate improved supply chain integration and access to high quality inputs, good agricultural practice training, credit and other logistics and infrastructure requirements. While some organizational models may be better placed to manage farmer challenges, all models would benefit from more systematic support for smallholder farmers to: reduce transaction costs; increase productivity and livelihood benefits; formalize land tenure; improve access to formal, long-term and affordable credit, and ensure sustainable practices. A jurisdictional or landscape-wide approach could offer a viable framework for achieving these goals at scale and delivering more efficient land-use at the village level in Indonesia.

Further detailed data collection is needed to develop a deeper understanding of (i) the baseline conditions and prevalence of different smallholder business models across Indonesia's palm oil producing regions, and (ii) challenges to inform the design of smallholder farmer support programs that avoid perverse outcomes such as elite benefit capture or promoting expansion into forested areas or high value ecosystems.

Recommendations

Smallholder farmers are the most diverse, most numerous, and least understood segment of the palm oil supply chain in Indonesia. Much more must be learned about them in order to design effective programs to increase their productivity while increasing their sustainability and avoiding unintended social or environmental outcomes. Experimentation will be required to determine how best to support and incentivize smallholders in ways that will improve livelihoods of the poorest while protecting the natural environment. The good news is that momentum behind scaling up this experimentation is growing. Government, the palm oil industry, financial institutions, donors, and NGOs have important roles to play in supporting and accelerating this process.

In each the three Working Papers summarized here, we outline a set of recommendations for further research on smallholder farmers to develop a deeper understanding of who they are, where they farm, how they farm, how they make decisions, what challenges and constraints they face (especially accessing credit), how these can be overcome, and what incentives they're likely to respond to in support of building sustainable supply chains. A selection of topics requiring more systematic investigation include the following:⁹



- What are the main factors driving farmer expansion into forests or peat lands (where this occurs), and main drivers leading to use of poor environmental practices.
- How do environmental risk and smallholder impacts vary by region, farm scale, and organizational model.
- How do transaction costs, credit, productivity and profitability vary by region.
- What are key lessons learned from past and current efforts to improve the livelihoods or sustainability of smallholder farmers through e.g. extending credit, providing extension services, encouraging farmer organization.
- How could rural lending products be tailored to farmer realities, especially terms and conditions that fit the needs and constraints of farmers while requiring greater efforts to achieve sustainability.
- How could laws, spatial planning, and regulatory practices be improved at all levels of government to facilitate productivity and sustainability improvements in smallholder farming.
- As a promising tool for promoting farmer sustainability, what forms of payment for performance schemes are most likely to be practicable with smallholders and what are the most important design considerations?
- What can large companies and downstream supply chain actors do to engage and support smallholders to give them the resources and tools necessary to improve their practices?
- What are the likely building blocks for the next generation of donor or NGO funded smallholder support projects to improve farmer yields and profitability while managing the risk of stimulating farm expansion?

⁹ See the Conclusions & Recommendations sections of the three Working Papers for more detail on recommendations for additional research.

Daemeter is a leading independent consultancy with offices in Indonesia and the US, providing research, advisory and practical on-the-ground support to agriculture, forestry and mining companies, as well as civil society organizations, government and the development community. Our clients share with us a commitment to responsible management of Southeast Asia's natural resources, especially Indonesia. Daemeter has expertise in social, ecological, business and legal aspects of sustainability in Southeast Asia, with emphasis on responsible production, supply chain sustainability, social and environmental risk assessment, and jurisdictional approaches to sustainable land management. Daemeter is a recognized leader in High Conservation Value and High Carbon Stock Assessment, as well as their integration and adaptation for use by smallholder farmers. Visit www.daemeter.org for more information.

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