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Oil Palm in Indonesia

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1. SUMMARY

Tropical deforestation, forest fires, and peatland degradation in Indonesia are a major cause of greenhouse gas emissions and biodiversity loss. Oil palm (*Elaeis guineensis*) is one of the more visible and profitable agricultural commodities driving the expansion of industrial and small-scale plantations into forest and peatland areas. Although they are not the primary driver of deforestation, oil palm plantations are the last and most profitable phase of a land governance system that incentivizes the degradation and eventual conversion of natural forests, beginning with forestry concessions. Especially in Southeast Asia, oil palm cultivation has become synonymous with tropical deforestation and subject to numerous environmental campaigns, including calls for boycotts and other measures to discourage its use. Free from deforestation and social conflicts, sustainably produced palm oil has become the aspired goal for many consumers, buyers, and governments, reinforced through zero-deforestation commodity supply chain pledges. The most effective path for ensuring the sustainability of palm oil, which should trigger a broad-scale reduction in the rates of deforestation, remains elusive.

This report evaluates six different approaches that have been implemented to transform the production of palm oil:

1. Private supply chain certification systems;
2. Government supply chain certification systems;
3. Corporate zero-deforestation commitments;
4. Government policies and regulations;
5. Smallholder productivity and intensification; and
6. Jurisdictional approaches to certification.

This report evaluates these initiatives by examining how well they addressed the causes of deforestation and environmental degradation and their acceptability among different stakeholders. The Roundtable on Sustainable Palm Oil (RSPO) certification scheme has both the instruments for reducing deforestation and the legitimacy among nongovernmental organizations, companies, and consumers globally. The legitimacy of the certification system largely derives from the consultative processes that led to the development of its principles and criteria. What limits the effectiveness of the scheme is that it does not address deforestation and environmental degradation in the broader landscape, the limited uptake of certified sustainable palm oil, and the costs and other requirements of certification. At present, these limitations prevent RSPO from leading to a broader scale reduction in deforestation across adjacent landscapes and among independent smallholders. In the case of Indonesia, the scheme also lacks legitimacy from the perspective of the government, which prefers its own Indonesia Sustainable Palm Oil (ISPO) system. Although the ISPO system is based on existing laws and regulations that are more enforceable than the voluntary requirements of RSPO certification, the system is perceived as a weaker by non-government organizations. These claims have been reinforced through recent studies that point to RSPO as having more robust environmental and social safeguards than ISPO.

Apart from the two certification schemes, voluntary efforts have been made by producer companies to ensure zero-deforestation supply chains. The Indonesian Palm Oil Pledge, which was a short-lived association of palm oil producing companies, sought to realize its zero-deforestation commitments through voluntary and collective action. These zero-deforestation pledges were similar to commitments made by producer and consumer goods companies as well as by importing nations globally. Similar to the reactions of the Indonesian government to RSPO certification, these zero-deforestation pledges were met with resistance by the government, which highlighted the disproportionate impact these pledges would have on smallholders. Under investigation by the government for cartel-like practices, the association was disbanded. The individual companies pledged to continue implementing their sustainability commitments through supply chain initiatives,

although in closer collaboration with the government as well as with initiatives that support smallholder production.

The Indonesian government has also issued laws and regulations to reduce deforestation and environmental degradation, focusing on peatland degradation and fires. The approach used by the national government has emphasized strict regulatory approaches rather than positive incentives. Consequently, the effectiveness of these regulations has been undermined by the government's limited capacity for law enforcement in remote, rural areas.

Addressing the yield gap between small-scale and industrial oil palm growers has been identified as a pathway for encouraging intensification and reducing agricultural expansion into forests and peatland. National efforts to address the yield gap have focused on providing finance for replanting, while agribusinesses and nongovernmental organizations have provided local support to farmers. Although addressing one of the main challenges facing small-scale producers, smallholders, in particular independent smallholders, generally lack access to high quality agricultural inputs and training and require a more systematic effort to improve their productivity.

Despite being in their infancy, jurisdictional approaches, in particular jurisdictional certification initiatives, represent a hybrid approach that has the potential to overcome many of the challenges faced by other initiatives. Because the pilot certification initiatives were nominated as RSPO pilot projects, they have the tentative endorsement of the RSPO as well as the leadership of local governments, supported in many cases by national line-agencies. These initiatives have begun to address many of the challenges that obstruct the sustainable and inclusive production of palm oil, through a mixture of local regulations and initiatives supported by the private sector and nongovernment organizations. While improving productivity, the pilot initiatives have focused on formalizing the participation of independent smallholders as well as on reducing deforestation and environmental degradation across the landscape through improved spatial planning processes.

As the demand for sustainably produced palm oil increases, a hybrid approach that supports and formalizes the participation of independent smallholders while reducing deforestation and environmental degradation is required. Although not the sole model, jurisdictional certification is one standard of a hybrid, jurisdictional approach that addresses many of these challenges, particularly when it eventually applies to all products exported from the jurisdiction. Understanding the benefits and limitations of these initiatives while building market recognition for this model of sustainably produced palm oil requires empirical research supported by constructive dialogues among producer and importing governments, nongovernmental organizations, and the private sector.

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3. INTRODUCTION

Although native to West Africa, the oil palm (*Elaeis guineensis*) had become one of the dominant plantation crops in Indonesia by the end of the twentieth century. Where historically oil palm had been cultivated as part of small-scale swidden systems, oil palm's introduction in Southeast Asia was primarily as an industrial scale plantation crop (Corley and Tinker 2016). The dominant model of production has defined both the benefits and the negative social and environmental effects of oil palm cultivation. Despite some significant shifts in oil palm production towards independent small-scale producers and mills, industrial-scale plantations, scheme smallholders, and mills remain the dominant mode of production. In 2013, it was officially estimated that there were 10.4 million hectares of oil palm planted, with private companies controlling 51%, smallholders controlling 42%, and state-owned companies controlling 7% (Directorate General of Estate Crops 2014; Pacheco et al. 2017a). Although the expansion of these plantations into the forest frontier and peatlands has been perceived as the main cause of extensive deforestation, greenhouse gas emissions, and the displacement of local and indigenous peoples, the reality has often been more nuanced. (See Section 5: Oil Palm and Deforestation below.)

For the most part, this expansion of oil palm in Indonesia has been legally planned in alignment with the economic development goals of the government, which in turn has supplied an ever-growing global demand for palm oil (Byerlee et al. 2016; Corley and Tinker 2016; Henderson and Osborne 2000). Under the right circumstances, smallholders have been able to benefit from the production of oil palm either as scheme (plasma) farmers or independent smallholders (Belcher et al. 2004; Feintrenie et al. 2010a; Rist et al. 2010). The multifunctionality of the oil palm and its derivatives, which are used for cooking oil as well as in the food, cosmetics, and other industries, means that demand is stable, despite price fluctuations and independence from a single sector (Henderson and Osborne 2000; Rival and Levang 2014).

Understanding the complex linkages between the producer companies, the government, and the demand from global markets is the first step toward decoupling palm oil production from its adverse social and environmental effects. This paper aims to provide a brief overview of the main challenges to ensuring sustainable and inclusive palm oil production as well as an overview of the main approaches that have been attempted. The paper then discusses the linkage between the expansion of oil palm plantations and deforestation, focusing on the Indonesian laws and regulations that, intentionally or unintentionally, have led to plantation-driven deforestation. Following this, the paper presents and assesses six supply-side approaches that have been implemented to ensure the sustainability of palm oil production in Indonesia, in particular:

1. Private supply chain certification systems;
2. Government supply chain certification systems;
3. Corporate zero-deforestation commitments;
4. Government policies and regulations;
5. Smallholder productivity and intensification; and
6. Jurisdictional approaches to certification.

4. BACKGROUND

The oil palm is a highly productive crop in terms of yields of oil per unit of land. The trees begin fruiting within 3 years and reach their maximum production at years 9 to 15. Oil palms should be replaced 25 years after planting. There are two main derivatives fresh fruit bunches (FFB) from oil palm: crude palm oil (CPO) and palm kernel oil (PKO). The main product of FFB is palm oil, which makes up 20% to 22% of the fruit, while the palm kernel accounts for 5% of the weight of the FFB. Palm oil is predominately used for food such as cooking oil and margarine but is also used for non-food purposes such as consumer goods, industrial inputs, and biofuels. Palm kernel oil, in contrast, is mainly used for soap and industrial purposes. Palm fruits should be processed at mills within 24 hours of harvesting, which means that farms and plantations should be located relatively close to mills (Byerlee et al. 2016). The oils are then transported to refineries for further processing.

The oil palm, originally from Central and West Africa, has now spread across the humid tropics. In its natural habitat, it thrives in disturbed forests and acts as a pioneer species. The distribution of oil palms, was linked to human activity, and groves of oil palm emerged in areas that had been cleared for shifting cultivation (Corley and Tinker 2016; Gerritsma and Wessel 1997). The traditional uses of palm oil included cooking oil, fuel for lighting, and medicinal purposes (Henderson and Osborne 2000). The first palm oil was imported to England in 1590, and by the early nineteenth century, a large market had developed for palm oil (Henderson and Osborne 2000). Driving the increasing demand for palm oil were changing standards in hygiene and the industrial revolution. Palm oil was used in products as varied as soap to tinplating (Rival and Levang 2014; Sheil et al.,2009). In the 1850s, the palm oil trade took off after the British government directly encouraged the trade of palm oil (Corley and Tinker 2016). The first oil palm trees were planted in the Bogor Botanical Gardens in Java in 1848, and a demonstration plantation was later established in Java (Levy 1957; Sheil et al. 2009). In 1875, seedlings were transferred from Java to Sumatra. These seedlings would become the foundation stock for future plantations in Indonesia and more broadly in Southeast Asia (Corley and Tinker 2016; Gerritsma and Wessel 1997).

In contrast to West Africa, the early history of oil palm in Indonesia was as a plantation crop under the Dutch colonial administration. The first large scale plantation in Indonesia was established in Sumatra in 1911 by a Belgian firm (Henderson and Osborne 2000). By 1925, 31,600 hectares of oil palm had been planted in Sumatra (Corley and Tinker 2016). By 1936, there was 75,000 hectares of oil palm plantations in Sumatra (Budidarsono et al. 2013). Aided by scientific research and access to modern technologies including mills, plantations in Sumatra became significantly more productive than plantations in Africa (Budidarsono et al. 2013). The benefits of these plantations during the colonial era were unevenly distributed, with unskilled workers receiving low wages for working on the plantations (Budidarsono et al. 2013). Despite these limited benefits, Chinese and Javanese still migrated in large numbers to work on the plantations, spurring broader economic growth across the East coast of Sumatra (Budidarsono et al. 2013).

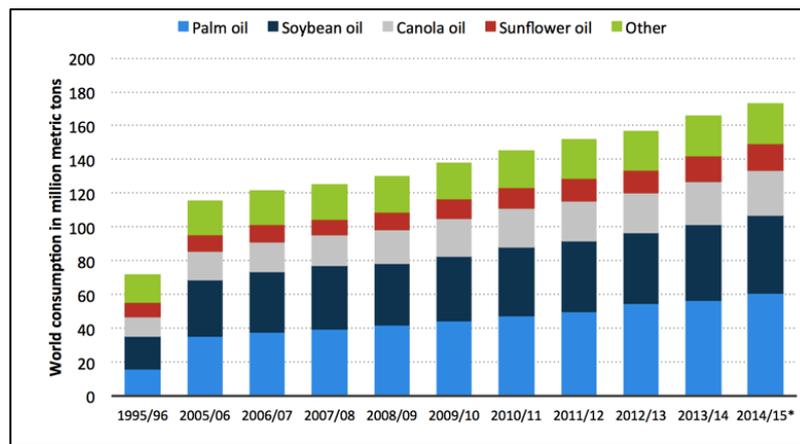
Following the Second World War and independence from Dutch colonial rule, the oil palm plantation sector persisted, although it had been significantly affected by the period of turbulence. Although the plantation sector was always part of the newly independent Indonesian government's development plans, it was not until the 1970s that oil palm plantations began to expand again (Budidarsono et al. 2013). Driving this new phase of agricultural development was the New Order regime, which by the late 1970s had begun promoting the development of tree plantation crops over food crops (Budidarsono et al. 2013). During the period from 1967 to 1997, the planted area of oil palm increased 20-fold, although slowed as a result of the El Niño related drought, declines in global crude palm oil prices, economic crises, and the resulting social and political unrest in 1997. Following these events, the industry began to expand again in 1999 as social, economic, and climatic conditions became more favorable (Casson 2000).

At the core of these policies were large-scale plantations, which were supported by smallholder farmers who were contractually bound to their plantation companies. The dominant form of “schemed” farming was the Nucleus Estate-Smallholder Scheme (NES) (*Perkebunan Inti Rakyat* or *PIR*) (Cramb and Curry 2012; Rist et al. 2010; Zen et al. 2016). Within these schemes, there would be a large concession (*inti*) surrounded by smallholder plots of around 2 to 3 hectares (*plasma*). In 1995, these schemes were replaced with Primary Cooperative Credit Schemes (*Kredit Kepada Koperasi Primer untuk Anggotanya* or *KKPA*) that focused on providing indigenous and local farmers with productive lands and extending support in exchange for giving large tracks of land to estates. This model was replaced with the partnership model (*kemitraan*), which was more advantageous to companies (Rival and Levang 2014; Zen et al. 2016). Whereas in the past companies would need to allocate the majority of concessions to smallholders, the new model meant that companies controlled up to 80% of lands. Smallholders could be compensated through profit dividends rather than just being allocated plots. A subsequent ministerial regulation in 2013 further eased the requirements for concessionaires.¹ This model has eroded the direct participation of smallholders in oil palm development in favor of promoting large-scale investments.

By the early 2000s, the model of large scale land acquisitions had begun to decline (Rival and Levang 2014). In its place, independent smallholders have emerged in areas with pre-existing palm oil processing infrastructure. Located within the required distance of a processing mill, independent smallholders have several options available to them if they want to cultivate oil palm. At one extreme, farmers and other local people may simply sell their land to companies or other small-scale investors, who then cultivate oil palm on the land (Rival and Levang 2014). Other independent smallholders must enter into various institutional arrangements in order to obtain the planting materials needed to establish an oil palm farms. Among the challenges faced is a lack of income from the land in the two to three years before a farm becomes productive. Only after the palms become fully mature do farmers begin to receive the full benefits of cultivating oil palm (Feintrenie et al. 2010a). Those farmers unable to survive these early years may find themselves financially worse off than before they tried to cultivate oil palm. Those who are able to survive these early years are able to earn an income that far exceeds their returns from other comparable crops such as rubber (Belcher et al. 2004; Rist et al. 2010). Although by law smallholders should have less than 25 hectares of farmland, more recently, medium- and large-scale producers have emerged as new categories of independent producers, who fall in between the more clearly defined categories of smallholders and industrial-scale producers (Jelsma et al. 2017).

¹ Agricultural Ministerial Regulation No. 98/Permentan/OT.140/9/2013

Figure 1: Trend in World Consumption of Vegetable Oils from 1995 to 2015



Source: USDA 2015

The expansion of oil palm plantations in Indonesia has been driven by the significant increase in demand for oil crops. (Figures 1 and 2) During the period of 1990 to 2010, the world production of palm oil grew by 300%, while world production of soybean grew by 220%. The demand for palm oil and palm kernel oil increased from 2 Mt to over 50 Mt in the past 50 years. In the late twentieth century, the growth of the palm oil industry in Indonesia led it to become the world’s leading producer of palm oil, followed by Malaysia (Byerlee et al. 2016). The main importing countries for palm oil and its derivatives are Asian markets that absorb 51%, with India importing 19.4% and China 13.0%, whereas European markets absorb 26% of CPO and its derivatives (Pacheco et al. 2017a). Generally, Asian markets have been less concerned about the sustainable production of palm oil, although there has recently been greater uptake of certified palm oil in China (Schleifer and Sun 2018).

Figure 2: Indonesian Palm Oil Exports in 2014 (Countries with Imports Over 100,000 tons)



Source: Palm oil supply chain, TRASE

5. DEFORESTATION AND OIL PALM

The expansion of agricultural commodities in Indonesia has led to deforestation and the conversion of degraded rural lands across the country. Between 2000 and 2010, around 4.5 million hectares of forests were lost in Indonesia (Margono et al. 2014). Others estimate that the total amount could be over 7 million hectares (Hansen et al. 2013; MoEF 2015). Although the cultivation of agricultural commodities is not the primary driver of deforestation in Indonesia, it contributes significantly to the total amount of deforestation and discourages the rehabilitation of degraded forest lands through forest regeneration (Gaveau et al. 2016; Gunarso et al. 2013; Abood et al., 2015). However, oil palm is by far the most significant of the main plantation commodities driving deforestation. According to Busch et al. (2015), 20% of the deforestation that occurred from 2000 to 2010 occurred within oil palm plantations. In provinces such as Central Kalimantan, this figure is much higher at 41% during the period from 2000 to 2012, based on Ministry of Environment and Forestry data (MoEF 2015). Despite these adverse environmental impacts, the relatively lucrative returns from oil palm plantations continue to drive expansion, especially among smallholder farmers (Belcher et al. 2004; Miettinen et al. 2012; Rist et al. 2010).

The expansion of oil palm causes deforestation through several mechanisms, both planned and unplanned. Historically, oil palm plantation concessions were allocated in areas that still retained forest cover. However, beginning in the 1970s, land use planning processes sought to separate forest areas from non-forest areas, with the former being used for forestry, conservation, and protection, and the latter for agriculture including plantations (Brockhaus et al. 2012). Due to limited information available at the time, in many instances non-forest areas still retained forest cover, which could be legally cleared for the purpose of economic development. The second mechanism by which oil palm plantations contribute to deforestation is through the rezoning of forest areas into non-forest areas. Forest areas, which have been degraded through forestry operations, can be reclassified as conversion forests, which in turn can be reclassified as non-forest areas. Although degraded, these areas still retain some forest cover, which could potentially be rehabilitated or restored. In both of these cases, extensive deforestation by oil palm is not a foregone conclusion. The final mechanism by which oil palm expansion contributes to deforestation is by independent, non-scheme smallholders. These smallholders may convert their existing plots, which retain tree cover or are diverse forest gardens, into oil palm monocultures (Belcher et al. 2004; Feintrenie et al. 2010b; van Noordwijk et al. 2017).

Transforming palm oil production in Indonesia so that it is both socially inclusive and sustainable requires addressing several main performance issues, including:

- Pervasive land conflict and informality;
- Yield differences between companies and smallholders; and
- A high carbon debt linked to emissions arising from deforestation and peatlands conversion (Pacheco et al. 2017b).

6. SUSTAINABILITY APPROACHES

In this section, the paper discusses six of the main approaches to promoting sustainable and inclusive palm oil production and their comparative advantages and disadvantages:

1. Private supply chain certification systems;
2. Government supply chain certification systems;
3. Corporate zero-deforestation commitments;
4. Government policies and regulations;
5. Smallholder productivity and intensification; and
6. Jurisdictional approaches to certification.

6.1 Private Supply Chain Certification Systems

In response to protests and boycotts of palm oil, the Roundtable on Sustainable Palm Oil (RSPO) was formed in 2004.² RSPO is a round table organization where each members such as small- or large-scale producers and processors, consumer goods companies, investors or civil society organizations have the same membership rights. One of the significant achievements of RSPO has been the development of a certification scheme for producers and processors, which is based on a set of principles and criteria. The principles and criteria were designed to minimize environmental and social harm while improving the efficiency and quality of palm oil production throughout the supply chain. The emphasis of the certification scheme was mainly on commercial actors in the palm oil supply chain, in particular on industrial scale plantations and palm oil mills, although smallholders were also incorporated into the principles and criteria. The cost of certification quickly became an obstacle to independent, non-scheme smallholders, which eventually led the RSPO to establish a fund for supporting these farmers to achieve certification. The industry has generally adopted the RSPO certification scheme, and by the end of March 2018, around 3.58 million hectares of oil palm plantations across the globe had been certified, including 335 certified palm oil mills, equivalent to 19% of global production. Despite the demands from civil society for certified sustainable palm oil (CSPO), the absorption of CSPO is less than 60% (Chalil and Barus 2018). RSPO certification, however, has not been a perfect solution for reducing deforestation and environmental degradation. A study in 2017 found that RSPO certification reduced deforestation within plantation areas, but did not reduce fires or peatland clearance (Carlson et al. 2017). The positive effects were further diluted by the fact it was largely older plantations, with little remaining forests, that were adopting RSPO certification. In response to many of the criticisms of RSPO, a more stringent standard, RSPO NEXT was developed, which has stronger environmental and social safeguards. RSPO NEXT does not replace the existing standard but is voluntary for members who wish to go beyond meeting the existing principles and criteria.³

6.2 Government Supply Chain Certification Systems

The resistance to RSPO certification was not solely related to the costs, especially for smallholders. Industry pressure in Indonesia led to the government creating a parallel certification system, the Indonesian Sustainable Palm Oil System (ISPO) in 2011. In contrast to RSPO, where environmental and social protection criteria were defined through multi-sector dialogue, ISPO emphasized legal compliance with existing Indonesian laws and regulations, including those pertaining to environmental protection. Table 1 presents a comparison of the RSPO and ISPO systems. International nongovernmental organizations reacted negatively to the new system, arguing that the new certification system offered inadequate social and environmental protections. Despite the legal requirement that companies comply with the ISPO system, only 12% of Indonesia's oil plantations were ISPO certified in early 2017.⁴ Aware of the limited coverage of ISPO, the government plans to issue a Presidential Regulation in 2018, which will create the legal basis for ensuring industry-wide compliance, including for smallholders. The initial design of the regulation was debated and, as of April 2018, still under discussion and revision.

² Another private palm oil certification system is the International Standard for Carbon Certification (ISCC), which was designed to enable companies to comply with the Renewable Energies Directive implemented by the European Union in 2009. This system will not be discussed in detail as part of this report due to the higher visibility and impact of RSPO in Indonesia.

³ RSPO NEXT: <https://rspo.org/certification/rspo-next>

⁴ <http://www.thejakartapost.com/news/2017/04/12/only-12-of-indonesias-oil-palm-plantations-ispo-certified.html>

Table 1: Comparison of ISPO and RSPO Principles⁵

ISPO PRINCIPLES	RSPO PRINCIPLES
<ul style="list-style-type: none"> • Principle 1: Legal Plantation Business Permits • Principle 2: Plantation Management • Principle 3: Protection of Primary Forest and Peatland • Principle 4: Environmental Management and Monitoring • Principle 5: Responsibility to Workers • Principle 6: Social Responsibility and Community Economic Empowerment • Principle 7: Continuous Business Improvement 	<ul style="list-style-type: none"> • Principle 1: Commitment to Transparency • Principle 2: Compliance with Applicable Existing Laws and Regulations • Principle 3: Commitment to Long-Term Economic and Financial Viability • Principle 4: Use of Appropriate Best Practice by Plantations and Mills • Principle 5: Environmental Responsibility and Conservation of Natural Resources and Biodiversity • Principle 6: Responsible Consideration of Employees, Individuals, and Communities Affected by Growers and Mills • Principle 7: Responsible Development of New Plantings • Principle 8: Commitment to Continuous Improvement in Key Areas of Activity

6.3 Corporate Zero-Deforestation Pledges

Despite their adoption of RSPO certification, producers have continued to be pressured by international and Indonesian nongovernmental organizations to reduce the environmental and social harm of palm oil production, in particular the clearing of degraded forests. Similar to many consumer goods and producer companies globally, Indonesian producers began making pledges to remove deforestation from their supply chains (Pasicznik and Savenije 2017). In 2014, four large Indonesian palm oil producing companies (Wilmar, Asian Agri, Cargill Indonesia, and Golden Agri-Resources) declared their commitment to zero-deforestation palm oil. This commitment was followed by Musim Mas in early 2015.⁶ The companies formed an association with a secretariat called IPOP to implement its zero-deforestation commitment. In early 2016, another major palm oil company, Astra Agro Lestari, also joined the pledge.⁷ By September 2016, the association and its secretariat had been dissolved. Zero-deforestation commitments for palm oil in Indonesia have faced intense resistance from the government and farmers since the time of the announcement. Whereas smallholders were worried about being excluded from palm oil supply chains, the Indonesian government reacted negatively to the unilateral declarations. In particular, the Indonesian government had been developing the ISPO, and the zero-deforestation pledges were perceived to be undermining the system. Under pressure from the government, including the threat of being investigated for cartel-like practices, IPOP was dissolved (Vit 2016). The individual companies have continued to promote sustainability, but through collaborative approaches with the national government through supporting ISPO or through direct engagement with regional governments such as jurisdictional certification initiatives in Central Kalimantan. Other companies, such as Asian Agri, have chosen to focus on supporting smallholder production instead through their “One to One” commitment, where they plan

⁵ Comparison of the revised Minister of Agriculture Regulation Number 11 of 2015 with the RSPO Principles and Criteria 2013 National Interpretation for Indonesia from (Ministry of Agriculture of the Republic of Indonesia and Roundtable on Sustainable Palm Oil (RSPO), 2015)

⁶ <http://www.thejakartapost.com/news/2015/08/29/govt-opposes-zero-deforestation-pledge-palm-oil-firms.html>

⁷ <http://www.regnskog.no/en/news/astra-agro-lestari-joins-the-indonesian-palm-oil-pledge>

to match each hectare of their own land with one hectare of smallholder land by the end of 2018 (Asian Agri 2017).

6.4 Government Policy And Regulations

The failure of these initiatives to achieve the desired reductions in deforestation and environmental degradation have been attributed to shortcomings in the laws and regulations governing land uses in Indonesia. By analyzing the perceptions of stakeholders towards sustainability initiatives in the palm oil sector, Pirard and others (2017) highlight two major policy challenges in Indonesia. First, they highlight the legal ambiguity that surrounds the areas with high conservation values that have been set aside as part in accordance with certification scheme requirements. The ambiguous status of these set asides means that these areas can potentially be reallocated for clearing and cultivation by the government. Second, for law enforcement to be effective, the tenure rights of small and medium scale producers should be clarified as should be the concession boundaries and legal status of concessionaires. Consequently, sustainable palm oil production is not simply a technical or market issue, but one that requires regulatory changes and government support to address the underlying barriers to sustainability.

In recent years, the Indonesian government has introduced many laws and regulations to reduce deforestation and environmental degradation such as peatland degradation and fires. As part of its Nationally Determined Contribution (NDC) for mitigating climate change, the Indonesian government has committed to reducing greenhouse gas emissions, including from land uses, by 29% by 2030, and another 12% if they receive external support (Republic of Indonesia 2015). There are several prominent regulations that have been issued to support this commitment. In May 2011, a two-year moratorium on new logging and oil palm and timber concessions in peatland and primary forests was enacted through Presidential Instruction 10/2011 (Alisjahbana and Busch 2017). This moratorium has been extended to the present, although does not apply to clearing on lands where concessions were allocated prior to the enactment of the moratorium. After the El Niño fires in 2015, the government tried to strengthen the moratorium laws through Government Regulation 57/2016. Through this regulation, many activities were prohibited, including certain types of land clearing where there is uncertainty over forest area delineation, draining peatlands, and burning on peatland (Alisjahbana and Busch 2017). The law also has strict requirements for peatland areas within existing concessions. Through presidential instruction 11/2015, the government also introduced a much stricter regulatory environment for restricting the use of fire for land clearing. Although under the scenario of a complete moratorium on oil palm plantation expansion, deforestation is predicted to reduce by 28% in the period from 2010 to 2030, palm oil production is still expected to increase by 124%–97%, driven largely by smallholders (Mosnier et al., 2017).

6.5 Smallholder Productivity and Intensification

Smallholders have an increasing role in palm oil production, although their actual contribution to deforestation and environmental degradation remains uncertain. Historically, the contribution of oil palm smallholders to deforestation has been comparatively small. During the period from 2000 to 2010, smallholders were only responsible for 10.7% of the deforestation caused by oil palm expansion (Lee et al. 2013). This contribution is expected to increase as a result of the moratorium and corporate zero-deforestation commitments. Recent research in Riau, for instance, argues that many forest fires and land clearings are part of a broader cycle of land claims, in which the land is later sold for oil palm cultivation (Purnomo et al. 2017). Due to the limited data on smallholder plots, the actual extent of smallholder-driven deforestation is unclear. Case studies, however, have demonstrated a cycle where smallholders replace biologically diverse forest gardens with monocultures such as oil palm (Belcher et al. 2005; Feintrenie et al. 2010b, 2010a; van Noordwijk et al. 2017). Improving the productivity of oil palm smallholders to support intensification has been highlighted as one of the main targets for achieving sustainable and inclusive palm oil production (Pacheco et al. 2017b).

Discussions on improving the productivity of oil palm smallholders has focused on improving access to finance, especially for replanting, to support smallholders through the early, unproductive phases of oil palm cultivation (Kusumaningtyas and van Gelder 2017; Pramudya et al. 2017). The obstacles facing smallholders, in particular independent smallholders, are far more systemic (Brandi et al. 2015) and finance alone will not solve these challenges. With the support of nongovernmental organizations, company-led efforts such as Asian Agri's "One for One" commitment, are promising, but geographically restricted approaches for supporting smallholder intensification (Asian Agri, 2017). In the Seruyan district of Central Kalimantan, an agricultural facility has been established by the district government, with the support of agribusinesses and an Indonesian nongovernmental organization, Inovasi Bumi (INOBU), to provide training and agricultural inputs to oil palm smallholders.⁸ Moreover, although intensification can in many instances reduce expansion and environmental degradation, it should be supported by the improved governance of natural resources (Byerlee et al. 2014; Cunningham et al. 2013).

6.6 Jurisdictional Approaches to Certification

The approaches to sustainable palm oil described above each offer a part of the solution for sustainable and inclusive palm oil production. There is a need to both coordinate these initiatives at the local level as well as to incentivize local governments, with the support of higher levels of government, to address many of the obstacles to producing palm oil sustainably. Jurisdictional approaches to sustainability offer a pathway for coordinating supply chain initiatives with landscape-level efforts to reduce deforestation and environmental degradation (Earth Innovation Institute 2017; Nepstad et al. 2013). Jurisdictional approaches to sustainability, which are a sub-set of landscape approaches to sustainability, focus on building on the power and authority of democratically elected local governments to achieve sustainable development. These initiatives can involve endogenous efforts driven by civil society and the private sector, exogenous incentives including carbon payments and preferential sourcing, or initiatives led by nongovernmental and multi-lateral organizations (Earth Innovation Institute 2017).⁹ A more recent sub-set of jurisdictional approaches that has been piloted by the RSPO is the jurisdictional approach to certification, or jurisdictional certification.

RSPO jurisdictional certification emerged as a response to both the challenges of certification and emergent initiatives from subnational governments, in particular the State of Sabah in Malaysia and the Province of Central Kalimantan in Indonesia. (See the case study in Section 7 below.) Two of the central challenges that jurisdictional certification aims to resolve relate to reducing deforestation on a larger scale and including smallholders, in particular independent smallholders, into sustainable palm oil supply chains. The initial pilot projects for jurisdictional certification, Sabah in Malaysia, Central Kalimantan, and South Sumatra in Indonesia, were announced in 2015.^{10,11,12} Following these announcements, the Government of Ecuador announced its intention to implement a jurisdictional approach to certification.¹³ Although jurisdictional certification initiatives in Indonesia initially

⁸ Perusahaan Sawit Dukung Agricultural Facility: <https://www.seruyannews.com/perusahaan-sawit-dukung-agricultural-facility/>

⁹ The Global Green Growth Institute (GGGI) and IDH: The Sustainable Trade Initiative both promote landscape approaches to sustainable commodity production at the jurisdictional level. The terms landscapes and jurisdictions are often used interchangeably. See for instance, GGGI: <http://gggi.org/theme/sustainable-landscapes/> or IDH: <https://www.idhsustainabletrade.com/landscapes/>

¹⁰ RSPO congratulates the Sabah State Government for its recent milestone decision towards Palm Oil Sustainability: <https://rspo.org/news-and-events/announcements/rspo-congratulates-the-sabah-state-government-for-its-recent-milestone-decision-towards-palm-oil-sustainability>

¹¹ Central Kalimantan Announces Jurisdictional Certification for Sustainable Palm Oil: <https://www.rspo.org/news-and-events/news/central-kalimantan-announces-jurisdictional-certification-for-sustainable-palm-oil>

¹² Landscapes in Indonesia that IDH supports: Aceh, South Sumatra & West Kalimantan: <https://www.idhsustainabletrade.com/news/3765/>

¹³ Ecuador chooses jurisdictional approach for RSPO certification: <https://rspo.org/news-and-events/news/ecuador-chooses-jurisdictional-approach-for-rspo-certification>

focused on the provincial level, efforts were later refocused to the district level, such as to the districts of Seruyan and Kotawaringin Barat in Central Kalimantan and to Musi Banyuasin in South Sumatra (MacIsaac 2017).¹⁴ Although these initiatives are nascent, all share the general objective to apply the RSPO certification standard at the jurisdictional level, with the support of government policies and regulations as required. The mechanisms for preferential sourcing from sustainable jurisdictions as well as the mechanisms for distributing the benefits of jurisdictional certification are still yet to be agreed upon by the RSPO. As these initiatives are all relatively recent, there has been little written on how they are contributing to sustainable and inclusive palm oil production in Indonesia as well as their overall effectiveness. The following case study on Central Kalimantan province in this report is intended to fill this gap.

Table 2: Comparison of Different Sustainable Palm Oil Initiatives in Indonesia

	SIGNIFICANCE	PUBLIC SECTOR INVOLVEMENT	SCALABILITY
RSPO	The first major oil palm certification scheme and remains the industry standard, accepted globally by nongovernmental organizations and consumers	Although there is limited explicit public-sector involvement, the government should implicitly ensure the legality of production, including the provision of certificates and legal documents.	As certification is based on a farm, plantation, or mill basis, theoretically, with enough resources, RSPO certification can be expanded to all producers that meet its requirements.
ISPO	The official Indonesian government palm oil certification system	ISPO is based on compliance with government laws and regulations, enforced through a Presidential Regulation.	In its current form, ISPO certification is on a farm, plantation, and mill basis, and compliance is mandatory. The new Presidential Regulation provides scope for jurisdictional certification which may accelerate the certification process.
CZDP (IPOP)	A major private sector initiative to realize Corporate Zero-deforestation Pledges in Indonesia	Initially, limited public sector involvement although collaborated with government (jurisdictional initiatives)	IPOP was dissolved in mid-2016, with the companies involved returning to supply chain initiatives and some support for jurisdictional initiatives.
GOVERNMENT POLICY AND REGULATIONS	National laws and policies to reduce deforestation and environmental degradation	Strictly enforced national environmental regulations	The strong emphasis on enforceable regulatory measures rather than incentives means that regulations may be difficult to enforce in under-resourced regional areas.
SMALLHOLDER PRODUCTION AND INTENSIFICATION	Reducing smallholder expansion into forest frontiers through intensification	Government replanting program, including smallholder finance	Interventions to support smallholders, aside from the replanting fund, are largely led by nongovernmental organizations or agribusinesses. More systematic, government interventions are required to provide inputs, farmer organizational support, and training as well as finance to

¹⁴ Supporting South Sumatra to become a RSPO certified jurisdiction: <https://www.idhsustainabletrade.com/news/supporting-south-sumatra-become-rspo-certified-jurisdiction/>

			smallholders.
JURISDICTIONAL APPROACHES / CERTIFICATION	Pilot initiatives for reducing deforestation across entire landscapes	Jurisdictional approaches explicitly work with local governments, although in a multi-stakeholder approach.	Jurisdictional approaches, including certification, theoretically offer a simplified and larger-scale process for reducing deforestation and sustainable commodity sourcing.

7. CASE STUDY: JURISDICTIONAL CERTIFICATION IN CENTRAL KALIMANTAN

The provincial and district governments of Central Kalimantan have been piloting initiatives to reduce deforestation, to protect peatland, and to recognize the rights of indigenous people. The province of Central Kalimantan covers 158,000 square kilometers, extending from the coast to the deep interior of Indonesian Borneo. Peatland covers up to three million hectares, or 19.4% of Central Kalimantan.¹⁵ In 2014, tropical forests covered 50.7% of the province, or 7.8 million hectares in 2014 (See Figures 3 and 4 for land use changes, including current forest cover, in Central Kalimantan.)¹⁶ Since 2003, the economy has grown rapidly driven largely by commercial land uses, in particular oil palm (*Elaeis guineensis*), with the number of plantation companies tripling.¹⁷ In 2012, agriculture contributed 29% of the regional gross domestic product of Central Kalimantan, with the plantation sector, mainly oil palm followed by rubber, contributing 44% of that figure.¹⁸ Based on figures from the 2013 agriculture census, 3.18 million hectares of land had been allocated for oil palm concessions, with only 885,894 hectares operational.¹⁹ Agriculture is also the largest sector for employment in Central Kalimantan, employing 53% of all households, and the plantation sector the largest employer within the agricultural sector.²⁰ Plantations in Central Kalimantan export crude palm oil to several countries, including China, India, and Pakistan. (Figure 5) The rapid expansion of commercial land uses including oil palm, however, has come at the expense of the natural environment. From 2001 to 2014, the rate of deforestation in Central Kalimantan was 164,309 hectares per year.²¹ The proportion of deforestation directly caused by oil palm plantations, however, is only a fraction of the overall deforestation in the province. (Figure 3)

¹⁵ Wetland International 2004 - reference

¹⁶ INOBU and Ministry of Forestry

¹⁷ BPS Agriculture Census 2013

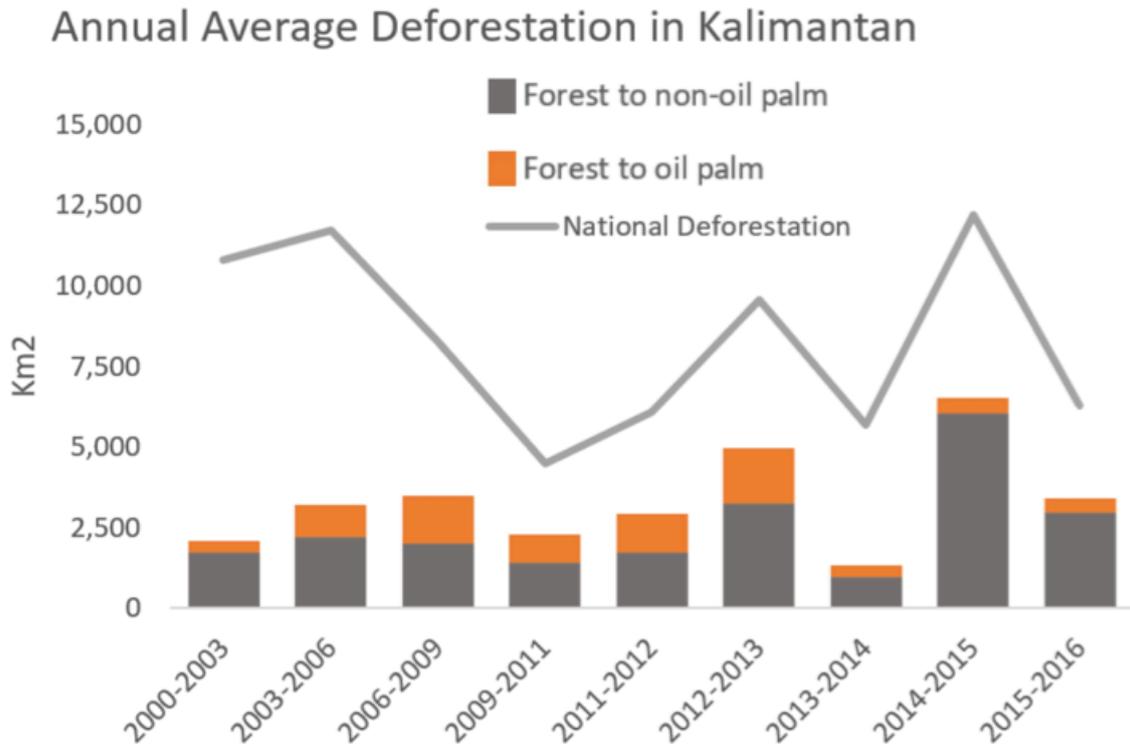
¹⁸ Kalimantan Tengah Dalam Angka, 2013

¹⁹ BPS Agriculture Census 2013

²⁰ BPS Agriculture Census 2013

²¹ Data from Earth Engine Partners and processed by INOBU

Figure 3: National Deforestation and the Contribution of Oil Palm Cultivation to Average Rates of Annual Deforestation in Kalimantan from 2001 to 2016.



Estimations by INOBU using data from Ministry of Environment and Forestry and CIFOR

Source: Croft-Cusworth, 2017

Note: The spike in deforestation in 2015 and early 2016 was probably caused by escaped fires that were exacerbated by the severe El Niño event during that period

Figure 4: Forest Cover in 2015 and Historical Land Use Change, including Oil Palm, in Central Kalimantan

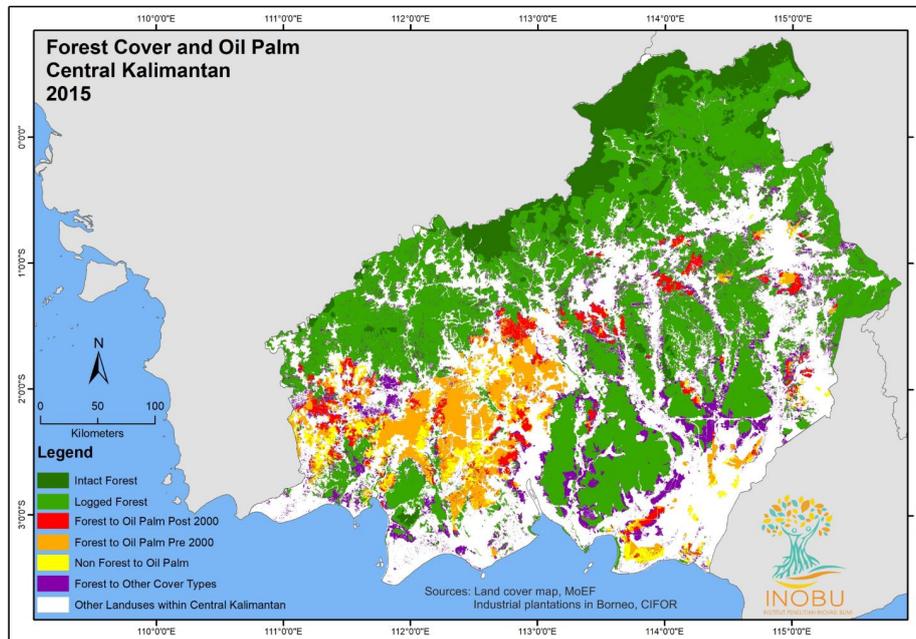
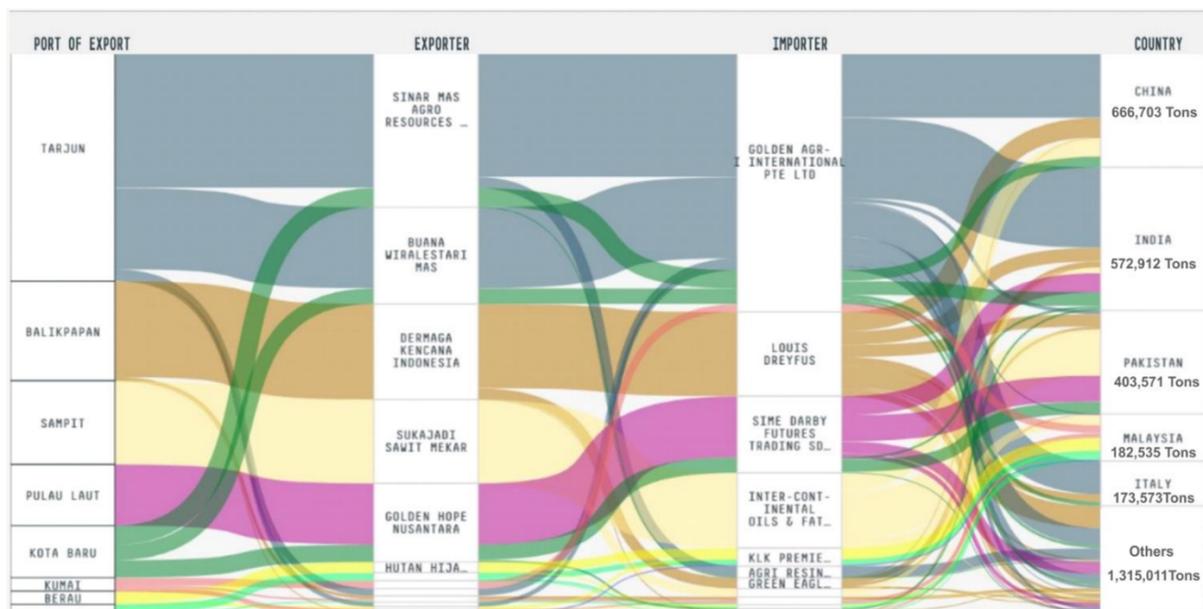


Figure 5: Palm Oil Supply Chain from Ports in Kalimantan



Source: Palm oil supply chain, TRASE

The efforts to reduce deforestation in Central Kalimantan gained momentum in 2009. In 2009, the Indonesian government committed to reduce greenhouse gas emissions by 26% by 2020 using its own resources. If the government were to receive international assistance, that figure would rise to 41%. The Norwegian government responded to these commitments by pledging USD\$1 billion in performance-based payments to support the efforts of the Indonesian government. As part of the efforts for Reducing Emissions from Deforestation and Degradation (REDD+), the province of Central Kalimantan was selected as a pilot province. To support efforts to reduce deforestation and to ensure that palm oil was produced sustainably and inclusively, the then governor of Central Kalimantan, Teras Narang, introduced a provincial regulation on Sustainable Plantations (Perda

5/2011). The regulation provides a framework for environmental management, for community plantations, for recognizing and respecting indigenous rights, and for ensuring that new plantations are only allocated on degraded lands. This regulation built on previous regulations, such as the Governor's Regulation No. 13/2009, which gave local customary institutions, in particular *Damang and Mantir*, the authority to recognize customary land claims outside of forest areas.

The first major step to implement a jurisdictional approach in Central Kalimantan was developing "The Central Kalimantan Roadmap to Low-deforestation Rural Development that Increases Production and Reduces Poverty" in June, 2013. The roadmap defined several goals to be achieved by 2020:

- Province-wide deforestation reduced to 20% of the 2006 to 2009 level;
- Zero-deforestation, sustainable palm oil sector; and
- Smallholder palm oil production reaches 20% of total.

The impacts of achieving these goals would be 1.2 million hectares of deforestation avoided, 0.6 billion tons of carbon dioxide emissions avoided, and reduced poverty in Dayak communities. Achieving these goals is contingent upon the implementation of several actions including resolving the negotiations over the long stalled spatial planning process for Central Kalimantan. Other immediate actions that were outlined in the roadmap included registering and monitoring plantations, including smallholder oil palm plantations, conserving primary forests and peatlands in non-forest areas, and increasing the participation and productivity of smallholder farmers. Actions needed in the longer term included improving market access for sustainable palm oil, supporting local and indigenous farmers to farm more sustainably, and exploring ways to provide support for smallholder farmers.

The Central Kalimantan Roadmap is both an aspirational and coordination document. In accordance with the distribution of powers and authority among different levels of government in Indonesia, provincial governments have limited authority over land use management. In terms of spatial planning, an area where the provincial government has the most direct influence on land uses, the national government was unable to agree on a revised Provincial Spatial Plan that it had created in 2003 through Provincial Regulation 8/2003. Only in 2015 were the provincial and national governments able to agree on a revised spatial plan for Central Kalimantan. As a result of Perda No.5 2015, there are 200,318 hectares of forests in areas classified as lands for other uses and 680,952 hectares of forests in conversion forest areas. Although provincial governments lack direct powers and authority over land uses except forestry, the coordinating function of provincial governments is helpful in addressing many of the challenges of land governance in Indonesia.

In the case of applying a jurisdictional approach for sustainable palm oil in Central Kalimantan, the provincial government was able to adopt a leadership role in addressing governance challenges at different levels of government. In Barcelona, in June 2015 at the Annual Meeting of the Governors' Climate and Forest Taskforce, the Governor of Central Kalimantan declared his commitment to a jurisdictional approach for certification.²² To this end, the governor issued two decrees in 2015 to support sustainable palm oil production across the province. The first of these was Governor's Decree No. 188.44/435/2015, which aimed to ensure that Central Kalimantan was free from deforestation by 2020 and that all oil palm plantations were sustainably certified by 2019. The decree also established a provincial working group to drive the achievement of these objectives. The second decree, Governor's Decree 188.44/436/2015, formally established a plantation monitoring system, later renamed *Sistem Informasi dan Pemantauan Kinerja Perkebunan Berkelanjutan* (SIPKEBUN). This

²² Central Kalimantan Announces Jurisdictional Certification for Sustainable Palm Oil: <https://www.rspo.org/news-and-events/news/central-kalimantan-announces-jurisdictional-certification-for-sustainable-palm-oil>

system was later adopted by the Ministry of Agriculture and three district governments in Central Kalimantan in October 2016. The plantation monitoring system includes smallholder spatial and socio-economic data, which is collected through pilot activities in three districts in Central Kalimantan along with similar data regarding plantations and scheme smallholder oil palm farmers.

Due to the distribution of power and authority among different levels of government in Indonesia, provincial governments do not have direct authority over land use management in non-forest areas. Consequently, the role of district governments is essential for sustainable palm oil production, which can only legally occur in non-forest areas. Two of the largest palm oil producing districts in Central Kalimantan, Seruyan and Kotawaringin Barat, subsequently declared their commitment to jurisdictional certification of palm oil according to RSPO standards in 2015. These declarations were formalized through decrees issued by the respective district heads in 2016, establishing working groups for the jurisdictional certification of palm oil.²³ These working groups were given the mandate to develop detailed plans for achieving jurisdictional certification as well finding:

“quick and appropriate ways of reducing frequent risks facing palm oil smallholders and companies, including deforestation, social conflict, greenhouse gas emissions and destruction of areas of high conservation value and high carbon value.”²⁴

In the two pilot districts, one of the main motivating factors for jurisdictional certification was the empowerment of independent smallholder farmers and their inclusion into sustainable palm oil supply chains. Consequently, the pilot districts have taken a stepwise approach to jurisdictional certification that emphasizes the importance of independent, smallholder farmers. In the Seruyan district, the more advanced of the two pilot districts, the following activities to address the challenges of achieving sustainable and inclusive palm oil development have been undertaken, or are ongoing: (Table 3)

- Establishing a district, multi-stakeholder working group for jurisdictional certification;
- Mapping and registering independent smallholders;
- Supporting all producers to comply with legality requirements;
- Establishing a district agricultural facility to systematically provide training and inputs to oil palm smallholders;²⁵
- Revising the district spatial plan to protect forest and peatland areas and restore critical areas as necessary;
- Developing a district protocol and mechanism to prevent and mediate social conflict arising from plantation development;
- Developing a district protocol and mechanism to trace transactions between independent smallholders, traders, and mills; and
- Engaging buyer companies to commit to sourcing sustainably produced palm oil from the district.

Although these initiatives share some of the features of many other nongovernmental organization or private sector supply chain initiatives, what differentiates jurisdictional certification is the scale and

²³ In the Seruyan district, the working group was established through “Decree of The Seruyan District Head Number 188.45/92/2016 on the Establishment of a Working Group on Jurisdictional Certification of Palm Oil in Seruyan District” while in Kotawaringin Barat district, the working group was established through “Decree of the Kotawaringin Barat District Head Number 525/500/198/Ut/2016 on the Establishment of a Working Group on Jurisdictional Certification of Palm Oil in Kotawaringin Barat District”

²⁴ Decree of The Seruyan District Head Number 188.45/92/2016 on the Establishment of a Working Group on Jurisdictional Certification of Palm Oil in Seruyan District

²⁵ Perusahaan Sawit Dukung Agricultural Facility: <https://www.seruyannews.com/perusahaan-sawit-dukung-agricultural-facility/>

the importance of government regulations, policies, and instruments. A jurisdictional approach means that sustainability, including deforestation, peatland degradation, and the improvements of smallholder productivity, can be achieved systematically across the entire jurisdiction. The initiation of jurisdictional certification has also encouraged the local government to address outstanding issues regarding palm oil production, such as ensuring plantation companies in the district meet the requirement of allocating 20% of their production to smallholders. The mapping and registration of smallholders has also initiated a process with the Ministry of Environment and Forestry to regularize the land tenure status of farmers with lands located in forest areas.

Jurisdictional certification at the district level has incentivized district governments and companies to address the complex challenges obstructing sustainable and inclusive palm oil production. These efforts have been supported by donors and nongovernmental organizations. As a result, many of the costs have not been directly borne by the jurisdiction. As an official framework for recognizing jurisdictional certification is still under discussion at RSPO, including the appropriate supply chain model, these initiatives have yet to translate into actual incentives for producers in the district.²⁶ The longevity and scalability of jurisdictional certification in Indonesia depends on jurisdictional certification providing producers and local governments with adequate upfront financing and incentives to undertake and maintain sustainable and inclusive palm oil production. A further advantage of jurisdictional certification is that creates a regulatory and enabling environment to ensure that all commodities within the jurisdiction are produced sustainability with institutional mechanisms to guarantee the inclusion of smallholders.

Table 1: How Jurisdictional Certification in the Seruyan District Addresses the Main Challenges for Sustainable and Inclusive Palm Oil Production²⁷

Challenge	Jurisdictional Approach to Certification	Relevant Laws, Policies, and Interventions
Limiting the expansion of palm oil into high-carbon forests and peatlands	Revising the spatial plan to protect and restore forests and other critical areas	<ul style="list-style-type: none"> • Carrying capacity assessments (<i>Daya dukung, daya tampung</i>) • Plan to protect and manage the environment (<i>Rencana Perlindungan dan Pengelolaan Lingkungan Hidup</i>) • Strategic environmental assessment (<i>Kajian Lingkungan Hidup Strategis</i>) • District Spatial Plan (<i>Rencana Tata Ruang Wilayah Kabupaten</i>)
Adopting mechanisms to enhance transparency and accountabilities	Monitoring and transparency systems at the district or provincial level and the piloting of protocols and mechanisms for preventing and mediating social conflicts arising from plantations	<ul style="list-style-type: none"> • Plantation monitoring system (<i>SIPKEBUN</i>) • District traceability system supported by regulation (<i>under development</i>) • District social conflict system supported by regulation (<i>under development</i>)

²⁶ Calling for Participation and Nomination of Jurisdictional Approach Working Group Members: <https://rspo.org/news-and-events/announcements/calling-for-participation-and-nomination-of-jurisdictional-approach-working-group-members>

²⁷ Challenges adapted from Pacheco et al. (2017b) and compared with ongoing initiatives and regulations in the Seruyan district, Central Kalimantan as part of jurisdictional certification efforts through personal observations and citations presented earlier in the report.

Creating conditional incentives to intensify palm oil supply, mainly of smallholder farmers	Preferential sourcing from sustainable jurisdictions and the creation of an agricultural facility to support smallholders	<ul style="list-style-type: none"> • Agricultural facility (<i>Fasilitas Pertanian Pelita Seruyan</i>)
Adopting new approaches to facilitate the upgrade of smallholder production systems	Creation of an agricultural facility to support smallholders	<ul style="list-style-type: none"> • Agricultural facility (<i>Fasilitas Pertanian Pelita Seruyan</i>)
Legalizing tenure claims under different types of rights recognition schemes	Mapping and registering smallholders followed by formalizing land and cultivation rights	<ul style="list-style-type: none"> • Various instruments from the Ministry of Agriculture, the Ministry of Environment and Forestry, and the National Land Agency

8. CONCLUSION

Although global demand for palm oil and the expansion of plantations in the tropics continue to increase, the demand for verified, sustainably produced palm oil is also increasing. Campaigns by nongovernmental organizations have inspired new national and regional policies in importing regions that are either encouraging outright bans, disincentivizing the use of palm oil for biodiesels, or demanding sustainable sourcing arrangements. Among nongovernmental organizations and consumers, the accepted pathway for improving the sustainability of palm oil production is through RSPO supply chain certification. Recent research has indicated that although RSPO certification does improve the sustainability of oil palm plantations, it does not reduce rates of deforestation, fire, and peatland degradation across the landscape. Zero-deforestation commitments have met with resistance from local nongovernmental organizations and communities. Government certification systems such as ISPO are perceived as diluting the principles and criteria of private certification systems. National policies for reducing deforestation and environmental degradation have focused on strict regulations with limited incentives for encouraging positive performance. Finally, initiatives for encouraging improvements in the productivity of smallholders to promote intensification are currently geographically limited in scope.

To significantly reduce the deforestation, fires, and peatland degradation from oil palm expansion, a compromise among producers, buyers, nongovernmental organizations, and governments in tropical producer countries is needed. Driving these processes forward requires government coordination and initiatives at the local or district level. District governments do not have any direct incentives to drive these initiatives. Environmental policies at the national level have a strongly emphasize legally enforceable bans and moratoriums, in contrast to providing positive incentives based on performance. Despite early promise, REDD+ payments to subnational governments have not yet been implemented. Globally, district governments receive few direct benefits from sustainability initiatives through commodity chain certification efforts, which instead flow to certified plantations and mills. To move beyond this impasse, there needs to be an alignment of the incentives for sustainably produced commodities and the actors, including local governments responsible for reducing deforestation and improving the legality of farmers. These incentives should be linked to a performance system, tailored to reflect the laws, regulations, and policies of Indonesia, as well as the jurisdictional authority of district governments. Jurisdictional certification, among other jurisdictional approaches to sustainability, offers the promise of addressing many of these challenges, with single commodity certification creating the enabling environment for wall-to-wall commodity certification.

9. FURTHER RESEARCH

In Table 4 below, this paper proposes areas for further research. The table emphasizes the areas where targeted and robust research could overcome many of the obstacles to sustainable palm oil production in Indonesia.

Table 2: Proposed Areas for Further Research

Topic	Focal Area	Policy Outcome
Small-scale production models	Finding incentives and financially viable models of small-scale, sustainable palm oil production, including mills, as well as identifying the obstacles to a broad-scale adoption of these models	Policy reform to incentivize investment in, and sourcing from small-scale production systems
Land and supply chain taxation	Investigating appropriate mechanisms for taxing plantations, other estate land, and the palm oil supply chain that adequately reflect their value and environmental and social effects	An appropriately designed land tax for plantations and concessions
Environmental safeguards	Finding an acceptable compromise between government methodologies and HCV/HCS	Legally enforceable and globally accepted environmental safeguards for commodity production at jurisdictional (landscape) scale
Social safeguards	Finding an acceptable design for jurisdictional social safeguards that meet the requirements of FPIC	Legally enforceable and globally accepted social safeguards for commodity production at jurisdictional (landscape) scale
Legality of jurisdictional certification and sourcing	Investigating the legal barriers to jurisdictional certification and sourcing both in terms of national laws and bi-lateral and multi-lateral trade agreements	Legal options/models for jurisdictional certification and sourcing, including models for transactions between buyers and producers, including those in bi-lateral trade agreements
Mechanisms for preferentially sourcing from sustainable jurisdictions	Finding the most effective ways to source traceable produce crude palm oil from sustainable jurisdictions considering the complexities of the palm oil supply chain and the needs of producers and buyers	Models for jurisdictional sourcing that are tailored to different types of producers and buyers globally
Mechanisms and criteria for green investments in sustainable jurisdictions	Finding the simplest and most effective ways for investors to invest in sustainable jurisdictions while reducing the risk to those investors	Models for green, preferential investments for sustainable jurisdictions tailored to different types of investors, with an initial, although not exclusive, focus on the palm oil supply chain
Mechanisms for financing low emission development	Finding the simplest and most transparent ways to channel financial resources to local governments (jurisdictions) to enable them to develop the governance infrastructure for jurisdictional sustainability.	Models for different mechanisms to finance low emission development in Indonesia and globally, with an initial focus on the palm oil supply chain.

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