Sustainability certifications, approaches, and tools for oil palm in Indonesia and Malaysia

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This report is the first in a series of three reports authored by CIFOR-ICRAF on palm oil sustainability in Indonesia and Malaysia. The information contained in each report builds upon the previous ones, which can be referred to for background and context.

Cover photo: A hut in the middle of oil palm plantations in Buluq Sen village, East Kalimantan. Photo by Nanang Sujana/CIFOR.

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Executive summary

The global demand for and production of palm oil continues to grow and has placed the commodity in the centre of controversies surrounding economic, social, and environmental challenges and opportunities. Concerns regarding the links between palm oil production and the environment (such as deforestation, soil degradation, peatland destruction, soil erosion, water pollution, greenhouse gas (GHG) emissions and the loss of biodiversity), exploitation, and illegal practices are at the forefront of the sector. This has resulted in a call for sustainable and deforestation-free palm oil. With around 85% of palm oil produced in Indonesia and Malaysia and significant amounts of production done by smallholders, these two countries are in the spotlight often and will be impacted the most should the demand for this commodity change.

Various approaches and tools have been developed to promote sustainable production of palm oil, including sustainability standards and certification systems (both voluntary and mandatory), jurisdictional approaches as a pathway for sustainable sourcing of commodities within political boundaries, and tools assessing sustainability performance. This study (part of the broader EU-funded KAMI – Sustainability of Indonesian and Malaysian Palm Oil - project) compares existing sustainability certifications, approaches, and tools addressing the oil palm sector in Malaysia and Indonesia, especially in regard to environmental thresholds, inclusion of smallholders, social protections including for indigenous peoples, and operational modalities. Three questions guide the study approach:

1. What are the existing sustainability certifications and approaches in Indonesia and Malaysia?
2. How do these approaches and certifications compare? and
3. What are the gaps and key takeaways (considering the new EU regulations and communications)?

Through a literature review combined with interviews and consultations with key stakeholders, CIFOR identified, examined, and compared oil palm related sustainability approaches, tools, and certifications applicable in Indonesia and Malaysia. In total, six (6) certification systems, 13 approaches and tools and eight (8) additional supplementary data tools applicable in oil palm landscapes were identified. The six certification systems were as follows:

1. Alliance for Water Stewardship - AWS Standard
2. Indonesian Sustainable Palm Oil - ISPO
3. International Sustainability and Carbon Certification – ISCC
4. Malaysian Sustainable Palm Oil - MSPO
5. Roundtable on Sustainable Biomaterials – RSB
6. Roundtable on Sustainable Palm Oil - RSPO

The additional approaches and supporting tools can assist in evaluating sustainability and showing sustainability performance within jurisdictions and commodity supply chains. Over the past decade, multiple tools that examine the progress towards sustainability have been developed, including those focusing in part or in full on commodities/palm oil. Two of these approaches – High Carbon Stock (HCS) and High Conservation Value (HCV)– have been

incorporated to varying degrees into some of the certification systems. The tools and approaches identified in this study are complementary to each other and can be implemented together within a single jurisdiction or landscape.

By examining the environmental thresholds, land use definitions and criteria for deforestation, peatlands, fire, participation and inclusion of smallholders (including aspects related to challenges faced by smallholders and existing support), safeguards for indigenous peoples, worker rights and working conditions, governance and decision making, monitoring and verification, implementation and non-compliance within certification systems, and traceability within certification systems, this study finds that many of the sustainability certifications and tools consist of criteria and indicators that could enable the production of sustainable, deforestation-free palm oil if implemented and enforced.

The identified certification systems vary but most focus on sustainable production of palm oil through criteria for environmental thresholds such as deforestation and land use change and social and governance requirements such as Free Prior Informed Consent (FPIC) and labour/no-exploitation regulations. Additionally, the inclusion and participation of smallholders varies across the certifications, as do the criteria for new plantings in HCV areas and peatlands. In both Indonesia and Malaysia, the national and mandatory certification systems are based on and linked to national regulations and requirements. For example, in Indonesia – oil palm plantations and mill investors are still required to conduct an Environmental Impact Assessments (EIA) before the start of operations of proposed plantation area greater than 3000 ha or proposed mills with an establishment area larger than 10 ha and in Malaysia – similar EIA requirements exist but are subject to the regulations of the state (especially Sabah and Sarawak) on land use and development.

All identified certification systems with the exception of AWS contain some guidance on “allowable” land use and land change. Most certifications have a historical cut-off date for deforestation. However, if a cut-off date is too far in the past, this can lead to the exclusion or marginalization of specific stakeholders, e.g., indigenous people (IP). Thus, it might be more beneficial to set earlier cut-offs with immediate implementation deadlines but work with marginalized groups to set short term cut-off dates with a plan for eliminating deforestation. Though most of the certification systems in their definitions of forests allow exceptions for indigenous lands, the concerns expressed show the need for clarifications on criteria implementation to be provided.

While it is worth noting that certification schemes have the potential to curb deforestation, studies examining the effectiveness of certifications are limited, with the majority focusing on RSPO and only a handful on ISPO, MSPO, and others. The study found mixed evidence of effectiveness of certification systems to address environmental, social, and economic issues. Though certifications have some positive impacts and the potential to help curb deforestation, monitor and address human rights violations, etc., their implementation remains a challenge. Some studies have shown that there is a reduction in deforestation rate based on a counterfactual analysis for RSPO, but forest loss due to deforestation or fire damage is not stopped in Indonesia, Malaysia and Papua New Guinea. At the same time, there is evidence that the moratoria on forest and peatland conversion and granting of new oil palm licenses along with initiatives for the restoration of peatlands implemented after the 2015 fires reduced the severity of 2019 fires. Malaysia also put a fire ban in place in 2019,

however the effectiveness of this remains to be studied. Other studies have observed that RSPO and ISPO have been ineffective in curbing oil palm related deforestation and that it results in a negative spill over effect or leakage (including indirect land use change) where deforestation is displaced to non-certified farms or to other sectors. Certifications need to focus on landscapes beyond the oil palm plantations that are forested to be more effective in curbing deforestation, resulting in forest protection, and addressing issues of leakage, and this can be accomplished through having other initiatives being implemented in the same areas. Considering subnational JAs to achieve a more effective path to halting deforestation would help in addressing leakage within a given jurisdiction.

Independent smallholders are important actors in the (sustainable) palm oil supply chain, managing significant portions of palm oil cultivation areas in both Indonesia and Malaysia. However, independent smallholders also attain only a portion of their yield potential, which is a major driver of deforestation and peatland conversion in Indonesia. Most certifications systems have developed specific streams for the certification of independent smallholders, and these tend to have a lower number of criteria or indicators to reduce the burden on independent smallholders. Organized smallholders are often subject to similar certification criteria and indicators as plantations. The definition of a “smallholder” varies across the different certification systems, in terms of hectarage.

In Indonesia, there are micro and macro level challenges for ISPO implementation, especially for smallholders, including: land legality, cost of certification, lack of reach and information sharing with smallholders in remote areas, data discrepancies, and negative campaign on palm oil. In Malaysia, despite having a set standard geared towards independent smallholders, MSPO adoption among this group has been slow since they face issues of land ownership exchange and other land-related issues that can take a long time to resolve to meet the MSPO requirements – these also include difficulties of getting the land use category changed and land titling, especially for IP. Additionally, one of the biggest challenge facing smallholders across both Indonesia and Malaysia is the absence of premium prices as representation of buyer’s acknowledgement of smallholders’ effort towards sustainability and premium prices can help smallholders offset certification costs.

Recognizing the difficulties posed by the costs of obtaining certification for smallholders, various incentives (i.e., mechanisms and funds) have been established by some of the certification systems to help. NGOs also play a crucial role in providing support and funding for the trainings and capacity building required for smallholders to achieve certification (e.g., WWF, Inobu, Yayasan Setara, Wild Asia). More recently, support from the private sector for smallholder certification has also been on the rise. Various certification systems also encourage smallholders to comply with sustainability principles and criteria through group certification. Many governments often cover the initial cost for certification of smallholders (especially for ISPO and MSPO) but there are additional costs for maintaining the certification that also need to be accounted for, such as recurrent audit costs. Often by joining a group/becoming organized, producers, particularly smallholders, can reduce the certification effort and costs by having multiple farms certified under a single certificate – this approach is utilized by many certification systems (including ISPO and MSPO) though the governance and structure of the group may vary. However, when requirements are revised and changed, these can cause difficulties in updating smallholders and ensuring compliance – requiring sufficient resources, planning, and strategies to re-train the smallholders. Further,

strategies for addressing non-compliance towards sustainability would be more impactful if socio-economic (livelihood assets, portfolios) differences in independent smallholders are considered and recognize that certain types of independent smallholders might have more control over actions and interests in the sector.

Most certifications provide some degree of protection for indigenous peoples (IP) and customary land rights, human and worker rights, work conditions. Community land rights, including customary rights, FPIC, labour standards, no child labour, migrant labour protection, and no discrimination are examined in this study. Consideration and monitoring of worker conditions is a crucial part of sustainable oil palm production since it is a labour-intensive process that requires prompt harvesting (i.e., two rounds of harvesting per month) and transportation of fresh fruit bunches to mills before they desiccate, resulting in lower quality and price. However, the credibility of the certification systems in detecting and responding to labour violations and indigenous land encroachment has been questioned. Making the close monitoring and enforcement of regulations crucial for the sustainability of the sector.

IP in both Indonesia and Malaysia face additional challenges when compared to other palm oil producers/smallholders seeking certification. Ranging from difficulties in having customary lands and rights recognized by the government to often not possessing a land title, it is challenging for IP to get certified. Mechanisms that address land recognition and land tenure issues are needed along with the acknowledgement of local and indigenous rights, especially as the importance of indigenous and local communities has been recognized in realizing commitments to stopping deforestation. There is evidence that through the process of becoming certified, smallholders and IP have now become more aware of the importance of environmental considerations, legal requirements, and adoption of good agriculture practices.

An additional key challenge for certification and sustainability is considering leakage markets along the supply chain. If suppliers and producers that are not committed to NDPE and other sustainability criteria are able to sell to sections of the market not requiring these practices, then there are few incentives to change practices and transition to sustainability. Thus, providing incentives, especially to smallholders, is a crucial part of moving to deforestation-free production. If smallholders are not incentivized and do not meet the criteria of the mandatory ISPO or MSPO, then they risk being unable to access markets, further impacting their income and quality of life.

Through revisions of the standards, many of the certification systems have attempted to improve on their shortcomings, however we find that they can still be improved. Given this, as recognized by other researchers, we believe that certifications cannot be the only mechanism or channel to incentivize a transition to sustainability. Rather, certifications need to be paired with other sustainability approaches and tools and supported by additional regulations and initiatives in oil palm producing landscapes. This is especially important as we consider the recent proposed EU regulations and other international sustainability standards seeking to reduce deforestation impacts of commodities entering the international market.

Reflecting on the findings of this study, specifically in the context of gaps, lessons learnt, and best practices in relation to existing certifications, tools and approaches to palm oil

sustainability, CIFOR outlines some future steps, improvements, and considerations for demonstrating sustainability performance.

1. Open and transparent discussions with all parties are needed on which certifications and tools would be acceptable as complementary information or as part of due diligence for the EU proposed regulation and a common understanding of definitions and metrics of measurements regarding sustainable supply chains and sustainability (e.g., HCS thresholds, mechanisms for measuring and detecting leakage).
2. In examining the transition or progress to sustainability through implementation of certifications or international sustainability standards, the adoption of quantitative proportion-based performance indicators that account for baseline conditions and monitor performance relative to initial conditions are needed, allowing for performance monitoring and evaluations to be aligned with regulations of each country or jurisdiction (e.g., district). Varying baseline conditions of areas before certification or sustainability initiatives can lead to confusion between participation and performance.
3. Support for and further development of data collection and monitoring initiatives and frameworks being developed within producing countries so the information produced can be utilized to demonstrate compliance with international sustainability standards.
4. Support integration or integrated platform initiatives to address the lack of integrated information regarding forests and commodity supply chains poses a major challenge for monitoring trade flows and transparency. Multiple data sources could be brought together on one platform that are designed based on existing tools, approaches, and certifications.
5. Additional financial support for and partnerships with NGOs and CSOs involved in supporting smallholders and indigenous people is needed. NGOs and CSOs support smallholders in capacity building, GAP, and certifications and provide a path for additional funding and support to be channeled to smallholders via their programs and initiatives.
6. Consider and explore mechanisms to establish traceability with geolocation information by expanding on on-going efforts. For example, existing mechanisms that could be expanded to include or provide geolocation data can be identified along with potential investors to allow for this work. Similarly, there is a need to conduct further research on book and claim traceability model for sustainable palm oil as a potential pathway to incentivize smallholders to adopt sustainable practices.
7. Support and consider subnational jurisdictional initiatives (JAs) as a mechanism to meet the information requirements to show production of deforestation-free commodities throughout the jurisdiction in a manner that accounts for leakage.
8. Considerations for the Indonesian Sustainable Palm Oil (ISPO) certification system: integrate high carbon stock (HCS) approach; adopt a cut-off date for deforestation; develop guidelines on governance and decision-making processes to enhance ISPO credibility; increase coordination between ministries to speed up land titling and legalization; provide additional support and financial resources to smallholder groups and smallholders; establish a traceability system prior to 2025; and develop a publicly accessible ISPO website to increase transparency.
9. Considerations for the Malaysian Sustainable Palm Oil (MSPO) certification system: develop specific criteria, indicators, and guidelines to strengthen the proposed integration of high conservation value (HCV) approach, environmental, and social impact assessment, greenhouse gas calculations, and labour and living conditions; provide

additional support to smallholders; further promote group certification and implement this strategy at a jurisdictional level; develop MSPO Trace website further and sooner than 2025 to further enhance transparency; establish a streamlined mechanism for resolving land titling issues for indigenous people and smallholders; and provide a clear and comprehensive list of situations and local legislations where land conversion (e.g., deforestation) can still occur.

Abbreviations and acronyms

ACOP	Annual Communication of Progress
AFi	Accountability Framework Initiative
AWS	Alliance for Water Stewardship
BAPPENAS	Badan Perencanaan Pembangunan Nasional (National Development Planning Agency), Indonesia
BPDPKS	Badan Pengelola Dana Perkebunan Kelapa Sawit (Oil Palm Plantation Funding Management Agency), Indonesia
BPN	Badan Pertanahan Nasional (Ministry of Agrarian and Spatial Planning/National Land Agency), Indonesia
BRWA	Badan Registrasi Wilayah Adat, Indonesia
CBP	U.S. Customs and Border Protection
CCBA	Climate, Community and Biodiversity Alliance
CDP	Carbon Disclosure Project
CO	Central Office
CPO	Crude Palm Oil
CSO	Civil Society Organization
CSPO	Certified Sustainable Palm Oil
DOPPA	Dayak Oil Palm Planters Association of Sarawak
EFI	European Forest Institute
EIA	Environmental Impact Assessments
ESA	Environmentally Sensitive Areas
ESG	Environmental, Social, and Governance
ESMP	Environmental and Social Management Plan
FELCRA	Federal Land Consolidation and Rehabilitation Authority, Malaysia
FELDA	Federal Land Development Authority, Malaysia
FFB	Fresh Fruit Bunches
Fortasbi	Indonesian Sustainable Oil Palm Farmer Forum
FPIC	Free, Prior and Informed Consent
FQD	Fuel Quality Directive
GAP	Good Agricultural Practices
GAPKI	Indonesian Palm Oil Association
GHG	Greenhouse Gas
GPSNR	Global Platform Sustainable Natural Rubber
HCS	High Carbon Stock
HCV	High Conservation Value
HCVRN	HCV Resource Network
ICS	Internal Control System
ILO	International Labour Organization
ILUC	Indirect land use change
IP	Indigenous people
ISCC	International Sustainability and Carbon Certification
ISH	Independent Smallholder
ISPO	Indonesian Sustainable Palm Oil
JA	Jurisdictional Approach
JAKOA	Department of Orang Asli Development Malaysia

JAOS	Indigenous People's Network of Malaysia
JCSPO	Jurisdictional Certification of Sustainable Palm Oil
KDSD	Kerangka Daya Saing Daerah (Regional Competitiveness Framework)
LAF	Landscape Assessment Framework
LTKL	Lingkar Temu Kabupaten Lestari (Indonesian Sustainable Districts Association)
LUCA	Land Use Change Analysis
MANRED	Ministry of Modernization of Agriculture, Native Land and Regional Development, Sarawak
MB	Mass Balance
MPIC	Ministry of Plantation Industries and Commodities, Malaysia
MPOB	Malaysian Palm Oil Board
MPOCC	Malaysian Palm Oil Certification Council
MSPO	Malaysian Sustainable Palm Oil
NASH	National Association of Smallholders, Malaysia
NDPE	No deforestation, no peat and no exploitation
NGO	Non-Governmental Organization
NPP	Peninsular Malaysia's National Physical Plan
NSPK	Norms, Standards, Procedures, and Criteria, Indonesia
P&C	Principles and Criteria
PKO	Palm Kernel Oil
PMM	Proposal for Mitigation Measures
RaCP	Remediation and Compensation Procedure
RED	Renewable Energy Directive
REDD+	Reducing Emissions, Deforestation and Degradation
RISDA	Rubber Industry Smallholders Development Authority, Malaysia
RSB	Roundtable on Sustainable Biofuels
RSPO	Roundtable on Sustainable Palm Oil
RSSF	RSPO Smallholder Support Fund
SALCRA	Sarawak Land Consolidation and Rehabilitation Board
SDGs	Sustainable Development Goals
SEIA	Social and Environmental Impact Assessment
SLDB	Sabah Land Development Board
SLRT	Sustainable Landscapes Rating Tool
SPOC	Sustainable Palm Oil Cluster
SPOTT	Sustainability Policy Transparency Toolkit
SPPL	Surat Penyataan Pengelolaan Lingkungan (Environment Management and Monitoring Letter), Indonesia
STA	Smallholder Trainer Academy, Indonesia
STDB	Surat Tanda Daftar Budidaya (Cultivation Registration Certificate), Indonesia
TORA	Tanah Objek Reforma Agraria (Agrarian reform), Indonesia
TUNAS	Tunjuk Ajar Dan Nasihat Sawit (Palm Guidance and Advice), Malaysia
UKL-UPL	Upaya Pengelolaan Lingkungan Hidup dan Upaya Pemantauan Lingkungan Hidup (Environmental management and monitoring documents)
WASH	Water, Sanitation and Hygiene
WSAS	Water Stewardship Assurance Services

1. Introduction

The global demand for and production of palm oil continues to grow and has placed the commodity in the centre of controversies surrounding economic, social, and environmental challenges and opportunities. Palm oil is ubiquitously used in both the food and non-food sectors, including as biodiesel, but has also been identified as one of seven major globally traded commodities that place increasing pressures on forests across landscapes in the tropics and subtropics (Wardell et al. 2021). Given the growing demand and ubiquity of palm oil, there are concerns over links to impacts on the environment (such as deforestation, soil degradation, peatland destruction, soil erosion, water pollution, greenhouse gas (GHG) emissions and the loss of biodiversity), exploitation, and illegal practices (Ibanez and Blackman 2016, Ching et al. 2019). Global palm oil production has increased from 22 million tons in 2000 to over 71 million tons in 2018 to meet global demand (Figure 1). With 85% of palm oil being produced in Malaysia and Indonesia, the two largest palm oil producers globally, these two countries are often in the spotlight regarding oil palm policies and agricultural practices. Additionally, smallholders, both independent and organized, play a large role in managing oil palm production areas in both Indonesia (40%) and Malaysia (35%) and face issues regarding low yields (Rahman 2020; Suhada et al. 2018) but have been identified as key in transition to sustainable palm oil.

Due to the links and concerns mentioned, there is growing pressure from civil society organizations (CSOs), consumers, and others for sourcing sustainable and deforestation-free palm oil to reduce potential reputational, financial, and regulatory risks (Wardell et al. 2021). Various instruments and tools have been developed to promote sustainable production of palm oil, though there are problems associated with implementation and exact definitions of what sustainable palm oil means (Gatti and Velichevskaya 2020), and with market access and credibility (Hidayat et al. 2015). This is in part due to the complexity of the oil palm supply chain/sector which contains many stakeholders ranging from government agencies, growers (plantations, organized smallholders, independent smallholders) mills, traders and processing corporations, consumer goods manufacturers, to financial institutions (Pacheco et al. 2020).

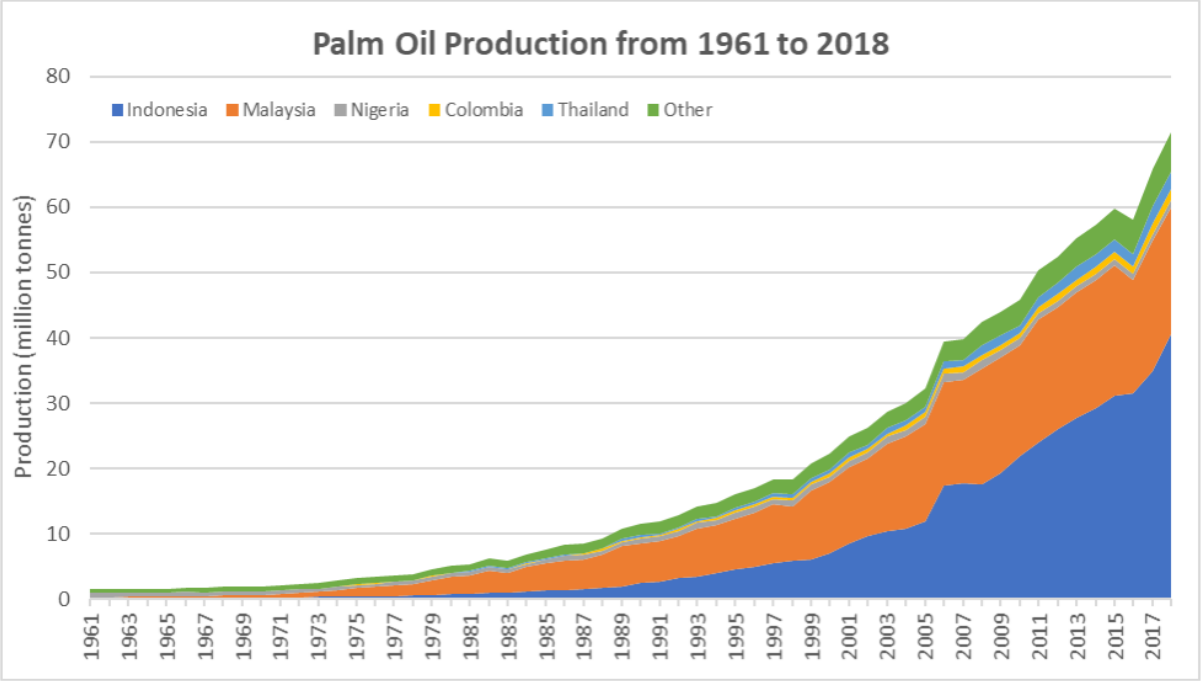

Figure 1. Palm Oil Production for the period 1961 to 2018. The production amounts from five highest palm oil producing countries (Indonesia, Malaysia, Nigeria, Colombia, Thailand) are shown individually while the amounts from all other palm oil producing countries have been grouped together. (Adapted from Ritchie and Roser (2021)).

Sustainability standards and certification systems play an important role in global governance of production and trade to demonstrate performance and compliance (UNFSS 2018). Most standards and certifications are voluntary and contain measurable criteria and indicators to assess sustainable conditions/outcomes (Potts et al. 2014, Smith 2019). Standards generally contain principles and criteria (P&C) defined through a global multi-sector process that is interpreted for individual regions, rely on independent monitoring or third-party conformity assessments, and use certification to strengthen performance claims (Potts et al. 2014). The strong presence of voluntary sustainability standards (i.e., Roundtable on Sustainable Palm Oil (RSPO), Roundtable on Sustainable Biomaterials (RSB)) in the palm oil sector has been observed (Ingram et al. 2020). Additionally, certain national standards and certifications (i.e., Indonesian Sustainable Palm Oil (ISPO), Malaysian Sustainable Palm Oil (MSPO)) have become mandatory within the supply chain. Moreover, like many other markets, the European Union market[1] is concerned about sustainability including deforestation, forest degradation, and emissions as related to production and with strong legislation in place (that codifies sustainability), the EU maintains the need for certified and sustainable palm oil (Pacheco et al. 2017), though uncertified palm oil is still imported. Further, in addition to environmental factors, different standards and certifications can encompass broader safeguards, social indices, and governance and policy issues to varying extents (Potts et al. 2014).

[1] European Union, after China and India, is the largest importer of palm oil with two-thirds of the imported palm oil going to bioenergy production (Ritchie and Roser 2021).

Despite the growth of certified sustainable palm oil in the recent years (RSPO 2020a), many critiques of the certification systems exist. In their 2021 report, Greenpeace states certification is "a weak tool to address global forest and ecosystem destruction" with limitations for delivering change (Greenpeace 2021). Concerns of leakage or negative spill overs with certifications resulting in deforestation by other actors or for production of other commodities beyond palm oil have been documented (e.g., Heilmayr et al. 2020, ten Kate et al. 2021). Standards and certifications have additionally been critiqued for having weak standards (Laurance et al. 2010), limited enforcement (Ruysschaert and Salles 2014), limited sanctions for non-compliance (Meijer 2015), and no difference between the certified and non-certified (Morgans et al. 2018) – however, it is important to note that standards and certifications do not operate singly and nor are they the sole way to achieve sustainable commodity production in a given landscape, rather they need to be coupled with effective and well-implemented regulations. Robust studies on the cost and benefits analysis of certifications are limited; Tey et al. (2021) found only three studies in a literature review that could be considered robust, of which two found net financial benefits and one found negative returns of the RSPO certification. Further, traditional certifications have operated at the estate or farm level, limiting the ability to deliver broader environmental and social benefits especially when taking leakage into account, and the multiple public and private sector stakeholders and their initiatives to address the various performance gaps within the sector have resulted in divergent development and sustainability priorities (Morgans et al. 2018, Pacheco et al. 2020). Addressing the issue of scale (level) of initiative implementation, leakage, and bringing together the stakeholders for cohesion, the emergent jurisdiction approaches has been identified as a pathway to drive change towards sustainability (Paoli et al. 2016; Wolosin 2016).

There has been a recent rise in the interest for and implementation of jurisdictional approaches (JA)[2] as a pathway for sustainable sourcing of commodities within political boundaries. Though a JA shares similar goals with standards and certifications (creating new frameworks and governance structures for sustainable commodity production), it operates beyond the individual farmer/producer or site level, bring together relevant stakeholders, and have the potential to reshape current supply chain practices. Further, the importance of contributions and mobilization of sub-national governments has been highlighted in international platforms[3]. Sub-national jurisdictions (state, province, or district) can be a strategic level of governance having some legal authority and political power to make decisions and policies regarding land use in decentralized political systems (Boyd et al 2018, Busch and Amarjargal, 2020), thus they can help advance and support national-level goals (Boyd et al. 2018, Stickler et al. 2018) and attempt to align multi-stakeholder processes with potential external financial and market incentives. The sub-national level is

[2] Jurisdictional approaches are a holistic attempt to address environmental and development trade-offs by operating across multiple objectives, scales, and sectors (Sayer et al., 2013). A focus within political boundaries (national. State/province, etc.) facilitates strategic alignment of initiatives and implementation with public policies and allows governments to lead or play an active role (Boyd et al. 2018; Stickler et al. 2018).

[3] For example, the Parties to the Convention of Biological Diversity in 2010 adopted the Plan of Action on Subnational Governments, Cities and other Local Authorities for Biodiversity in support of the Strategic Plan for Biodiversity 2011-2020 (https://www.cbd.int/kb/record/decision/12288) and the Governor's Climate and Forest Task Force (GCF-TF; https://www.gcftf.org) is now a platform for collaboration among 38 states and provinces in 10 countries with the commitment to protect forests, reduce emissions and enhance livelihoods across 28% of global tropical forests.

better positioned to coordinate with farmers and communities (e.g., smallholders, indigenous communities) that drive land change. Certification systems are developing streams (jurisdictional certifications) adapted to being implemented at the jurisdictional level, e.g., RSPO Jurisdictional approach, where an entire sub-national jurisdiction is certified rather than a farmer/producer or farm.

In addition to standards and certifications, other tools and approaches exist that assess sustainability performance and prove due diligence. Specific tools and approaches that are geared towards assessments at the jurisdictional level examining different aspects have been developed. For example, the Climate, Community and Biodiversity Alliance's (CCBA) Sustainable Landscapes Rating Tool (SLRT), rates governance conditions for sustainable landscapes against internationally recognized criteria, thereby focusing on process and enabling conditions rather than on outcomes (SLRT 2019). Other examples include LandScale led by CCBA, Rainforest Alliance and Verra; Terpercaya by EU, Inobu, and European Forest Institute (EFI); and Verified Source Areas/SourceUp by IDH[4] which provide information on deforestation, productivity, and human development metrics. These tools and approaches can often be used in tandem to complement each other and certifications and help in due diligence processes for decision making.

Through this report, which is a part of the broader EU-funded KAMI ("Sustainability of Malaysian and Indonesian palm oil") project[5], CIFOR seeks to provide background information on existing sustainability certifications, approaches, and tools addressing the oil palm sector in Malaysia and Indonesia. This study compares and benchmarks existing sustainable commodity approaches in Indonesia and Malaysia, especially for environmental thresholds, social protections including for indigenous peoples, inclusion of smallholders, and operational modalities, by addressing the following questions: (1) What are the existing sustainability certifications and approaches?; (2) How do these approaches and certifications compare?; and (3) What are the gaps and key takeaways (given the new EU regulations and communications including considerations regarding information demonstrating compliance)?

To address these questions, CIFOR conducted a document and literature review combined with interviews with selected key stakeholders to fill in any gaps in publicly available data. Additionally, a consultation process was conducted to validate and add any missing sustainability certifications, approaches, and tools identified through the literature review6.

[4] SLRT (https://www.climate-standards.org/sustainable-landscapes-rating-tool), LandScale (https://www.landscale.org), Terpercaya (https://inobu.org/terpercaya; https://efi.int/partnerships/terpercaya), and Verified Source Areas/SourceUp (https://www.idhsustainabletrade.com/approach/sourceup)

[5] The KAMI project aims to support national processes and international dialogue on the sustainable use of natural resources with a specific focus on palm oil. This includes informing on existing support for sustainability and helping to establish a palm oil sustainability monitoring system at the jurisdictional or district level that can provide reliable information for due diligence processes.

[6] Appendix 1 provides further details on the methods and the stakeholders engaged.

2. Existing certifications, approaches and tools

The study's findings are divided into two major sections, sustainability certifications systems and tools and approaches, that examine similarities and differences in objectives; governance mechanisms; beneficiaries; and criteria for forests/deforestation/peatland/fire/wetlands, and rights of indigenous and local people, labour and human rights. In terms of implementation information, the analyses focus on traceability, independent monitoring and verification procedures alongside associated costs for actors, and market acceptance. Further, gaps in the existing sustainability certifications, approaches, and tools, such as alignment with international, national, and subnational processes, locations, and inclusion/involvement of smallholders are identified.

4.1 Sustainability certifications

Through the literature review and the validation process, six (6) relevant certifications systems that are being implemented in Indonesia and Malaysia were identified. Each certification system is briefly described below before exploring the similarities and differences. Tables 1 and 2 summarize the principles, criteria, and indicators of the selected certification systems and associated funding sources.

Alliance for Water Stewardship (AWS) Standard v.2.0 is a voluntary standard that aims to improve water governance, water balance, water quality, healthy status of important water-related areas, and access to water, sanitation and hygiene (WASH) through the process of identifying and understanding catchment water risks to enable action via a stakeholder inclusive process. The objective of this globally applicable standard is to have "socially equitable, environmentally sustainable and economically beneficial" use of water. AWS Standard is managed by the members of the AWS and informed by a Technical Committee. Sites making claims to good water stewardship can be audited and certified by independent third-party assessors (Alliance's certification requirement document (AWS 2021) refers to a conformity assessment body (CAB)). In 2019 the AWS Standard was revised (version 2.0) (AWS 2019). Through this revision, the Standard was refined and clarified expectations for "best practices" and water catchments location/use, reduced to five (5) steps from six (6), and WASH was added as a fifth outcome. This standard can be employed by sites in any sector, including oil palm[7]. There is an on-going initiative between AWS Indonesia, LTKL, RSPO, and Global Platform Sustainable Natural Rubber (GPSNR) to create guidance on integration of better water stewardship into existing standards and certifications and jurisdictional approaches.[8]

[7] Currently, AWS Standard has been adopted by major private sector entities in the palm oil sector such as Cargill (https://www.cargill.com/sustainability/priorities/water) and Unilever (https://www.unilever.com/news/news-search/2020/working-collectively-to-accelerate-water-security-for-all/).

[8] The collaborative project is titled "Boosting Sustainability Practice and Performance at The Landscape Level Through Good Water Stewardship" https://awsindonesia.org/en/proyek/detail/4

Indonesian Sustainable Palm Oil (ISPO) is the national certification system developed in line with Indonesian legal, social, and environmental regulations by the Indonesian Ministry of Agriculture to improve the sustainability and competitiveness of Indonesian palm oil. It was first launched in 2011, specifically for plantation and mills, and then revised in 2015 to include the target audience of integrated entity-grower and processing units/mills, plantations, mills, organized and independent smallholders and made mandatory for all plantations (but voluntary for plantations producing palm oil for bioenergy and smallholders). In its latest revision in 2020, the new ISPO is mandatory for plantations producing palm oil for bioenergy and smallholders by 2025 (See Appendix 2 for a comparison of ISPO 2015 and ISPO 2020). The current ISPO contains two parts with different criteria for: (1) plantation, mills, and integrated companies (plantation and mills); and (2) smallholders (ISPO ISH). However, ISPO standards for supply chain certification that goes beyond plantations and mills have yet to be issued. The national accreditation committee (KAN) lists the various companies that can perform ISPO audits and accreditations.[9]

International Sustainability and Carbon Certification (ISCC) began operation in 2010 and is a globally applicable voluntary certification seeking environmentally, socially, and economically sustainable production and use of biomass/bioenergy in global supply chains. The certification aims to promote the reduction of GHG emissions, sustainable land use, protection of the natural biosphere and social sustainability. ISCC has three certification schemes relevant to oil palm: EU, Plus, and Independent Smallholder (ISH). The ISCC EU demonstrates compliance with EU Renewable Energy Directive (RED) and Fuel Quality Directive (FQD) legal requirements for EU member states while the ISCC Plus developed a year later in 2012 for non-regulated markets, covers food, feed, and industrial applications globally and biofuels for the non-EU markets. ISCC ISH certification was developed in 2018 to ease sustainability certification and reduce costs for smallholders and includes upfront registration program, group certification approach, and access to funds/price premiums. ISCC certification audits are conducted by independent third-party Certification Bodies and requires applicants to meet all “major” criteria and at least 60% of “minor” ones.

[9] The list of companies can be accessed at http://kan.or.id/index.php/documents/terakreditasi/doc17021/sni-iso-iec-17065/lembaga-sertifikasi-ispo.

Table 1. The principles of the identified certifications systems and associated funding sources.

Name	AWS Standard 2.0 [2019]	ISCC [2017]	ISPO [2020]	MSPO [2013]	RSB [2016]	RSPO [2018]
Principles	Gather And Understand Commit And Plan Implement Evaluate Communicate And Disclose	Protection of biodiverse and carbon rich areas Good Agricultural Practice Safe Working Conditions Compliance with Human, Labour and Land rights Compliance with Laws and International Treaties Good Management Practices and Continuous Improvement	Compliance with rules and regulations Application of good agriculture practices Environmental management, natural resources and biodiversity Responsibilities for workers* Social responsibilities and community economic empowerment* Application of transparency Enhancement of business sustainability	Management commitment and responsibility Compliance to legal requirements Social responsibility, health, safety and employment conditions Environment, natural resources, biodiversity and ecosystem services Transparency Best practices◊ Development of new planting◊	Legality Planning and monitoring Greenhouse gas emissions Human and labour rights Rural and social development Local food security Conservation Soil Water Air quality Technology, Inputs, Waste Land rights Optional module: low ILUC biomass	Behave ethically and transparently* Operate legally and respect rights^ Optimize productivity, efficiency, positive impacts and resilience Respect community and human rights and deliver benefits^ Support smallholder inclusion* Respect workers' rights and conditions Protect, conserve and enhance ecosystems and the environment
Funding sources	Membership fees, accreditation program, licensing of the brand, AWS training and events fees, and fundraising from development agencies and funding institutions	German government-financed (Federal Ministry of Food, Agriculture and Consumer Protection) scheme, now independent	Private sector funds for company certification, and state and district-owned budgets and other valid sources of fund for smallholders.	Malaysian government funding and private sector funds paid for certification	Membership and certification fees	Revenue generated from the trade of Certified Sustainable Palm Oil (CSPO), membership fees

* These principles do not apply to smallholders for certification under this system.
◊ For MSPO 2022, these have been integrated into other principles
^ These two principles have been combined for the Independent Smallholder Standard - Ensure legality, respect for land rights and community wellbeing

Malaysian Sustainable Palm Oil (MSPO) is the mandatory national certification system in Malaysia developed by the government and currently overseen by the Malaysian Palm Oil Certification Council (MPOCC) to improve the competitiveness of the country's palm oil industry and bolster sustainability and help small- and mid-range cultivators. MSPO is in line with many existing national laws and regulations and ensures sustainable palm oil through establishment, implementation, and improvement of the operational practices. It was launched in 2013 with implementation starting in 2015. The MSPO version (2013; MS2530:2013) contains 4 parts: 1) General principles; 2) General principles for smallholders; 3) General principles for palm oil plantations and organized smallholders; and 4) General principles for palm oil mills[10]. As a part of the approximate five-year review of the MSPO (and to address some aspects), the MPOCC, Malaysian Palm Oil Board (MPOB) and the steering committee along with the technical working committee started the revision process in 2019 (See Appendix 3 for details on major changes to MSPO). On 22nd March 2022, MPOCC launched the new version. The current MSPO version (MS 2530:2022) contains 4 parts outlining general principles for (1) specifying the framework of MSPO along the value chain and elaboration of terms and definitions applied, (2) independent and organized smallholders, (3) oil palm plantations, and (4) palm oil mill supply chain requirements, palm oil processing facilities and dealers (DSM 2022a, DSM 2022b, DSM 2022c, DSM 2022d, DSM 2022e and DSM 2022f).

Criteria and indicators discussed in this report refer to the current MSPO [2013], unless otherwise noted as detailed documents on the revised MSPO have just been released. July 2022 to December 2023 is the transition period between the current and revised version with all certifications to be assessed using the revised MSPO beginning January 2024[11].

Roundtable on Sustainable Palm Oil (RSPO) is a globally applicable voluntary certification with a set of environmental and social criteria developed in 2008 for sustainable palm oil production to minimize negative impacts. Established in 2004, RSPO is a multi-stakeholder initiative comprising of members from oil palm growers, processors and traders, consumer goods manufacturers and retailers, financial institutions, and NGOs. In 2018, the P&C was reviewed and revised through a multi-stakeholder process. The revisions included reorganizing the principles and impact goals and changes to the criteria that ensure halting deforestation, peatland protection and conservation, human rights, and labour rights and exploitation are tackled. Additionally, a smallholder standard was adopted in 2019 developed around the principles of continuous improvement (stepwise approach) and simplifying assessment and verification and more recently a pilot framework for a RSPO JA certification[12]. Further, the RSPO national interpretation process allows for a multi-stakeholder consultation that promotes better alignment of RSPO standards with national

[10] Sources utilized for information about MSPO 2022: MPOCC 2022a, MPOCC 2022b

[11] https://static1.squarespace.com/static/604db3a6dad32a12b2415387/t/623c27e6aa02434a01253ae4/1648109542926/Circular+on+Transition+to+MS2530_2022+Standard+Series+-+Final.pdf

[12] This allows for a group certification that allocates legal requirements and authority to a Jurisdictional Entity (JE) and has a multi-stakeholder governing body that will establish an Internal Control System to facilitate full compliance with the RSPO Standards. Unlike the conventional RSPO group certification, this type of certification requires that there is government leadership and collaboration to facilitate a multi-stakeholder process and set up governance and regulations.

laws and policies through the interpretation of the indicators. Independent auditors approve RSPO certifications for claims on producing, selling, or buying sustainable palm oil.

Roundtable on Sustainable Biomaterials (RSB)[13] is a voluntary certification for primary biomass and biomass from end-of-life products recognized by the European Commission since July 2011. RSB offers various schemes including the Global Fuel, EU RED Fuel, Japan FIT (Biomass), and Smallholder Group certifications. The RSB P&C aim for a fuel production that shows GHG emissions reductions and does not contribute to deforestation, ecological collapse, hunger, etc. EU RED Fuel certification enables operators to access EU markets by showing enhancement of environmental and social outcomes and compliance to the EU Renewable Energy Directive (RED), with recognition under the new RED II being in process. This certification has been designed for fuel producers, traders, processors, and transporters working within, or trading with, the EU. Compliance is verified by RSB-accredited certification bodies.

Throughout the report, the information presented about the identified certification schemes will refer to the documents (the most recent versions available as of Feb. 2022) mentioned here unless otherwise stated. The report uses the certification system acronym and year mentioned in this section and Tables 1 and 2 as a shorthand for these documents.

[13] Though the uptake of RSB in Indonesia and Malaysia is currently limited, there are opportunities for growth in biofuels and biomaterials given the expected rise in demand. In Indonesia, biofuel is highlighted as a priority in the national medium-term plan, the national energy policy, and is part of the strategy to reduce fossil fuel consumption for achieving the NDC. In Malaysia, there is a mandate (B20) to an increase palm-oil derived biodiesel to 20% in fuel mixes.

Table 2. Summary of the principles, criteria, and indicators in the selected certification systems.

No	Certification system	Name of Standard	# Principles	# Criteria	# Indicators
1	AWS 2.0 [2019]	Applied Water Stewardship Standard	5	30	98
2	ISCC EU/Plus [2017]	ISCC EU/Plus Standard	6	21	86
	ISCC ISH [2018]	ISCC Independent Smallholder	6	13	25
3	ISPO [2020]	Indonesian Sustainable Palm Oil	7	30	174
	ISPO ISH [2020]	ISPO Independent Smallholder	5	13	33
4	MSPO [2013]	Malaysia Sustainable Palm Oil	7	33	114
	MSPO ISH [2013]	MSPO Independent Smallholder	7	22	32
	MSPO SCCS [2013]	MSPO Supply Chain Certification Standard	8*	17	28
	MSPO [2022]	MSPO for organized smallholders and oil palm plantations	5	28	86-88
	MSPO ISH [2022]	MSPO for independent smallholders	5	28	63
	MSPO SC [2022]	MSPO for palm oil mill, processing facilities and dealers including supply chain requirements	5	26-27	79-83
5	RSB [2016]	RSB Principles and Criteria	12	40	156
	RSB EU RED [2021]^	RSB Standard for EU Market Access	12	7	31
	RSB Global Fuel [2020]^	RSB Standard for Advanced Fuels	12	8	37
	RSB Japan FIT [2020]^	RSB Standard for Japan FIT (Feed in Tariff)	12	2	2
	RSB Smallholder Group	RSB Standard for Certification of Smallholder Groups	12	33	64
6	RSPO [2018]	RSPO P&C for the Production of Sustainable Palm Oil	7	42	180
	RSPO ISS [2019]	RSPO Independent Smallholder Standard	4	23	58
	RSPO SCC [2020]	RSPO Supply Chain Certification Standard	-	13+	39+

* These are different than the 7 principles identified for the other MSPO standards, rather they are management requirements and traceability of the production throughout the supply chain from the raw materials until processing and manufacturing of palm oil and palm oil-based products

^ These standards apply additional criteria and indicators to the RSB principles and criteria.

+Additional criteria and indicators apply on top of these based on the selected traceability model

4.2 Additional Sustainability Approaches and Supporting Tools

In addition to certification systems, there are other approaches and supporting tools that can assist in evaluating sustainability and showing sustainability performance within jurisdictions and commodity supply chains. Over the past decade, multiple tools that examine the progress towards sustainability have been developed. Those selected for examination here have a focus (in part or full) on commodities/palm oil (see Table 3 for a summary including the spatial extent of implementation in Indonesia and Malaysia and Appendix 4 for additional details).

Two of these approaches have been incorporated to varying degrees into some of the certification systems discussed above (e.g., RSPO, ISPO, ISCC), the High Carbon Stock Approach (HCS Approach) and High Conservation Value (HCV) approach[14]. They have also been identified by the United Nations (UN) as a Nature-based Solution to climate change and a tool for achieving the UN Sustainable Development Goals (SDGs), respectively[12]. HCS is a methodology that distinguishes forest areas for protection from degraded lands with low carbon and biodiversity values that may be developed for other purposes while considering workers and communities' rights and livelihoods. The HCS methodology aims to be a widely accepted and scientifically credible approach that intends to halt tropical deforestation. Recognizing that carbon and biodiversity vary across vegetation types, the methodology uses satellite imagery and ground surveys to stratify vegetation cover in areas of interest into six different classes with the first four being considered potentially HCS forests: high density forest, medium density forest, low density forest, young regenerating forest, scrub, and cleared/open land.

The HCV approach identifies and protects natural habitats that have significant or critical importance along six categories (species diversity, landscape level ecosystems, ecosystems and habitats, ecosystem services, community needs, and cultural values) in places where there are threats from rapid expansion of agriculture, forestry and aquaculture. The approach uses three-steps to protect HCVs: identification, management, and monitoring based on risk level (and whether smallholders) ranging from adjustments for simplified identification methods to mitigation measures being adopted to the need for assessments by an HCV licensed assessor. Management of HCV needs to be in collaboration with local stakeholders and include a process to

identify and address threats (can range from full protects to moderate use to co-management). Lastly, monitoring is essential for long-term protection of HCVs and assessments using indicators (context and site specific) can help monitor whether management practices are effective.

Other tools and approaches that were identified are complementary to certifications and can be used synergistically to address issues and goals of deforestation and sustainability. The identified tools and approaches are Accountability Framework Initiative (AFi), Carbon Disclosure Project (CDP) for States and Regions, Green Jurisdictions Database, LandScale, Landscape Assessment Framework (LAF), Regional Competitiveness Framework (KDSD),

[14] HCS Approach: https://highcarbonstock.org/; and HCV approach: https://hcvnetwork.org/.

SourceUp – Verified Sourcing Areas, Sustainable Landscapes Rating Tool (SLRT), Sustainability Policy Transparency Toolkit (SPOTT), Terpercaya.[15]

Other than KDSD and Terpercaya[16] that were developed for the Indonesian district level, initiated by the Indonesian Sustainable Districts Association (LTKL) and EFI/Inobu with EU funding[17], respectively, the tools and approaches are designed for global application. Both KDSD and Terpercaya use indicators to measure and verify sustainability performance including legally required obligations/implementations at the district-level, show a large amount of alignment at the indicator level[18], and are in the pilot phase. The piloting of Terpercaya has focused on oil palm districts across Indonesia while KDSD piloting has focused on selected LTKL member districts[19]. However, both do examine governance and planning, environmental, economic, and social aspects, though KDSD contains additional indicators examining incentives. Both approaches were designed with multi-stakeholder inputs and are currently attempting for integration at the national level. For example, both are exploring potential inclusion/integration in the Satu Data platform[20] that seeks to have all data for Indonesia on one platform. Recently, Terpercaya has handed over from the EU to the Government of Indonesia, and BAPPENAS is currently planning for the use of this tool as a platform for dialogues among stakeholder and a basis for distributing IDR 200 billion annually through the special allocation funds (DAK) scheme to jurisdictions.

AFi aims to achieve supply chains that are protective of forests, other natural ecosystems, and human rights while helping mainstream ethical production and trade through the policies, practices, and initiatives of companies and others to implement and monitor effective commitments on deforestation, ecosystem conversion and human rights. SPOTT assesses commodity producers, processors and traders on their public disclosure regarding policies and practices related to environmental, social, and governance (ESG) issues and measures a company's overall transparency. Both AFi and SPOTT focus on the practices and policies related to environmental, social and governance best practice of companies[21], these tools do include an indicator/core principle around collaboration and contributions to landscape or jurisdictional initiatives. The remaining tools have been designed to be implemented at a landscape or jurisdictional scale. CDP States and Regions provides a platform/data portal through which states and regions can disclose, measure and manage

[15] Websites for each of the identified tools and approaches (in order): https://accountability-framework.org; https://www.cdp.net/en/cities/states-and-regions; https://greenjurisdictions.org/; https://www.landscale.org; http://kabupatenlestari.org/kdsd/; https://www.spott.org; https://www.climate-standards.org/sustainable-landscapes-rating-tool; https://www.idhsustainabletrade.com/approach/sourceup; and https://inobu.org/terpercaya

[16] Terpercaya is part of the Transparency Pathway (https://transparencypathway.org/), which is aiming to bringing together public and private supply chain actors to shift mainstream commodity markets towards sustainability

[17] https://euredd.efi.int/documents/15552/460846/The+Terpercaya+Brief+5_EN+%28SCREEN%29.pdf/614206a3-ca16-00d2-ee27-fd5f23199b2c

[18] LTKL, personal communication, September 20, 2022

[19] Terpercaya indicator testing pilot districts: Seruyan and West Kotawaringin in Central Kalimantan, Rokan Hulu in Riau, and North Morowali in Central Sulawesi. KDSD is being piloted in the following LTKL member districts: Gorontalo in Gorontalo, Sintang in West Kalimantan, Siak in Riau, Musi Banyuasin in South Sumatra, and Aceh Tamiang in Aceh.

[20] https://data.go.id/

[21] CDP also has a stream for environmental reporting through which companies can self-disclose their practices, policies, and environmental impacts

their environmental impacts, including information on governance, emissions (region-wide), strategies and targets, risks and adaptation, water security, and forest. Earth Innovation Institute's (EII) Green Jurisdictions Database provides information on progress toward low-carbon development in select tropical forest jurisdictions by reporting on indicators focusing on environment/forest, agriculture, livestock, social, governance and investment aspects.

Conservation International's LAF evaluates and monitors the status and trends of landscape sustainability indicators across governance, human well-being, production, and natural capital. The indicators are selected through a multi-stakeholder process that determines the relevant indicators for the set landscape goals and targets. This information can be communicated using a summary card and used to guide investments and adaptive management. Similar to the SLRT, LAF can be conducted initially at the early stages of a jurisdictional initiative and then repeated as part of a monitoring plan. The SLRT, as mentioned earlier, focuses on enabling conditions and on progress toward rather than outcomes of a sustainable landscape at the subnational level. Consisting of indicators on governance and commodity production, the SLRT indicator data is designed to be validated and verified through a multistakeholder workshop held at the jurisdictional scale of assessment. While the LAF and SLRT focuses on the early stages and process of a JA initiative, LandScale is a tool for an assessment of outcomes.

LandScale is an assessment framework for landscape sustainability performance metrics that measure status or trends across the topics of ecosystems, human well-being, governance, and production using core, landscape-dependent and optional indicators. In addition to the assessment tool with indicators, Landscale contains a verification guideline which provides guidance on how to check the assessment for completeness and quality. LandScale builds on frameworks such as LAF and SLRT. Lastly, SourceUp/Verified Sourcing Areas is an initiative with a reporting platform for jurisdictions that meet a set of requirements. Generally, within such a jurisdiction a local multi-stakeholder coalition (local government, local civil society organizations, producer groups/cooperatives, and traders) have an agreement to address sustainability challenges in a coordinated, timebound, and resource-committed manner. Though the reporting jurisdictions do not state that all the commodities produced within are sustainable, it indicates a high probability that conditions are or will be improving.

One last approach identified is specific to Indonesia, developed by the Indonesian government (BAPPENAS), is the "Guidelines for Regional Plans for Sustainable Plantation Based on Jurisdiction Approach". This approach seeks to guide the implementation of sustainable palm oil related policies within Indonesia containing through providing guidelines for identification, inventory and data analysis; preparation and planning process; preparation of action plans and implementation; and reporting, monitoring, and evaluation. These guidelines are expected to be the basis for norms, standards, procedures, and criteria (NSPK)22 for sustainable plantation commodities development at jurisdiction level on four main aspects: environment, productivity, economic /investment stability, and fairness, which are being currently developed with the expectation to help local governments in sustainable planning and budgeting. BAPPENAS is expected to issue a Ministerial regulation about

[22] Incorporates Terpercaya indicators

planning and financing regional sustainable plantations, which specify NSPK will become the reference for local governments, national agencies, and stakeholders.

In addition to these tools and approaches, there are some supplementary tools that can provide data for assessments or due diligence. These include TRASE, Nusantara Atlas, Maphubs, Starling, Satelligence, Global Forest Watch (WRI), Transform Platform, and DIBIZ[23]. The scope of data each of these provide are summarized in Table 4 (see Appendix 4 for additional details), however it is important to note that these data sources are not all free to access but do provide independent information for verification, triangulation, and monitoring. Of these tools, one that has been gaining interest is blockchain-based traceability. DIBIZ is part of the recent emerging technologies in blockchain based real time traceability and visibility, which can be inclusive of smallholders. Blockchain-based traceability enables for secure information sharing, facilitates monitoring/control, real-time data acquisition, transparency, and visibility throughout the supply chain (Agrawal et al. 2021).

The tools and approaches discussed here do not have to be implemented in a landscape or jurisdiction exclusively, rather, many of them are complementary to each other. For example, the SLRT, LandScale, and LAF could be used in tandem to assess different aspects and points in the transition to sustainability within a jurisdiction while drawing on data from TRASE, Global Forest Watch, among others and reporting on platforms such as SourceUp. Further, the implementation of LAF utilizes SLRT indicators to examine governance.

[23] Websites for each of the data sources (in order): https://www.trase.earth; https://nusantara-atlas.org; https://www.maphubs.com; https://oneatlas.airbus.com/service/starling; https://satelligence.com; https://www.globalforestwatch.org; https://transform-platform.org; https://dibizglobal.com.

Table 3. Summary of additional sustainability approaches and supporting tools

Name	Scope	Scale	Spatial Extent *
Accountability Framework Initiative (AFi)◊	Commodities, company activities (e.g., production, sourcing), locations of production, sourcing, types of suppliers (own production, direct/indirect, smallholders), business units or affiliates	Based on company activities	Indonesia, Malaysia (various organizations, RSPO for some criteria)
Carbon Disclosure Project (CDP) State and Regions◊	Information on governance, emissions (region-wide), strategies and targets, risks and adaptation, water security, and forest	State/ province and districts	Indonesia (2 provinces)
Green Jurisdictions Database◊	Aggregates, harmonizes and structures official national and regional information provided by national forest monitoring systems, national agricultural offices and national statistical offices for the subnational level (states and provinces) to report on key indicators of forest conservation, agriculture, and socio-economic development	State/ province	Indonesia (11 provinces)
High Carbon Stock Approach (HCS Approach)◊	Identify HCS forest patches over concessions or landscapes; Demonstrate concerned companies' commitment to no deforestation. In addition, there are social considerations in the HCS Approach	Site, landscape or jurisdiction	Indonesia (148 companies; various jurisdictions and organizations)
High Conservation Value (HCV) Approach◊	Identification, management and monitoring of high conservation value areas. HCVs can range in size from single tree to entire landscapes	Site, landscape or jurisdiction	Indonesia and Malaysia (used by various jurisdictions and organizations)
LandScale◊	Landscapes with substantial natural resource-based economies and supply, chains, including agribusiness, forestry, extractives, infrastructure, and tourism.	Landscape or jurisdiction	Indonesia (1 district)
Landscape Assessment Framework (LAF)	Four dimensions of landscape sustainability: natural capital, sustainable production, human well-being and governance.	Landscape or jurisdiction	Conservation International's landscapes^
Guidelines for Regional Plans for Sustainable Plantation Based on Jurisdiction Approach	It provides jurisdictions (district, province) with a guideline for developing plans for sustainable palm oil	Jurisdictional (province/ district)	Indonesia only (under consultation in 4 districts and 3 provinces)
Regional Competitiveness Framework	Monitoring tool for progress toward sustainable development goals and commitments	District	Indonesia only (currently in 6 districts)
SourceUp - Verified Sourcing Areas (VSA)◊	Verifies the sustainability of an entire jurisdiction (e.g., municipality or district and later province and state), ensuring individual efforts are aligned and additional in improving the lives and the environment in sourcing regions, while decreasing related risks	District	Indonesia (4 districts), Malaysia (2 districts)

Sustainability Policy Transparency Toolkit (SPOTT)◊	Assessment, reporting progress towards greater transparency. SPOTT indicators and assessment data can inform policies and procedures for due diligence, screening and sourcing.	Based on company activities	100 selected companies annually, including those operating in Indonesia (35), Malaysia (10), and both (20)
Sustainable Landscapes Rating Tool (SLRT)◊	Monitoring tool for enabling conditions of sustainable landscapes with five themes: (1) land-use planning and management; (2) land and resource tenure; (3) biodiversity and other ecosystem services; (4) stakeholder coordination and participation; (5) commodity production systems	Jurisdictional (State/province or district)	Indonesia (3 provinces); Malaysia (1state)
Terpercaya (Part of Transparency Pathway - https://transparencypathway.org)	Measure sustainability in subnational jurisdictions across governance, social, environmental and economic aspects	District	Indonesia only (all districts)
* This refers specifically only to locations where the tool or approach is being applied in Indonesia and Malaysia. ◊ Indicates tool or approach is applied or implemented beyond Indonesia and Malaysia ^ This framework was applied in landscapes where Conservation International works, including in Indonesia and Malaysia but details on where is not available. As of March 2022, this framework appears to have been replaced by LandScale (https://www.conservation.org/projects/landscale), which builds on LAF and SLRT.			

Table 4: Additional information on supplementary data tools

Name (Website)	Scope	Spatial coverage
DIBIZ (https://dibizglobal.com/about/)	Supply chain activities and transactions in real time	Global
Global Forest Watch (GFW; https://www.globalforestwatch.org/)	Forest cover monitoring and alerts. This includes GFW's Forest Watcher (near-real-time data to identify and respond to threats), GFW Pro (management solution to detect and reduce deforestation in companies' supply chains), and the Global Forest Review (track progress toward global forest goals).	Global
Maphubs (https://www.maphubs.com)	1) palmoil.io-web platform to help financial, procurement and sustainability analysts screen and monitor deforestation and other ESG risks in their palm oil supply chains and investments; 2) Forest Report, an automated deforestation monitoring platform that provides daily monitoring for thousands of locations	Global
Nusantara Atlas (https://nusantara-atlas.org/)	Contains imagery with concession maps of land ownership and with governmental land use zones (State Forest zone and Moratorium maps)	Parts of Indonesia and Malaysia
Satelligence (https://satelligence.com/)	Combine local knowledge, field trips, AI-powered predictive modelling and remote sensing to monitor changes on the ground in real-time	Global
Starling (https://oneatlas.airbus.com/service/starling)	Commodity driven global monitoring interactive digital platform	Global
Transform Platform (https://transform-platform.org/)	A central data hub for palm oil trader-refiners, their suppliers and buyers to credibly back-up deforestation-free claims and to firmly address detected non-compliance - whilst documenting how liability for past harm is settled	Indonesia
TRASE (https://www.trase.earth)	Data at scale that comprehensively maps supply chains for key commodities with major forest risk from entire countries and regions to deforestation and other impacts on the ground	Global

3. Similarities and differences between certifications

The six identified sustainability certification systems are applicable in oil palm landscapes. As seen from the descriptions, the certifications vary but most focus on sustainable production of palm oil through criteria for environmental thresholds such as deforestation and land use change and social and governance requirements such as Free Prior Informed Consent (FPIC) and labour/no-exploitation regulations. Additionally, the inclusion and participation of smallholders varies across the certifications. The section also explores the differences and similarities between the certifications along these themes in addition to differences in governance structures of the certification systems.

As mentioned in the previous section, four of the certification systems identified are voluntary (AWS, ISCC, RSB, RSPO) while two are mandatory (ISPO, MSPO). The revised ISPO [2020] certification is mandatory for all growers, millers (processing units) and will be mandatory for smallholders by November 2025. Similarly, MSPO certification became mandatory for companies (estates, oil mills) from January 2020 and for smallholders by 2021.

5.1 Environmental thresholds

Certifications vary in the criteria for new plantings and cut-off dates that are established as a standard for different land use types (forest, peatland, etc.) and land use changes (deforestation, fire) and this has impacted the market acceptability of certifications schemes. Below the differences in the thresholds are examined. The AWS Standard v. 2 is excluded from this comparison as it does not have any relevant criteria but rather focuses on the management and governance of water resources at different scales. However, good water stewardship (captured within the AWS standard) as the basis for jurisdictional and landscape approaches to tackle the challenges on peatland development and deforestation, especially in oil palm landscapes is being developed. All other certifications – voluntary (ISCC, RSB, RSPO) and mandatory (ISPO, MSPO) – contain some guidance on “allowable” land use and land change.

5.1.1 Land use: Defining forests and peatland

Of the six identified certification systems, five have definitions for forests and peatland. In most cases the definitions (Table 5) are slightly different but reflect major differences in the criteria of how land cover recognized as forest and peatland are classified, evaluated, and managed.

Table 5. Varying definitions of "forest" and "peatland" across the selected certification systems

Certification systems	Forest	Peatland
International Sustainability and Carbon Certification (ISCC), 2017	Continuously forested areas refer to land spanning span over more than one (1) ha with trees higher than five meters and a canopy cover of more than 30%, or trees able to reach those thresholds in situ. This criterion includes forests according to the respective national legal definition but excludes land that is predominantly under agricultural land use.	Peatland are defined as soils with horizons of organic material (peat substrate) of a cumulative thickness of at least 30 cm at a depth of down to 60 cm. The organic matter contains at least 20 percent of organic carbon in the fine soil according to mass.
Indonesian Sustainable Palm Oil (ISPO) 2020	Forest refers to a unity of ecosystem in the form of land consisting of biological resources dominated by trees and their natural association with environment, in which one and another are inseparable.	Peatland refers to a naturally occurring organic material, from partially decomposed plant remains, with a thickness of 50 cm or more, which has accumulated in the swamp
Malaysian Sustainable Palm Oil (MSPO), 2013, 2022	A primary forest is a forest that has never been logged and has developed following natural disturbances and under natural processes, regardless of its age, notwithstanding that such forests that are used inconsequentially by indigenous and local communities living traditional lifestyles relevant for the conservation and sustainable use of biological diversity. MSPO [2022] lists primary forest (forests not been subjected to major human impacts in recent history) as part of "natural forests," which possess many or most of the characteristics of a forest native to the given site, including species composition, structure, and ecological function. Natural forests also include regenerated (second growth) forests, managed natural forests, and forests that have been partially degraded by anthropogenic or natural causes but no land conversion has occurred.	Peatland or peat soils are soils with organic soil material which make up more than half the total cumulative thickness of the upper 100 cm. If the depth of the bedrock is less than 100 cm, the total thickness of the organic soil layers taken cumulatively is more than half the depth to bedrock.

Roundtable on Sustainable Biofuels (RSB), 2016	Land spanning more than 0.5 ha with trees higher than 5 m and a canopy cover of more than 10 percent of trees able to reach these thresholds in situ, not including land that is predominantly under agricultural or urban land use.	Peatlands are areas with or without vegetation with a naturally accumulated peat layer at the surface of at least 30 cm in depth.
Roundtable on Sustainable Palm Oil (RSPO), 2018	A primary forest is a forest that has never been logged and has developed following natural disturbances and under natural processes, regardless of its age. Also included as primary, are forests that are used inconsequentially by indigenous and local communities living traditional lifestyles relevant for the conservation and sustainable use of biological diversity. The present cover is normally relatively close to the natural composition and has arisen (predominantly) through natural regeneration. National interpretations should consider whether a more specific definition is required.	A soil with cumulative organic layer(s) comprising more than half of the upper 80 cm or 100 cm of the soil surface containing 35% or more of organic matter (35% or more Loss on Ignition) or 18% or more organic carbon. Note for management of existing plantations in Malaysia and Indonesia, a narrower definition has been used, based on national regulations: namely soil with an organic layer of more than 50% in the top 100 cm containing more than 65% organic matter.

5.1.2 Land use: Deforestation and Peatlands

Cut-off dates and implementation deadlines for deforestation vary across certification systems (Potts et al. 2014). Here cut-off dates for deforestation and associated practices for new and re-plantings are examined.

RSPO aims to protect, conserve, and enhance ecosystems and the environment (principle 7) and particularly addresses deforestation as specified in criteria and indicators 7.12 and peatland in 7.7. The 2018 RSPO P&C (RSPO 2018a) states that land clearing must not cause deforestation or damage any area required to protect or enhance High Conservation Values (HCVs) or High Carbon Stock (HCS) forests. HCVs and HCS forests in the managed area need to be identified and protected or enhanced. No new planting on peat land, regardless of depth are allowed after 15 November 2018 and all peatlands should be managed responsibly. While in its earlier version (2013), RSPO focuses the protection of ecosystem and the environment on HCVs and identification and estimating carbon stock, the 2018 version include new requirements to ensure effective contribution of RSPO to halting deforestation, namely incorporation of HCS Approach Toolkit in the revised standard.

As further described in new planting procedure issued in 2021 (RSPO 2021), a historic land use change analysis (LUCA) shall demonstrate that there has been no conversion of primary forest, or any area required to maintain or enhance HCVs since November 2005 and HCS from November 2018. Despite this, RSPO gives an exception where clearing actively

managed plantations to replant is not considered land clearing and clearings less than 10 ha within certified units is not considered new clearing. The procedure is also not applicable for oil palm plantings and associated development that took place before 1 January 2010 and undertaken by non-RSPO members (RSPO 2021).

If HCV areas were cleared between 2005-2014 due to not having a historical analysis, this is non-compliant clearing and subject to the Nov. 2015 Remediation and Compensation Procedure or RaCP (RSPO 2015). RaCP was established as a mechanism to restore and compensate for lost conservation values rather than imposing immediate sanctions, including suspension, or barring members from certification. Initial analysis has shown that most of the non-compliant clearing was in degraded landscapes and only 4% was in high quality forest areas.[24] Clearing in HCV areas after May 2014 results in a revoked RSPO membership. HCV areas are to be identified using HCV Toolkits (Country specific toolkits: CR-HCV Indonesia (2009) and HCV Malaysia Toolkit Steering Committee (2018)) and RSPO provides guidance on the LUCA and division of assessment periods for companies.

Any new land clearing after 15 November 2018 must be preceded by an HCV-HCS assessment to identify HCVs, HCS forests, and other conservation areas. In particular, the HCS assessments identify forest patches and decisions on low carbon stock areas for development and HCS forests for protection. The final assessment for on-the-ground land clearing is based on an integrated conservation and land-use plan (ICLUP) that considers environmental, social, production and legal interests (HCS Approach 2021). As mentioned in Table 3, 148 companies operating across provinces in Sumatra, Kalimantan and Papua that are registered with HCS Approach already submitted HCS Approach and peer review reports. RSPO is developing a simplified combined HCV-HCS approach for independent smallholders to enable them to identify, protect, and manage HCV/HCS areas after November 2018 that provide for both existing and new plantings. The RSPO Secretariat has developed an interim measure, the Independent Smallholder – Land Use Risk Identification (IS-LURI) for independent smallholders intending to clear plots of land for new plantings or expand existing plots. This measure identifies low risk areas in which new plantings can occur until the simplified combined HCV-HCS approach and tool for independent smallholders is available (RSPO 2021).

Further, RSPO requires that all peatlands are managed responsibly, and growers are required to identify areas of peat within their managed areas to ensure effective measures to safeguard and minimize impacts within planted and unplanted peatland areas (RSPO 2018b). Where oil palm already exists on peatlands, RSPO requires growers to follow the Manual on Best Management Practices (Parish et al. 2012) and Peat Audit Guidance (RSPO 2018b). Additionally, for smallholders, obtaining RSPO certification means new plantations cannot be established on peatlands after November 2019. Further, smallholders are also required to do a risk assessment and to adopt best management practices to minimize subsidence and degradation of peat soils.

ISPO [2020] is mandatory for companies/plantations/mills who are already in the production phase or are about to start production/commercial operation (GoI 2020b).[25] ISPO sets out how land clearing must be conducted prior to new plantings but the criteria and indicators

[24] https://rspo.org/certification/remediation-and-compensation
[25] Permentan No. 38/2020, Article 9

only address soil and water conservation, setting aside protected areas, and avoidance of fire use. ISPO requires that protected areas and HCV areas occurring outside nature reserves and nature conservation areas, including those within designated oil palm plantation concessions are identified, and management and monitoring plans need to be prepared to ensure long-term sustainability of the protected and HCV areas. Protected areas, such as riparian zones along rivers, coastal areas, and water sources, and HCV areas can be identified and verified using the HCV Toolkit and regulations/technical instructions based on variables such as protected and threatened wildlife and plants, land cover, ecosystem types and soil type.[26] Additionally, regulations on the guidance for HCV (or Areal Bernilai Konservasi tinggi; ABKT) developed and issued by leading palm oil producing provinces such as Central Kalimantan and East Kalimantan are examples of legally binding instruments to enforce the identification and management of HCV areas across company plantations.

Prior to the start of a plantation's operations in Indonesia, investors are required to obtain several permits[27] from relevant authorities to legally be able to clear forests within the designated concession areas,[28] establish nurseries, and start pre-planting activities. Following the issuance of Omnibus Law (No. 11/2020), aimed at boosting investment and creating employment across sectors, oil palm plantation and mill investors are still required to conduct an Environmental Impact Assessments (EIA or AMDAL in Indonesia) before the start of operations of proposed plantation area greater than 3000 ha or proposed mills with an establishment area larger than 10 ha. If the proposed plantation area is less than or up to 3,000 ha or if the project development is considered to not have significant impacts, plantations and mills need to only prepare environmental management and monitoring documents (UKL-UPL), a more simplified assessment than an EIA. These assessments can provide useful information on potential impacts and how to mitigate them, and indicate areas which are environmentally, socially, and culturally significant to be set aside from plantations. Smallholders with less than 25 ha of plantation area are required to have an Environment Management and Monitoring Letter (SPPL) issued by the local environmental office showing the smallholder's commitment and readiness to manage and monitor the environment.[29] In addition to obtaining the SPPL when establishing new plantations, smallholders must register their plantation (Surat Tanda Daftar Budidaya; STDB) which primarily includes information on the ownership, size and location (can be specified as geographic coordinates or the name/point of village or sub-district) of the plantations, and annual production and year of planting. They shall also adhere to soil and water conservation regulations (e.g., not planting on very steep slopes), as per technical guidelines provided by the Directorate

[26] Identification of protected areas under Presidential Decree No. 72/1990 and technical instruction for HCV identification through Ministry of Environment and Forestry's Directorate General of Natural Resources Conservation and Ecosystems No.P.8/2020

[27] *i.e.*, location permit - *izin lokasi*, forest conversion permit - *izin pelepasan hutan*, plantation business permit - *izin usaha perkebunan*, business use rights - *hak guna usaha*, and land clearing permit from the district head - *izin pembukaan lahan*

[28] Located on convertible production forest zones as specified in the Minister of Environment and Forestry's Regulation No. 7/2021 regarding forest planning, changes in forestland status and function, and uses of forestland

[29] This is based on the Omnibus Law's operational regulations including Government Regulation No. 22/2021 regarding environmental protection and management and the Minister of Environment and Forestry's Regulation No. 4/2021 specifying business activities subject to EIA, UKL-UPL and SPPL

General of Plantations, and demonstrate plans and strategies to identify and protect existing rare/threatened wildlife and plants around their plantations (verified during audits).

Under ISPO 2020, new plantings on peatlands must be avoided and no clearance of primary forest is allowed. For already existing oil palm plantations on peatlands, as indicated on moratorium policy maps, appropriate corporate policies and standard operating procedures need to be in place to ensure proper management and protection.[30] Independent smallholders are allowed to establish new plantings on peatlands provided they take account of land characteristics and technical requirements to avoid environmental degradation and reduce GHG emissions as elaborated further in various regulations issued by government and ministries.[31] Despite the requirements and EIA, none of the ISPO indicators and required permits assess or consider carbon stock thresholds or whether the area is forested or non-forested – this is information that could lead to decisions or recommendations to protect high carbon stock (e.g., HCS) areas or secondary forests from conversion. This indicates that even when ISPO criteria and indicators are met, there can still be a potential loss of HCS areas.

Further, ISPO's new planting procedures could be strengthened if relevant clauses in regulations[32] following the enactment of the 2020 Omnibus Law are enforced to avoid deforestation. One such clause could expand the new planting procedures to incorporate HCS criteria (the revised ISPO does not yet take this full into account, such as vegetation classes) and provide additional guidance on where plantations are allowed – thus, this would limit the clearance of land for plantations to forestlands classified as non-productive (i.e., low carbon stock areas such as shrubs, bare lands and mixed farms).[33] Another clause[34] would allow companies more time to establish plantations and better plan new plantings within their concessions. This gives them the ability to delineate low and high carbon stock areas for development and conservation, while adapting to HCS approaches (that are required under some certification schemes, e.g., RSPO).

Within the **MSPO** [2013] certification criteria, there is no cut-off date, but plantings are not allowed on land with high biodiversity value unless allowed by national and state biodiversity legislation. High biodiversity value areas, including forests and protected areas, are required to have management plans and no new oil palm is allowed in these areas, unless carried out in compliance with national and state legislation. However, MSPO [2013] allows new

[30] In adopting good agriculture practices, ISPO provides a guidance and set criteria regarding planting on either mineral or peatlands, which indicates that new plantings on peatlands by companies (Annex 1 of Permentan 38/2020) as well as smallholders are allowed as long as technical guidelines and standard operating procedure for planting on peatlands and water table maintenance (pengaturan tinggi muka air) are fully adhered to, implemented, and monitored.
[31] Includes PP 71/2014, PP 57/2018 and Ministry of Agriculture and Ministry of Environment and Forestry P.60/2019
[32] Law No. 26/2021 regarding agriculture, Government Regulation No. 23/2021 regarding forestry, and the Environment and Forestry Minister's Regulation No. 7/2021
[33] See Article 58 of Government Regulation No. 23/2021
[34] Amending Law 39/2014 regarding plantations, Law 11/2021 (Article 16) annuls the company's obligation to achieve 30% of plantation establishment targets within three years, and 100% within six years after the business use right is granted.

plantings and replanting on peatland if MPOB guidelines[35] or industry best practices to reduce negative effects on the peatland are followed. To develop new plantings, no conversion of Environmentally Sensitive Areas (ESA) to oil palm are permitted under Peninsular Malaysia's National Physical Plan (NPP). In the case of Sabah and Sarawak, new plantings or replanting of an area greater than 500 ha requires an EIA and for areas between 100 and 500 ha, a Proposal for Mitigation Measures (PMM) is required. EIA reports provide a detailed assessment in quantitative as well as qualitative terms of the likely environmental impacts of development activities, which are normally of high magnitude in terms of area and sensitivity. PMM reports provide only a description of the likely impacts of activities, which are normally of low magnitude in terms of area and sensitivity. Both reports guide the measures required to prevent, mitigate, or abate any adverse environmental impacts or to protect the environment (EPD 2005). While the guidelines do not provide any threshold of vegetation or biomass disposal that can be allowed when lands are cleared for plantations, EIA methods (e.g., EIA matrix, GIS etc.) can shed light on ecologically sensitive areas, predict impacts, and guide necessary mitigation measures to be taken. This is crucial during site selection and preparation stages of oil palm plantation development.

However, MSPO is not clear or explicit in defining the legislations or circumstances under which high biodiversity areas can be cleared. Some instances[36] of where legislation could permit such clearing includes a landowner in peninsular Malaysia that is clearing the land for its allotted land use or applying to change the category of land use (e.g., industry or building to agriculture) under the legislation of National Land Code 1965. In Sarawak, clearing for new plantings in high biodiversity value areas can be a result of the Land and Survey Department Sarawak managing the land to benefit the people and state or the Ministry of Modernization of Agriculture, Native Land and Regional Development (MANRED) developing agriculture and rural communities, especially customary land. In Sabah, land can be cleared for land development if the land has been allocated for agricultural use under the Land Ordinance (Sabah Cap. 68).

MSPO [2022] contains integration of HCV approach and states that a comprehensive HCV, environmental, and social impact assessments will be conducted before new plantings or establishments occur. Cut-off date has been set as 31st December 2019; after this date no conversion of natural forest, protected areas, and HCV can take place (MPOCC 2021). However, it is unclear what happens to plantations with deforestation after the cut-off date. New plantings or establishments will need to avoid steep terrain, areas located 300m above sea level, fragile/marginal soils and peatlands, unless allowed by state legislation (e.g., standard operating procedures for compliance with environmental conditions of oil palm plantations in Sabah; EPD 2019). The revised standard mentions that new plantings on peatlands should be avoided unless permitted by local legislation and if appropriate and viable conservation measures are adopted and implemented to minimize adverse impacts. Further, a management plan will need to be implemented, monitored, and regularly updated

[35] Guidelines for the Development of a Standard Operating Procedure for Oil Palm Cultivation on Peat (MPOB 2011). Water level in the collection drain should be maintained in the range of 35cm to 60cm and 30cm to 50cm in the field drains (Principle 7, Criteria 2. Indicator 1 of MS2530-3:2013)

[36] These examples were mentioned in a presentation on the MSPO Certification Scheme given by the Biomass Sustainability Working Group on 6th August 2021. https://www.meti.go.jp/shingikai/enecho/shoene_shinene/shin_energy/biomass_sus_wg/pdf/011_e02_00.pdf

for ongoing operations on peatlands. Also, under the revised MSPO, requirements for deforestation are not clearly defined but some deforestation is still allowed. Despite the gaps identified and the suggestion to include NDPE as a requirement during the revision process, there is no specific mention of NDPE within the revised standard. It is argued that the concept is incorporated across various principles (MPOCC 2022b). However, from the methods of accounting for GHG emissions required by the revised standard, it is clear that land use change after the cut-off date is an identified source of emissions that is included, indicating that conversion of forest could be potentially possible. Further, though new plantings on peatlands are discouraged, if it is permitted by local regulations, clearing of peatland forests could be allowed under this revised standard.

The **ISCC** EU and PLUS certification criteria set out that raw material must not be obtained from land with high biodiversity value (primary forests, areas for nature protection and protection of rare, threatened, or endangered ecosystems or species, etc.), high carbon stock (wetlands, forests) areas, or peatlands after 1 January 2008[37]. As part of this certification and audit process, the applicants must submit evidence of no-conversion after this date (Principle 1, a "major must" for certification), this can be geographic coordinates with satellite imagery at 20 m resolution or Google Earth imagery can be used if unable to provide this. Any land use changes occurring in or after January 2008 must be reported to ISCC with detailed explanation on how compliance with ISCC Principle 1 was verified.[38] As part of the ISCC smallholder management system, there is an ISH Data Management system that automatically can verify whether a smallholder's plot meets the criteria for Principle 1, this can also be used to check the criteria for smallholder group certification. ISCC has also developed a mobile app to assist smallholders in collecting the geographic limits (polygon) of their farms. [38]

Similarly, **RSB** includes a criterion stating that any area of local, regional, or global conservation value for existing or new areas of operation should be maintained or enhanced. Such areas (e.g., forests, high carbon stock areas, IUCN key freshwater biodiversity areas, key biodiversity areas, etc.) cannot be converted after 1 January 2008 for EU RED certification[39] and January 2009[40] or earlier based on relevant international standards for other certifications. All operators seeking RSB certification need to conduct a risk assessment (to identify and evaluate relevant risks of operations that need to be addressed in management plans and identify the risk class – these determine the length of certificate validity, audit sampling and other details of the audit) and self-evaluation (help understand current performance and identify areas and opportunities for improvement). Further, biomass producers and industrial operators need to complete the RSB screening tool to identify relevant social and environmental aspects that need to be closely monitored and develop an

[37] https://www.iscc-system.org/wp-content/uploads/2021/06/ISCC_EU_202-1_Agricultural-Biomass_ISCC-Principle-1-v4.0.pdf; https://www.iscc-system.org/wp-content/uploads/2021/08/ISCC-PLUS_V3.3_31082021.pdf

[38] Smallholder solutions for palm, https://www.iscc-system.org/wp-content/uploads/2018/03/Feige_Independent-Smallholder-Palm.pdf

[39] https://rsb.org/wp-content/uploads/2020/06/RSB-GUI-01-007-01-RSB-Conservation-IA-Guidelines_3.0.pdf

[40] https://rsb.org/wp-content/uploads/2020/06/RSB-STD-03-001-RSB-PCs-for-Smallholder-Groups.pdf; https://rsb.org/wp-content/uploads/2020/06/RSB-STD-01-001_Principles_and_Criteria-DIGITAL.pdf

Environmental and Social Management Plan (ESMP), which includes all baseline studies, reports, impact assessments, mitigation, management, monitoring and evaluation plans.

Many of the other approaches and supporting tools identified earlier do not contain specific cut-off dates for deforestation or new plantings or requirements. The exception to this is SPOTT, which asks companies for a commitment to zero deforestation/natural area conversion (includes HCV, HCS, and peatland areas) by January 2020 as an environmental indicator (SPOTT 2020a). However, many of the tools and approaches do allow for the identification of jurisdictional targets and commitments and the progress towards them for reducing emissions and deforestation, and peatland management. Additionally, some include international targets, such as the amount of jurisdictional area that should be protected (i.e., SLRT includes Aichi Target 11).

Most certifications have a historical cut-off date for deforestation. This reflects the recognition that farther-into-the-future deforestation cut-off dates might result in a deforestation surge prior to the set date (Jopke and Schoneveld 2018) and immediate cut-off dates might overlook past deforestation (Pasiecznik and Savenije, 2017) or other suppliers that could have been stopped from deforesting (Garrett et al. 2019). However, if a cut-off date is too far in the past, this can lead to the exclusion or marginalization of specific stakeholders, e.g., indigenous people (IP). Thus, it might be more beneficial to set earlier cut-offs with immediate implementation deadlines but work with marginalized groups to set short term cut-off dates with a plan for eliminating deforestation (Garrett et al. 2019). In both Indonesia and Malaysia, stakeholders engaged in the study that work with or who are from indigenous communities and smallholders voiced concerns over what cut-off dates mean in practice. They questioned the rationale for a blanket cut-off date (while recognizing cut-off dates are needed for credibility of certifications) which would limit the development of IP seeking to improve their social and economic situation. A Malaysian stakeholder (CSO) mentioned that customary lands for development into new plantations are relatively small and generally the vegetation does not consist of primary or secondary forests; thus, sustainable management of these lands with minimal impacts on the environment should be allowed. Though most of the certification systems in their definitions of forests allow exceptions for indigenous lands, the concerns expressed show the need for clarifications on criteria implementation to be provided.

While it is worth noting that certification schemes have the potential to curb deforestation, studies examining the effectiveness of certifications are limited, with the majority focusing on RSPO and only a handful on ISPO, MSPO, and others (Abdul Majid et al. 2021; Tang and Qahtani 2020). However, these studies show mixed evidence regarding the effectiveness with which certifications can halt deforestation. Some have shown that there is a reduction in deforestation rate based on a counterfactual analysis for RSPO (Carlson et al. 2018), but forest loss due to deforestation or fire damage is not stopped in Indonesia, Malaysia and Papua New Guinea (Gatti et al. 2019). For Malaysia, the World Resources Institute (WRI) has found that since 2016 the deforestation rate has decreased annually (approximately from 185,000 hectares in 2016 to 73,000 hectares in 2020)[41] with MPOB claiming this is likely due to the self-imposed limit (the national government's commitment) on area for oil

[41] https://research.wri.org/gfr/top-ten-lists#malaysia

palm plantations to 6.5 million Ha by 2023 and the expansion of MSPO certifications since 2015 (Law 2021).

Other studies have observed that RSPO and ISPO have been ineffective in curbing oil palm related deforestation (Hidayat et al. 2018) and also result in negative spillover effects or leakage where deforestation is displaced to non-certified farms (Heilmayr et al. 2020) or to other sectors (ten Kate et al. 2021). The issue of leakage resulting from oil palm certification is a major concern regarding the effectiveness of certifications, following Meyfroidt et al. (2020), CIFOR refers to land use leakage as land use spill over caused by an intervention (e.g., policy, incentive, certification) whereby it reduces its overall effectiveness. Land use leakage is due to indirect land use change (ILUC), where land use change in one place is caused by land use change in another place. However, land use leakage and ILUC are difficult to measure and detect given methodological limitations and the complex nature of land system changes (that result from multiple causes and policies; Azhar et al. 2021). Direct deforestation can be reduced through certifications and enforcement, but it is more difficult to address indirect deforestation. Some drivers for indirect deforestation can include input reallocation (farmer shifting the use of funds to clear non-certified forests), investment of price premiums for additional forest clearance, palm oil price increases (globally or through local mills trying to fill quotas), price reduction of inputs, high non-forest land prices, and reduction in price of forest clearing contract work (Heilmayr et al. 2020).

As mentioned before, certifications are not the sole approach employed to reduce deforestation, and in many areas and jurisdictions they are additional supporting policies and initiatives in place. Certifications certainly need to focus on landscapes beyond the oil palm plantations that are forested to be more effective in curbing deforestation, resulting in forest protection, and addressing issues of leakage/ILUC (Heilmayr et al. 2020), and this can be accomplished through having other initiatives being implemented in the same areas. Considering subnational JAs to achieve a more effective path to halting deforestation would help in addressing ILUC within a given jurisdiction. Though the overlap of JAs, reducing emissions, deforestation and degradation (REDD+), and/or private sector commitments is relatively new, Umunay et al. (2018) note that they show potential in reducing deforestation. They highlight this through the example of Mato Grosso compared to neighbouring states in Brazil to illustrate the reduction in deforestation. This is also noted by others as hybrid governance (Wardell et al. 2021).

5.1.3 Land use change: Fire

RSPO certification criteria mandate that fire is not used in oil palm cultivation areas for preparing land, pest control, or waste management on the farm. In Indonesia, aligning with the zero-fire policy, ISPO criteria states that fires for land clearing are prohibited both for smallholders and company growers pursuing certification. Protocols and efforts should be established by the managers to prevent and control fires. Along the similar line, the current MSPO criteria [2022] prohibits the use of fire for preparing land for oil palm cultivation and replanting except in situations allowed under the legal framework (in MSPO [2013], use of fire for waste disposal was mentioned as explicitly prohibited). This is based on identified regional best practice and requires special approval for use of fire from relevant authorities to circumvent where no other measures exist. MSPO [2022] strictly restricts open burning, except in situations allowed under the legal framework. Response and mitigation plans for preventing fires need to be established.

The ISCC sustainability requirements state that waste burning should be done through official systems but if done on site, hazardous materials cannot be burned and burning sites/incinerators must be in appropriate locations. Burning as part of land clearance is also prohibited, while stubble can be burned in a responsible way. A plan that covers waste reduction, pollution, waste recycling must be available and if burning is taking place on site, then records about types of waste burning and burning practices must be kept. Further, risk assessment records and monitoring and management measures must be kept for at least five years.

RSB criteria on fire states that operations should avoid or eliminate open-air burning of residues, waste, by-products, and land for clearing. The management plan should recognize major air pollutants as harmful and include employed mitigation strategies or rational for the lack of use of such strategies. Further, a plan for a phase out within three years of certification of any open-air burning needs to be in place, though limited open-air burning practices may occur if required based on crop or local context where there are no other viable alternatives.

Lastly, of the identified tools and approaches, SPOTT, KDSD, and Terpercaya, contain explicit indicators on fire uses and management/reduction. These indicators focus on whether relevant policies and regulations are in place and are implemented.

The extent to which zero-burning (fire) policies have been effectively enforced and led to positive outcomes is often related to other measures taken by relevant actors to prevent and mitigate forest and land fires. In the Amazon, where smallholders use fire to clear land for economic savings and lack mechanical clearing equipment, Morello et al. (2019) found that a policy subsidizing such equipment would improve the effectiveness of fire bans. In Indonesia, moratoria on forest and peatland conversion and granting of new oil palm licenses along with initiatives for the restoration of peatlands implemented after the 2015 fires are generally understood to have decreased the severity of the 2019 fires (Normile 2019). The restoration of peatlands is estimated to decrease the burned area and economic loses, showing that it is a cost-effective strategy for fire prevention (Kiely et al. 2021). In oil palm plantations, instead of land expansion that is cleared using fire, the focus has been on boosting yields from existing sites (Purnomo et al. 2018).

The Indonesian government's current measures to enforce fire prevention policies by supervising company operations and imposing administrative sanctions appear to have a deterrent effect on corporations, including forestry and oil palm plantation companies (Gakkum 2019), despite some loopholes and weak enforcement (Normile 2019). From 2015 to 2019, 515 companies out of 639 have been sanctioned, and some of their business licenses revoked (Gakkum 2019). Additionally, the private sector has also stepped-up programs to enforce fire prevention. In addition to individual companies adopting no burning policies for operation (see Box 1 for an example), there is also an alliance that has been established. The alliance, Fire Free Alliance, is a voluntary multi-stakeholder group comprising of forestry and agriculture companies, NGOs and other concerned collaborators and partners committed to resolving Indonesia's persistent haze issue arising from forest and land fires through sharing information and resources. Member companies in the alliance work on monitoring haze and work with communities to develop fire risk maps, provide alternative methods to burning for land preparation, raise awareness about impacts of fire in

villages, support incoming generating activities that does not involve burning and provide rewards to villages with no forest fires.[42] However, the impact of the fire bans on fire dependent communities (where fire utilization carries agricultural and cultural values) is not well understood, one study in West Kalimantan (Daeli et al. 2021) has shown that burdens of the bans are heaviest on farmers that are dependent on traditional agriculture with few livelihood alternatives and have little external support to fight uncontrolled fires.

Box 1. Adoption of no burning policies in the private sector: GAR

GAR adopted no burning in its operation and worked with nearby communities through a fire prevention community program to strengthen prevention and mitigation measures. GAR has most of their plantations and subsidiary companies RSPO, ISPO, and ISCC certified, taken part in a clustered-based forest fire prevention initiative led by the Indonesian Coordinating Ministry for Economic Affairs, and joined forces with local governments in several provinces where they operate. Their strengthened fire mitigation and fire-fighting procedures were claimed to keep the fire-affected areas relatively contained in 2019, and as a result, 99.5% of the company's production area was unaffected (GAR 2019).

Further, working with communities in fire prone areas of Jambi and West Kalimantan provinces, GAR has been running a community fire-free program since 2016, which now includes conservation and food security in addition to fire prevention and response. The program now known as Desa Makmur Peduli Api includes GAR working with local government to provide village communities and indigenous groups with support and education to minimize fires and associated haze.[43]

In 2001, Malaysia imposed a fire ban and during the 2019 fires strictly enforced the no-open burning under the Environmental Quality Act 1974 to manage air pollution (Ong 2019). Despite this, in 2020 Malaysia opted for a regional approach (i.e., individual state-based regulations/legislations) rather than a national law to hold companies responsible for forest fires (Taylor 2020). Evidence of effectiveness of the fire ban or the newly adopted regional approach in Malaysia remain to be studied.

5.2 Participation and inclusion of smallholders

Independent smallholders are important actors in the (sustainable) palm oil supply chain, managing significant portions of palm oil cultivation areas in both Indonesia and Malaysia. However, independent smallholders also attain only a portion of their yield potential, largely due to not following good agricultural practices (GAP) and, unlike organized smallholders, through lack of access to training and financial support. Low smallholder productivity and yield is considered to be a major driver of deforestation and peatland conversion in Indonesia (Khor et al., 2015). Further, Austin et al. (2019) show that small-scale agriculture and plantations have become a significant driver of deforestation and especially since 2014

[42] https://www.firefreealliance.org/
[43] https://www.goldenagri.com.sg/desa-makmur-peduli-api-fire-free-programme-kalimantan/

have resulted in a larger deforested area compared to larger scale oil palm plantations in Indonesia. Thus, the targeted inclusion of smallholders in any sustainable palm oil certification is paramount.

Most certifications systems have developed specific streams for the certification of independent smallholders, and these tend to have a lower number of criteria or indicators (see Table 2) to reduce burden. Organized smallholders are often subject to similar certification criteria and indicators as plantations. The definitions of a “smallholder” also varies among certification schemes, in terms of hectarage (see Box 2).

In defining a smallholder, most certification systems consider size and ownership of the land. However, a study (Schoneveld et al. 2019) examining and creating a typology of independent oil palm smallholders in Indonesian Borneo shows that this group is far from homogeneous. Rather, they find six distinct groups, each with their own structural compliance gaps with ISPO and indicators of GAP, potentially restricting them from accessing the formal palm oil market. Similar results of smallholder heterogeneity were also found by Jelsma et al. (2017) in Sumatra. This indicates that strategies for addressing non-compliance towards sustainability would be more impactful if socio-economic (livelihood assets, portfolios) differences in independent smallholders are considered and recognize that certain types of independent smallholders might have more control over actions and interests in the sector. Landscape or jurisdictional approaches might help align goals of various stakeholders, including the various groups of smallholders.

Box 2. Who is a "smallholder" in palm oil certification systems?

RSPO defines smallholders as those with oil palm production areas smaller than or equal to 50 ha or smaller than or equal to the maximum size defined in a National Interpretation (e.g., for Indonesia this implies threshold size is 25 ha or below, for Malaysia less than 50 ha). Such smallholders are the decision makers on the operation of the land and production practices (utilization of the land, crops to plant, how to manage, and how to finance).

Under ISPO, smallholders are referred to as individuals with palm oil plantations with a maximum area of 25 ha that is registered and has the necessary information declared, such as size, location, planting year, owner, land status etc.

MSPO defines independent smallholders of oil palm as individual farmers who own or lease a farm less than 40.46 ha (100 acres) and manage the farm themselves. Independent smallholders or leases may employ workers to carry out daily work at their farms.

ISCC defines independent smallholders as farmers who grow oil palm (of less than 50 ha in area) alongside with other crops. On such farms, labour is provided mainly by the family and is a major source of income. The land is not contractually bound to a mill and the farmers free to choose what is cultivated and how to manage. These farms can receive support or extension services from government agencies, NGOs, etc.

RSB defines a smallholder as a farmer with less than 75 hectares of land.

AWS does not include a definition of a smallholder, since the standard is applied to a site and encourages neighbouring sites (farms, businesses, etc.) with similar characteristics to group together for certification.

RSPO's new standard for independent smallholders (ISH) took effect in November 2020 (adopted in Nov 2019 with a one-year transition period). The adoption of the standard is intended to increase the inclusion of those smallholders that qualify as independent smallholders. Adhering to the key pillars of RSPO's Theory of Change (ToC): Prosperity, People and Planet, independent smallholders must comply with the simplified system and standard for sustainable production of palm oil comprising of 4 principles, 23 criteria and 58 indicators. RSPO introduced a stepwise (three phase) approach to enable smallholders to achieve compliance over a specified time period: (1) entry level or eligibility (minimum requirements that need to be met in order to enter the certification system), (2) progress or milestone A (intermediate requirements to be met within 2 years), and (3) full compliance or milestone B (final requirements to be met within 1 year of meeting milestone A). The approach screens for smallholders with the most unsustainable practices and then, for those who are eligible, allows time for continual improvement and progress towards meeting all requirements. As of December 2021, 21,597 (62,863 ha) independent smallholders were RSPO certified globally, while approximately 19% of global palm oil, including that produced by independent smallholders, is RSPO certified.[44] After concerns in 2017 of RSPO

[44] https://www.rspo.org/impact

certifications having plateaued especially in Indonesia and Malaysia (RSPO 2017), the 2019 Impact Report showed an increase of 11% in membership and 27% and 24% increase in RSPO certified area in Indonesia and Malaysia (RSPO 2020b). This could potentially be demonstrating the impact of the new RSPO ISH standard.

Under ISPO and MSPO, oil palm smallholders are recognized as either independent or organized. While organized or scheme smallholders are tied to a particular company mill by partnership, contract, or agreement, and often receive technical support from the company, independent smallholders manage their plantations autonomously. Organized smallholders in Indonesia are linked historically to various government schemes such as PIR (Perkebunan Inti Rakyat) and refined partnership models engaging companies' role in empowering smallholders. They originate from the companies' obligation to empower and partner with local communities through benefit sharing schemes and facilitate the establishment of oil palm farms, as reinforced through the latest regulations. These regulations require companies to set aside 20% of the company's concession for allocation to nearby communities and to provide various forms of assistance (e.g., providing credit, shared benefit mechanism, other type of partnership, high quality seedlings, fertilizers etc.) to improve technical capacity for a higher quality product.

ISPO targets smallholders to comply with ISPO ISH certification P&C – now declared mandatory for smallholders to achieve by 16 November 2025. However, smallholders will need only to comply with five (5) of the seven (7) ISPO principles that companies are required to comply with. As indicated in Table 1, these five ISPO principles are (1) legality, (2) GAP, (3) environment management and protection of biodiversity, (4) transparency, and (5) sustainable business. Organized smallholders can get access to funding (i.e., training, facilitation to comply with ISPO P&C and first certification; details on funding are discussed in Section 5.2.2). As of December 2020, of the 755 ISPO certificates issued, 21 are certified smallholder plantations comprising of 14 cooperatives, four (4) village cooperatives, one (1) state-owned village, and two (2) farmer associations/groups (Ministry of Agriculture 2021). As of March 2021, the number of issued certificates was reported to increase to 763 (Coordinating Ministry of Economic Affairs 2021) covering a total area of 5.8 million ha, accounting for 35.4% of the country's oil palm plantation areas (BPDPKS 2021b). Total smallholder plantations, approximately 6.72 million ha, account for only 0.19% of the area certified under ISPO (BPDPKS 2021b). ISPO adoption among independent smallholders remains low, however, the standard was declared as mandatory for smallholders by 2025 only in 2020.

In Malaysia, 'organized smallholders' refers to those smallholder plantations managed by government/state agencies such as Federal Land Development Authority (FELDA), Federal Land Consolidation and Rehabilitation Authority (FELCRA), Rubber Industry Smallholders Development Authority (RISDA), Sarawak Land Consolidation and Rehabilitation Board (SALCRA), and Sabah Land Development Board (SLDB). Organized smallholders were 100% MSPO certified before 31 May 2021, but many independent smallholders remain to be certified. As of November 2021, about 55% (~140,000) of independent smallholders covering an area of 530,652 ha were MSPO certified (Kadir 2021b). Given this, the deadline set by the government to achieve 100% independent smallholder certification has been shifted to the end of 2022. The Malaysian government is channelling funds to independent smallholders covering costs of certification to achieve this goal through the MPOB.

Despite the inclusion of smallholders in certification schemes, due to a general lack of resources and capacity, various certification systems promote smallholders to comply with sustainability P&C through group certification. Many governments often cover the initial cost for certification of smallholders but there are additional costs for maintaining the certification that also need to be accounted for, such as recurrent audit costs. Often by joining a group/becoming organized, producers, particularly smallholders, can reduce the certification effort and costs (i.e., audit cost). Group certification allows individual smallholders to certify farms for the production of fresh fruit bunches (FFB) against sustainability P&C under a single certificate. This approach is utilized by many certification schemes (e.g., RSPO, ISCC, ISPO, MSPO). For example, RSPO, through such a system allows individual growers to be certified under a single certificate, which is held by a central organization or individual which could be group manager, group administrator, or group entity. The group manager is responsible for establishing an Internal Control System which controls the group, and for carrying out a program of internal assessments of members' performance to be certain that they are complying with the RSPO production requirements. To support independent smallholders to move towards sustainability and livelihood improvements, RSPO provides smallholders and group managers (who are now given larger responsibility compared to previous group certification processes) with training materials as part of Smallholder Trainer Academy (STA), There are multiple types of training material (e.g. formation of groups, technical requirements such as pesticide use, peatland and drainability assessment, HCV, FPIC) for trainers, group managers and group members. Additionally, funds from RSSF for independent smallholders can provide support for the first audit to assess eligibility. As of February 2022, RSPO has 63 certified independent smallholder groups which includes 126,668 smallholders and covers 315,099 ha.[45]

Similar to RSPO, ISCC, RSB, ISPO, and MSPO certifications have also adopted the group smallholder strategy. ISCC has developed an ISH standard and issued the world's first ISCC smallholder certificate in March 2018 consisting of 35 plantations less than 39 ha each (i.e., Cooperative Makarti in Sumatra). ISCC considers connecting smallholders to markets a "fundamental part of any strategy towards more productive and sustainable agriculture and rural development". As a part of their approach, the ISCC organizes ISH into groups. ISCC adopts this as a practice of organizing individual producers into structured groups and shifting responsibility in part from an external audit to internal inspections. RSPO as well as ISCC have specific guidance detailing management system requirement and guidance for group certification including applicability and eligibility. However, under ISCC, group certification is only possible for homogenous groups - located in the same region and with a similar production system and climate conditions for agriculture product. As of February 2022, ISCC has 5870 valid certifications, of which 253 are from Malaysia and 380 are from Indonesia, including 4 and 20 valid group certifications in each country, respectively.[46]

The RSB certification for smallholder groups is for the production of biomaterials from farms or plots of smallholder (with a plot less than 75 ha) group members and for micro- and small-scale feedstock processing and biomass production – but currently this is not included in the RSB EU RED Standard that is recognized by the European Commission (the possibility for inclusion is being investigated by the RSB Secretariat)[47]. Group members need to have a

[45] https://rspo.org/smallholders
[46] https://www.iscc-system.org/certificates/all-certificates/
[47] https://rsb.org/wp-content/uploads/2020/06/RSB-STD-03-001-RSB-PCs-for-Smallholder-Groups.pdf

group management for a common management system and to apply for and represent group members to RSB and the certification body. It is also the group management that holds the RSB certificate.

ISPO is promoting this type of system to reduce the burden on smallholders and facilitate smallholder certification – stressing the importance of a group to have an internal control system (ICS) who is responsible for adoption ISPO standards – but guidelines for the adoption of group certification are not yet available. Under ISPO, individual farmers are grouped with others having a common interest, commodity, and need to develop their business in a farmer group (Poktan). Alternatively, farmers can also join a cooperative to reach economies of scale and efficiency, the farmer groups are grouped into associations of farmer groups (Gapoktan). The monitoring and verification of a certified smallholder group would be different than of larger plantations and the guidance to be drafted for this would need to balance the frequency of internal checks versus external/accredited/certified audits (specially to keep costs down) and can utilize a stepwise approach, like RSPO. However, there is an additional burden of financing and training ICS rapidly to meet the 2025 deadline. As of March 2021, of 763 certificates issued, only 21 smallholders were certified under ISPO, including cooperatives, village unit cooperatives, village-owned enterprises, and farmer groups (Coordinating Ministry of Economic Affairs 2021). Additionally, with the support of Musim Mas, 1200 smallholders were able to obtain ISPO [2020] group certification at the end of 2021 (2,700 ha) (Investor Daily 2021).

MSPO has also adopted a similar strategy to prepare smallholders and enable them to be certified under a single certificate by establishing a Sustainable Palm Oil Cluster (SPOC), falling under the purview of the MPOB. Under this scheme, all throughout Malaysia, smallholders can be potentially grouped within SPOCs of 1000-2000 farmers to reduce the financial burden for organized smallholders and small- and medium-estates to prepare for the initial MSPO audits (Kannan et al. 2021). Though further details regarding strategies for MSPO 2022 are needed, it would be expected that SPOC would be continued to be used by MPOB as a key strategy given that smallholder challenges will largely remain the same despite the changing standards. Additionally, the draft version of the revised MSPO[48] distributed for comments included SPOC as a scope for certification under the more general standard for independent smallholders, allowing for smallholders with less than 40.46 ha of land to be grouped together for certification. As of May 2022, certified planted areas (nationally is 5,613,205.30 ha)[49] of independent and organized smallholders account for 10.6% (592,738.48 ha) and 12.3% (689,751.44 ha), respectively, of the country's total certified planted areas amounting to 6.64 million ha. Around 167,145 (64.2%[50]) independent smallholders across the Peninsular states, Sabah, and Sarawak are registered and have their plantations MSPO certified (MSPOtrace 2022).

By design and the nature of water as a resource, AWS Standard is already applied at the "site" level, though this can differ from the company level to a larger landscape, this standard

[48] https://static1.squarespace.com/static/604db3a6dad32a12b2415387/t/61ea144c50fd337f22c1c9b8/1642730578804/Draft+Revised+of+the+MSPO+Certification+Scheme+Document.pdf

[49] Note that as of March 2021 Malaysia switched from using certified areas to certified planted areas as the main statistical figure for certification data.

[50] This percent has been calculated by CIFOR using the total number of independent smallholders reported in Rahman (2020) which utilized MPOB 2019 data.

allows for group certification. In this case, farms that are located close together, share characteristics such as catchment and have similar water-related interests and/or challenges are encouraged to consider group implementation and be certified as a group. This would enable better knowledge and resources sharing and more effective collaboration in collective action.

Participation and inclusion of smallholder in jurisdictional or landscape processes are also assessed by most of the identified approaches and tools. SPOTT and AFi, as mentioned, do have indicators about multistakeholder collaboration for companies. SLRT and LandScale contain assessing indicators on stakeholder participation in various policy and consultation processes and the SLRT contains additional indicators trainings or assistance provided to smallholders and communities for relevant commodities in the selected jurisdiction. Green Jurisdictions Database provides similar metrics as the SLRT. KDSD and Terpercaya have indicators on status of smallholder managed areas in the district, smallholder productivity, smallholder cooperatives, and district support for smallholders. KDSD also includes indicators on stakeholder participation in consultations and forums. CDP States and Regions does not ask for reporting on participation or inclusion of smallholders. However, it is worth noting that not only can these various approaches and tools measure or assess participation and inclusion of smallholders, but the tools themselves also can provide a platform for inclusion and participation (Peteru et al., 2021). Thus, it would be possible for smallholders and other jurisdictional stakeholders to be involved and participate in the various aspects of implementation of these approaches and tools (e.g., relevant indicator selection for LAF, participation in validation of SLRT, participation in data collection of KDSD).

5.2.1 Challenges facing smallholders

In Indonesia, there are micro and macro level challenges for ISPO implementation, especially for smallholders, including: land legality (a primary concern for smallholder to achieve ISPO's target; see Box 3), cost of certification, lack of reach and information sharing with smallholders in remote areas, data discrepancies, and negative campaign on palm oil (Coordinating Ministry for Economic Affairs 2021). Lack of land rights creates barriers for smallholder certification. Of the 4.54 million ha cultivated by smallholders (Ditjenbun 2020), as of May 2021, only 40,800 ha or 23,000 smallholders have an STDB (Media Perkebunan 2021). Without an STDB, smallholders are unable to apply for or obtain an ISPO certification. Low productivity of the oil palm crop due to the use of poor-quality seedlings, lack of technical skills in adopting good agriculture practices, and lack of collectivization (i.e., desire to form smallholder groups and working together) are additional challenges and constitute as major criteria for ISPO (BPDPKS 2021a). Additionally, in relation to the recent ISPO changes, one stakeholder mentioned the difficulty in navigating the new regulation to be allowed to train the farmers. The change in the ISPO system has led to a lack of understanding and a limited number of agents (in addition to DG Ministry of Agriculture) who can help train smallholders for certification, thus potential progress towards ISPO certification has been even slower. The stakeholder, based on their experience in working with smallholders, also mentioned the lack of responsibility or willingness of mills under ISPO to support smallholders, unlike the mills under RSPO which are required to support independent smallholder certification (e.g., provide training, knowledge about good agriculture practices). It is possible that the structure offered by a group certification coupled with a train-the-trainer approach could help address some of these challenges facing smallholders to ISPO certification.

Despite having a set standard geared towards independent smallholders, MSPO adoption among this group has been slow. Independent smallholders face issues of land ownership exchange and other land-related issues that can take a long time to resolve to meet the MSPO requirements – these also include difficulties of getting the land use category changed and land titling, especially for IP. For example, in Sarawak, indigenous oil palm smallholders struggle with issues of land tenure, as indigenous ancestral lands are not necessarily recognized by the state government (Rahman 2020). A limited knowledge of best practices is one of the biggest challenges for smallholders (see Box 4 for details). Other challenges include weather (e.g., flooding causes a halt in the supply of harvested fruits to millers during the rainy seasons) and open market price changes. Particularly for smallholders in the states of Sabah, Johor and Sarawak, limited access to the wider market or to millers, a lack of capital, and land tenure were identified as challenges (Rahman 2020). Additionally, sometimes there are difficulties in contacting these smallholders since they might not be running their own farms full-time and are scattered; this is exacerbated when the MPOB officer is in charge for over 1000 smallholders (Kaur 2020; Malay Mail 2021).

As mentioned previously, one of the biggest challenge facing smallholders across both Indonesia and Malaysia is the absence of premium prices as representation of buyer's acknowledgement of smallholders' effort towards sustainability.[51] Premium prices can help smallholders offset certification costs. In addition to social benefits such infrastructure, health and education facilities provided by the government, better income for smallholders from certification through premium price is considered important. Lack of appreciation of stakeholder efforts towards sustainability practices was also mentioned as a challenge for motivating smallholders to certification. For example, interviewees mentioned that the oil palm industry in Malaysia is heavily regulated and despite a licensing process that enable actors including smallholders to do business in a sustainable manner, it has yet to be recognized by the market and consumers. Lastly, the challenge posed by the lack of transparency of the palm oil market, which make smallholders less aware of how fresh fruit bunches can be traced from production site to traders and buyers. This has resulted in less income received by smallholders. Newer tracing technologies like blockchains (e.g., DIBIZ) could help improve the transparency in a manner that could benefit smallholders since all transactions would be tracked in a transparent manner and in real time.

[51] Source: interviews with Fortasbi, NASH, DOPPA, MPOB

Box 3: Biggest challenge for sustainable palm oil in Indonesia: Land legality and tenure

One of the biggest challenges to smallholder sustainability certification in Indonesia is overlapping rights and claims over lands, where oil palm plantations are found to occupy state forestlands (kawasan hutan) – regarded as illegal in Indonesian regulations. While figures vary, 2.6 to 3.4 million ha of 16.38 million ha of oil palm plantation areas are estimated to overlap with state forestlands (Javlec et al. 2020; Dirjenbun 2021). Smallholder plantations are estimated to account for 1.2 ha (~35-46%) of these conflicted areas (Kehati 2020), though another study by CSOs has found that only 750,000 ha belong to oil palm smallholders with less than 25 ha are in forest areas (SPKS 2022). Reasons for this illegal occupation, particularly by smallholders, are linked to economic and social factors and aggravated by the weak governance of state forestlands (Rumboko et al. 2019).

Requirements for certification can create barriers for smallholders. ISPO and RSPO require growers to conform with national laws and regulations and have evidence of land rights (e.g., STDB for ISPO that can be issued only when land legality is clear and there are no conflicting claims; demonstration of legal rights via a title or permission for RSPO). Similarly, ISCC requires proof that land is being used legitimately and that any traditional land rights have been secured.

Agrarian reform (TORA) and social forestry are considered major strategies for resolving smallholder tenure conflict associated with overlapping state forestlands. Through agrarian reform, the government expects to redistribute land and ownership rights obtained from expired concessions, abandoned concession lands and ‘convertible production forests’ lands, to targeted beneficiaries including land-less peasants, farmers, farm labourers, community groups, and cooperatives. BPN (2021) reported that as of mid-2021, 27.6% of the total lands under redistribution program have been completed. However, BPN has also identified issues that have slowed the process of land redistribution: (1) delayed or lack of fulfilment of the companies’ obligation to set aside 20% of their concessions for community farms and targeted plantation smallholders; (2) proposed lands for redistribution have been mapped but not yet located in the field; (3) unclear mechanisms for transferring land between companies and the targeted beneficiaries; and (4) further coordination between local governments and various ministries is required due to the complexity around releasing lands designated as ‘convertible production forests.’

The second strategy - social forestry scheme complemented by a recent regulation for jangka benah allowing time for forests to restore their structure and ecosystem function - would enable oil palm smallholders to continue legally managing their plantation. However, social forestry is not a long-term solution for this agricultural commodity, as smallholders under this scheme are not allowed to replant oil palm crops and must destroy them once they reach the age of 25 years in lands designated as ‘production forest’ and 15 years in lands designated as ‘protection and conservation forest’. Rather, social forestry is intended as a transition between the utilization of existing oil palm crop in the short term to forestry and non-timber forest products in the long term; whereby allowing for forest and ecosystem functions to recover. But no details on how social forestry and its jangka benah strategy would clarify tenurial rights over smallholder plantations have been provided since the regulation has just entered into force.

Box 4: Biggest challenge facing independent oil palm smallholders in Malaysia[52]

While oil palm smallholders are an essential element for a sustainable palm oil supply in Malaysia, they face challenges in trying to meet MSPO certification standards. Their lack of knowledge about good agricultural practices (GAP) leads to non-competitive production with low yields and low quality FFB. In a study with 400 smallholders across all Malaysian states, only 26% have complied with GAP criteria (Mansor 2021). The average FFB yield of independent smallholders ranges from 15.4 tons/ha/year in Sabah to 19.1 tons/ha/year in Peninsular while the national average yield is 18.2 (Sahidan et al. 2021). These yield rates are all below MPOB's target of 22 tons/ha/year (Awang et al. 2016).

Further, smallholders are often unaware of the certification requirements as well as advantages of compliance and inclined to use less cost-effective fertilizers with unknown compounds for their crop and low-quality seedlings. Relatedly, smallholder frequently lack the finance to participate in GAP projects. Another related challenge for smallholders highlighted by MPOCC is regarding the concern over cultural norms where within rural Asian and Malaysian communities, children tend to accompany their parents or guardians at work in the agricultural sector during off-school hours for social safety reasons, especially if both parents work at the same time and place. Children will often help their parents pick loose fruits or with similar small tasks. However, this circumstance is often misconstrued as forced or child labour which is not allowed under the Employment Act 1955 and further stipulated in Act 670.

Efforts have been underway to tackle those challenges. MPOB has adopted Smallholders Palm Oil Cluster (SPOC) strategy for organizing smallholders and employed guidance and advisory programs through TUNAS (Tunjuk Ajar Nasihat Sawit). In 2021, RM20 million (SGD 6.57 million) has been allocated for oil palm sustainability certification and supporting independent smallholders (Rahman 2020). MPOB covers cost of training, auditing, document, personal protective equipment, and chemical storage rack for those independent smallholders engaged in MSPO certification.

5.2.2 Support and funding for smallholder certification

Recognizing the difficulties posed by the costs of obtaining certification for smallholders, various incentives (i.e., mechanisms and funds) have been established by some of the certification systems to help. It is also important to note that NGOs play a crucial role in providing support and funding for the trainings and capacity building required for smallholders to achieve certification (e.g., WWF, WWF-Malaysia, Inobu, Yayasan Setara, Wild Asia; Apriani et al. 2020). More recently, support from the private sector for smallholder certification has also been on the rise. For example, Wilmar working with Wild Asia to help smallholders in Sabah to obtain RSPO certification (Wilmar 2022) and Musim Mas supporting smallholder ISPO certification in various provinces of Indonesia (Investor Daily

[52] This information is synthesized from the following sources: KAMI Focus Group Discussions, Ahmad et al. 1996, Awang et al. 2016, Aznie et al. 2018, Che Omar et al. 2018, Mansor 2021, MPOCC 2020, Rahman 2020, and Sahidan et al. 2021.

2021). Discussed below are the certification schemes where relevant information on smallholder support was found.

- **RSPO and ISCC support**

RSPO, in addition to the ISH standard with a stepwise approach, established the RSPO Smallholder Support Fund (RSSF) in 2013 to assist smallholders in getting RSPO certified by reducing cost implications through funding. Between 2013-2018, RSSF disbursed RM 20.1 million to smallholder programs, which supported 18,100 smallholders across five major oil palm producing regions: Indonesia, Malaysia, Thailand, Africa, and Latin America.[53] Additionally, RSPO has also created a Smallholder Engagement Platform[54] recognizing that supporting smallholders is essential for making the palm oil supply chain more sustainable. This platform aims to connect smallholder groups with potential project partners, resources, and support. Further, with the Covid-19 pandemic causing hardships to many smallholders, RSPO waive certification costs for one year for existing ISH groups.[55]

Though the ISCC does not provide any additional financial support to smallholders, it initiated the ISCC Smallholder Academy partnering with a Netherlands Development Organization (SNV), to provide training that will enhance financial resources and mitigate social and environmental issues and to expand the certification of independent smallholders. ISCC claims to be innovative in its approaches and provides valuable tools and trainings that enable a more effective but less costly certification process, enabling smallholder certification.

In addition to the strategy of forming smallholder groups for certification, RSPO credits is another attempt to incentivize smallholders to participate in the sustainable production of FFBs[56] by providing direct access to the sustainable palm oil market. A RSPO Credit 'represents' one ton of palm oil product in the sense that for every credit bought, a premium goes to the producer ensuring that the one ton of palm oil is produced according to the RSPO P&C. Under this mechanism, certified FFBs do not have to be sold specifically to a certified mill. RSPO credits have encouraged smallholders to adopt good agricultural and sustainability practices. For example, RSPO-certified independent smallholders participating in Fortasbi – the Indonesian Sustainable Oil Palm Farmer Forum – have gained much support from governments, nearby companies and have started to reap benefits from the sale of their credits. In January 2020, 90% of the independent smallholders' credit were sold, generating a total of USD 1.3 million, equivalent to IDR 20 billion. Buyers such as Unilever, The Body Shop, PepsiCo, etc. purchased these credits and the funds received yearly by smallholders are used to improve the quality of nearby environment (e.g., ecosystem services, tourism), improve access to health services and education, and help the smallholder groups to increase their capacity and productivity, cover audit fees, and expand their business (e.g., replanting, purchase of trucks to transport FFB, access bank and government's aid; Fortasbi 2020). Earnings from the sale of the RSPO credits received by

[53] https://rspo.org/news-and-events/news/rspo-smallholder-support-fund-supporting-smallholders-around-the-world
[54] https://www.rsep.rspo.org/
[55] https://rspo.org/news-and-events/announcements/financial-assistance-provided-to-independent-smallholders--rspo-waives-independent-smallholder-membership-fees-for-2021-and-allocates-hardship-allowance-to-smallholder-support-fund
[56] https://rspo.org/rspo-credits; this is same as the book and claim model discussed in Section 5.7.

smallholder groups varied based on plantation area certified and volume of certified CPO and is dependent on the palm oil price.[57]

Indonesia and ISPO support Indonesian smallholders in groups pursuing ISPO certification are eligible for financial support[58] from national (APBN budget) or subnational (APBD budget) governments or other organizations for training and facilitation[59] to help them to comply with ISPO standards. The central government provides funding to support smallholder certification, sourced from palm oil funds managed by the Oil Palm Plantation Funding Management Agency (Badan Pengelola Dana Perkebunan Kelapa Sawit; BPDPKS). While sizeable portions of these funds have been allocated for incentivizing biofuel program[60] and smallholder replanting program, the latest regulations[61] have made it possible to use these funds to cover means and infrastructure of oil palm development – this includes the cost of agricultural inputs and technical verification of smallholder ISPO certification (i.e., audit).[62] To access any of these funds, smallholders need to submit a funding application to be verified by respective funders. Within the last three years, to ease smallholders' burden, the government has reduced the number of eligibility requirements from 14 in 2018 to eight (8) in 2019 to only two (2; concerned with farmer groups and land legality) in 2020 for smallholder application process. The procedure for verifying the eligibility of a farmer group has been also streamlined to consist of an integrated team comprising of officials from national, provincial, and district authorities (BPDPKS 2020).

Smallholders seeking ISPO certification need to ensure the adoption of GAP, particularly the use of certified seedlings from a government registered source and crop productivity. Thus, BPDPKS can support smallholders by providing financial support for replanting. Plantations potentially subject to replanting are estimated to be 2.78 million ha with an approximate target of 185,000 ha for each year (there is some variation in the target for each year). Funds for eligible smallholders are Rp 30 million per ha to replant and replace the oil palm crops with low productivity. Between 2016 and 2021, IDR 6.59 trillion has been spent on smallholder replanting program for 105,684 farmers across the country covering an area of 242,537 ha (BPDPKS 2021). However, this disbursement and area covered in the past five

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[57] For example, one cooperative in 2020 in North Sumatra received USD 20,450 from the sale of RSPO credits to Procter and Gamble (P&G), and GIVE and Go, based on a certified plantation area of 274 ha, certified CPO production of 917 tons (priced at USD 15/ton), and palm kernel oil (PKO) of 103 tons (priced at USD 65/ton). In 2021, the cooperative's income increased to USD 71,230 due to a higher price for CPO (US$20/ton) and PKO (US$107/ton) and an expansion of the certified plantation area (Fortasbi 2020).

[58] The funds would enable smallholder groups to cover initial ISPO certification, but audit and subsequent certification costs are to be borne by smallholders themselves - Article 51 of Permentan No. 38/2020 (GoI 2020b)

[59] Training refers to those organized by competent institutions or those recognized by ISPO Committee, while facilitation refers to those provincial or district level plantation officers or extension workers accompanying the targeted farmer groups.

[60] The large allocation of the BPDPKS funds for incentivizing biofuel (IDR 110 trillion) is due to the integration of biofuel as priority into the RPJMN and the identification of biofuel as a strategy to reduce dependency on fossil fuels to achieve the Nationally Determined Contribution (NDC).

[61] Minister of Agriculture Regulation No. 07/2019 and Decree of Directorate General of Plantations No. 273/2020 regarding human resources development, research and development, means and infrastructure for palm oil plantation development

[62] This cost coverage of technical verification will support smallholders to obtain ISPO certification and enable the traceability of CPO sourcing smallholder plantations (Article 60 of Minister of Agriculture Regulation No. 7/2019)

years falls drastically short of the target (reaching only about 26%). BPDPKS (2021) also reported that only a small portion (about IDR 21.1 billion) of the funds have been spent on oil palm development means and infrastructure in 2021 to support four selected smallholder groups, mostly for improving production road and procurement of seedlings and pesticides. None of these funds have been used to support smallholder ISPO certification costs yet, possibly due to such use of funds having only been recently approved (see Footnote 45). Additional reasons for this are similar to some challenges identified in the previous section, they include the lack of legality since many smallholder plantations are located within state forestlands (making them ineligible for funding), lack of collectivization, and the high price of crude palm oil (CPO) - particularly in 2021 farmers decided to postpone replanting. Further, the time for each step - farmer groups to submit proposals, verification of submitted proposals, and the selection of recipients and proposed locations – is lengthy.

To certify around 2.5 million smallholders in Indonesia by 2025 is ambitious especially given the challenges facing smallholders. This target will not be possible to achieve without providing support and incentives to smallholders. Some possibilities to speed up the current rate of ISPO certification include:

1. supporting and implementing the sustainable palm oil action plans at the national (RAN-KSB) and regional (RAD-KSB) levels for smallholder capacity building, tenure clarifications, increased coordination between stakeholders, improved smallholder data, and provide some financial support;
2. commitment by governments especially for resolving land tenure issues through initiatives such as TORA and social forestry strategy (see Box 2 for more details);
3. Financial support from (mainly) BPDPKS and other potential actors - one estimate for certifying 1 million farmers is IDR 4 trillion[63];
4. commitment and support by stakeholders along the value chain – mills and refiners to support implementation and organization of smallholders and consumers to reward performance;
5. support the formation of smallholder groups for certification;
6. support local organizations that provide training, guidance, and resources to smallholders;
7. utilize the recently initiated government mechanism on ecological fiscal transfers to channel funds from the district government to villages to incentivize smallholders to innovate and potentially have sustainability integrated into village planning and initiatives.

Additionally, a jurisdictional approach to certification could also support smallholders in achieving certification – since like a group certification, it seeks to certify all smallholders within a district or province rather than individual plantations or farms. Though only RSPO has a jurisdictional certification (already being developed by Inobu in the districts of Seruyan and West Kotawaringin in Central Kalimantan[64]), the allowance of a group certification within ISPO could be used as a foundation to build towards jurisdictional ISPO certification. Certification at a jurisdictional level would, however, need to be through a jurisdictional level entity rather than a group level ICS, which would similarly be charged with ensuring compliance and conducting internal audits.

[63] https://mediaperkebunan.id/diperlukan-rp-4-triliun-guna-sertifikasi-1-juta-petani/
[64] https://inobu.org/jurisdiction-certification-of-palm-oil

- **Malaysia and MSPO support**

In Malaysia, the government (MPOB) incentivizes smallholder certification by reimbursing 100% of auditing fees and 50% preparation costs for those estates that range between 40.46 ha to 1,000 ha. For larger estates (> 1,000 ha), the government will reimburse up to 30% of auditing fees. While auditing fees include man-days, stakeholder consultations, and peer reviews; preparation costs include social impact assessment, environmental aspect, and impact (EAI) assessment, trainings on internal audit and management review, training on calculation and reporting of GHG emissions, report on high biodiversity value assessment, and the MSPO policies and documentation system (MPOCC 2021c). Further, MPOB also provides assistance and training through their TUNAS officers to smallholders and smallholder groups, including on understanding environmental impacts of their daily habits (e.g., storing and using of pesticides, herbicide). These officers support group certification by acting as internal control system officers (see section 5.6). These forms of support along with warning letters sent to smallholders has seen an increase in independent smallholder certification from around 25% (62,009 smallholders with 243,666 ha) in mid-2020 to over 55% (~140,000 smallholders with 530,652 ha) by November 2021 (Kaur 2020; Kadir 2021b). By the end of 2020, all organized smallholders (233,191 smallholders with 724,633.32 ha of oil palm cultivated areas) were already MSPO certified with support from eight federal and state government agencies, including FELDA, FELCRA, RISDA, SALCRA, SLDB, South Kelantan Development Authority, Perak Islamic Economy Development Corporation, and Sarawak Land Development Board (The Edge Markets 2021). Additionally, MPOB has also been supporting a transition to mechanization and automation in the oil palm sector through development of tools and providing trainings to reduce the dependence on migrant labour and help with the labour shortage. Though the government has been provided subsidies to smallholders to purchase these tools, MPOB stated that this initiative can be expanded.

Further, a jurisdictional approach initiative – Sabah Jurisdictional Approach (SJA) – launched in 2015 at the state level in Sabah has also been providing support to smallholders across the jurisdiction and the piloting of the RSPO jurisdictional certification (Jurisdictional Certification of Sustainable Palm Oil; JCSPO). The initiative seeks to achieve the production of fully certified palm oil by 2025 through MSPO and RSPO jurisdictional certifications. Sabah is the second largest palm oil producing state in Malaysia and produces approximately 6% of the global output and relies on smallholders for 20-30% of this output. SJA is a multi-stakeholder initiative with commitments to address deforestation resulting in no loss of HCV and HCS areas and sustainable palm oil practices. The initiative includes helping smallholders not only with best management practices for production areas and finances but also in dealing with mills. As of February 2021, about 26% of palm oil from Sabah is RSPO certified (Taylor 2022; WWF Malaysia 2021).

5.3 Safeguards for indigenous peoples, worker rights, work conditions

Most certifications provide some degree of protection for indigenous peoples (IP) and labourers. Community land rights, including customary rights, FPIC, labour standards, no child labour, migrant labour protection, and no discrimination are examined in this section.

Consideration of worker conditions is a crucial part of sustainable oil palm production since it is a labour-intensive process that requires prompt harvesting (i.e., two rounds of harvesting per month) and transportation of fresh fruit bunches to mills before they desiccate, resulting in lower quality and price.

RSPO, RSB, and ISCC have the integrated IP and land rights, human and worker rights, work conditions in the following ways:

- The RSPO certification contains indicators related to community rights and benefits that specifically require the certified unit to show documents of ownership or lease or authorized use of customary landowners through a FPIC process. Also included are indicators on no child and forced labour alongside indicators on occupational health and safety, worker's rights to form or join unions and associations, and prohibition of any form of discrimination.
- The RSB criteria states that existing formal and informal land and land use rights need to be assessed, documented, and established. It also states the need for FPIC to be followed in all stakeholder consultations, which are required to be gender sensitive and result in consensus based negotiated agreements. RSB mandates no discrimination of workers, no child labour (except for family farms), no forced labour, and workers' right to organize and bargain collectively, and occupational safety and health.
- ISCC criteria do not explicitly mandate FPIC but state that biomass production should not violate human rights, labour rights, or land rights. Producers under ISCC are required to provide documentation that the land being used for production is legitimate (ownership, lease, history of land tenure) and that traditional rights have been secured. Existing IP land rights have to be identified and respected, and all impacts on surrounding communities have to be taken into account and compensated. Like RSPO and RSB, ISCC mandates no discrimination of workers, no child labour (except for family farms), no forced labour, and workers' right to organize and bargain collectively, and occupational safety and health.

Within the ISPO certification criteria, IP are addressed in two ways: (1) FPIC must be adopted when investors seek lands considered to be owned by IP and necessary compensation is paid in accordance with prevailing regulations in the case of land transfer, and (2) business actors are responsible (social responsibility) for empowering IP by maintaining local wisdom and enhancing well-being.[65] This applies to those investors or companies developing large-scale plantations. No specific criteria and indicators regarding the protection of IP are mentioned for ISPO smallholder certification, although smallholders need to ensure that there are no conflicting claims over proposed lands from surrounding communities before establishing plantations. In the event of conflicting land claims, smallholders must demonstrate through documentation that consensus has been reached and disputes have been resolved. Further, ISPO now requires that would-be certified business actors/units should:

1. ensure work safety and health of their labourers
2. follow fair recruitment processes and issue employment contract for their labourers specifying rights and obligations, wages, schedules, duration of employment

[65] According to ISPO Criteria 1.1.2 and 5.2, respectively.

3. enhance the well-being and capacity of the labourer
4. adopt non-discriminatory policies (e.g., gender, equal treatment, no child labour)
5. facilitate the establishment of worker unions (e.g., complaint mechanism in place) and cooperatives that will be ensured by the newly established Workplace Safety and Health Advisory Committee (Panitia Pembina Keselamatan dan Kesehatan Kerja).

The ISPO principle related to labour responsibilities currently does not apply to smallholders.

MSPO considers the protection of customary or indigenous rights as a major indicator all growers have to fulfil, and this is addressed in two criteria: compliance to legal requirements and development of new plantings. MSPO certified companies are required to show that customary rights are understood, protected, and maintained with evidence of following the FPIC process with documentation for all negotiated agreements, and make maps of the appropriate scale available. Management should ensure that their activities do not diminish the land use rights of others. Further, no new plantings can be established on recognized customary land without FPIC and if new development requires transfer of land from IP, then compensations must be provided for the land acquired and the relinquishment of rights through a system that identifies those entitled to compensation, all of which must be documented. Additionally, MSPO sets requirements on workers' rights and health and safety using national regulations, such as the Malaysian laws of Immigration Act 670 and 2007 Anti-Trafficking in Persons and Anti-Smuggling of Migrants Act. These regulations are important especially in the Malaysian context as much of the labour for harvesting fresh fruit bunches on plantations and farms are provided by migrants. Most labour (80% in 2015; Fair Labour Association 2020) in Malaysia is migrant labour from Indonesia, Bangladesh, Nepal, India, and other countries.

Additionally, the other identified approaches and tools also include assessment criteria and indicators for these protections. Protections included in the HCV and HCS Approaches fit the goal of a strong commitment to ensuring the rights and livelihoods of IP. Both approaches not only include the criteria for customary rights and FPIC, but also provide guidance on the process through which the assessment must engage with local and indigenous communities (and women) and respect their rights and provides clear stages on how FPIC can be ensured. Within the LandScale assessment framework, the rights to access and use in terms of land and resource tenure are considered in addition to indicators on human rights that address incidences of child and forced labour, respect for workers' rights and work conditions, and status of other human rights that might be impacted by economic activities. This is similar to the way SLRT contains indicators on worker and farmer associations, child and forced labour and integration into policies and implementation of FPIC, but SLRT also includes integration of indigenous rights and customary land into spatial planning and policies and legal requirements and implementation of social and environmental impact analyses. The Green Jurisdictions Database also contains metrics on the progress towards the recognition and practice of FPIC and indigenous and customary rights recognition across different provinces in Indonesia, and Sabah in Malaysia. SourceUp also includes indicators on the themes of land tenure and livelihoods (amount of landscape with secure land tenure rights with clean boundaries and unresolved land or resource conflicts) and labour (renumeration of agricultural employees and representation of workers by unions or similar).

Both KDSD and Terpercaya contain indicators on FPIC (whether FPIC procedures are incorporated into existing regulations) and customary rights in a district but neither contain explicit indicators on labourers, work conditions, and gender equality. The AFi recognizes respect for human rights as a core principle, this consists of respect for internationally recognized human rights, rights of IP and local communities (and associated FPIC) that may be affected by company's activities through production, sourcing or financial investments, and worker's rights (including child and forced labour, work conditions, working hours, and safe/healthy workspaces). SPOTT contains several indicators on the commitment to community, land, and labour rights, this includes IP rights, FPIC, stakeholder engagement, and inclusion of and barriers facing women.

5.3.1 Implementation challenges

Despite the inclusion of worker rights and work conditions in the major certifications implemented in Indonesia and Malaysia, issues remain (issues relating to IP are further explored in Section 5.3.2). Addressing labour issues is an on-going effort in the Indonesian palm oil sector and ISPO is seen as an additional tool that can help and potentially provide assurance on the labour conditions for Indonesian palm oil (Hasan 2021). However, labour rights violations (e.g., child labour, below minimum wage payments, exposure to hazardous chemicals) continue to be reported. For example, an Indonesian company (Indofood) despite having both RSPO and ISPO [2015] certification was exposed – the company has since withdrawn its membership in RSPO (Kurniawati 2019). This (and other similar occurrences e.g., Melka commercial group in Peru, actions of Wilmar encroaching in West Sumatra, PanEco withdrawing from RSPO due to weak enforcement of standards)[66] has called into question the credibility of RSPO in detecting and responding to labour violations and indigenous land encroachment, especially as a review found that labour violations by Indofood were identified in previous audits but never addressed.[67] A collaborative report (Griffiths and Jiwan 2021) by NGOs in 2021 states that social and environmental problems still continue to exist in the Indonesian palm oil industry and global palm oil supply chains, including those tied to land conflicts, deforestation, and weak governance. By tracing connections between companies and financiers, the report finds that not enough attention is being given to identifying and addressing human rights impacts in business operations and investments. It calls for new laws in both importer and producer countries for due diligence by these actors and to hold them accountable (Griffiths and Jiwan 2021).

There has been on-going cooperation between various ministries, the Indonesian Palm Oil Association (GAPKI), the International Labour Organization (ILO) and the U.S. to strengthen national legislations and improve worker rights.[68] Additionally, the NGO, Earthworm through their work in the Indonesian provinces of North Sumatra, East Kalimantan and Aceh found risks of child labour, low wages, excessive working hours and 'invisible' family workers, and unfair employment conditions in the oil palm sector and has developed RSPO and ISPO

[66] https://www.forestpeoples.org/en/topics/agribusiness/news/2016/11/melka-group-company-peru-withdraws-rspo-shipibo-complaint-exposes-l; https://www.aseantoday.com/2019/12/ethics-in-agriculture-human-rights-violations-persist-in-indonesian-palm-oil-operations/
[67] https://socialinvestment.id/berita/more-than-20-labour-law-violations-by-indofood-alleged-in-indonesia/
[68] Advancing Worker's Rights in Indonesia's Palm Oil Sector Project, https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---ilo-jakarta/documents/projectdocumentation/wcms_742612.pdf

aligned guidelines to help companies improve workers' rights and working conditions (Earthworm 2020). In 2020, Indonesia passed the Omnibus Law, which is aimed at increasing worker competitiveness and enhancing protection of investors and companies and their workers in the palm oil industry in terms of wages, working hours, worker's rights, etc.[69] Skeptics[70] however question the effectiveness of this policy to address worker issues, calling for more government supervision of how oil palm companies adhere to some provisions particularly regarding job security (short-term employment contracts), minimum wages, and worker social insurance. Despite this, labour issues will likely continue and need to be monitored closely, especially given the growth of oil palm in new and remote regions such as Papua and West Papua. Since many of the recorded incidents of violations were before 2020, the efficacy of ISPO 2020 with its new workplace safety and health indicators, and integration of FPIC in addressing and avoiding violations remains to be seen.

In the Malaysian case, despite the inclusion of worker protections in the MSPO and the aligned regulations, in December 2020 the U.S. Customs and Border Protection (CBP) barred Malaysian products of Sime Darby Plantation (world's biggest palm oil planter by land size), including its subsidiaries and joint ventures, citing reasonable suspicion of use of forced labour.[71] In January 2022, the CBP published findings indicating that there was sufficient evidence of fruit harvest and palm oil production using forced labour,[72] and that the ban on the products will remain until satisfactory evidence is provided. The Malaysian government continues to claim that all regulations for labour protection that are aligned with UN SDGs, were adhered to, and that the U.S. ban is hasty.[73] Sime Darby is not only certified under MSPO but is also a RSPO member. Further, the key issue in Malaysia is the shortage of labour and migrant labour for harvesting, which has been highlighted especially due to the Covid-19 pandemic travel restrictions and the drop in oil palm yields. Closed borders due to pandemic have hampered the return of labour from their countries of origin (e.g., Indonesia). Not enough labour can lead to suboptimal harvesting (e.g., once in three-weeks, overripe FFBs, underripe FFBs), resulting in decreased prices from the mills.

After discussions between the Malaysian and Indonesian governments on minimum wages, living conditions and social welfare, and a MoU that will be signed, Indonesia has agreed to send 32,000 workers to Malaysia in February 2022. These workers will be supplemented by additional migrants from India, Bangladesh and (Southern) Thailand once Malaysia reaches agreements with the respective governments. However, the Minister of Plantation Industries and Commodities stated that this is a short-term strategy and that there are plans for the reduction of dependency on migrant labour through automation and mechanization.[74] It is also important to note that allegations of labour abuse are not limited to the oil palm sector in

[69] https://sawitindonesia.com/uu-cipta-kerja-lindungi-perusahaan-dan-pekerja-sawit/
[70] https://www.hukumonline.com/berita/a/pemerintah-ingatkan-penerapan-standar-kerja-layak-sektor-kelapa-sawit-lt6141aa9395bc0; https://www.hukumonline.com/berita/a/prospek-dan-tantangan-perkebunan-sawit-pasca-berlakunya-uu-cipta-kerja-lt5ff40be46d47f
[71] https://www.reuters.com/business/energy/us-blocks-palm-oil-imports-malaysias-sime-darby-over-forced-labour-allegations-2020-12-31
[72] https://www.federalregister.gov/documents/2022/01/28/2022-01779/notice-of-finding-that-certain-palm-oil-and-derivative-products-made-wholly-or-in-part-with-palm-oil
[73] https://www.freemalaysiatoday.com/category/nation/2022/01/31/us-ban-on-sime-darby-products-hasty-unfounded-says-zuraida/
[74] https://themalaysianreserve.com/2022/01/13/malaysia-to-bring-in-more-plantation-workers-from-india-bangladesh-southern-thailand-zuraida/

Malaysia, rather instances have been reported across various types of industries[75] – indicating a larger problem than that cannot be solved through oil palm certification and necessitating a thorough examination of national legislations and their enforcement.

5.3.2 Challenges facing Indigenous People

IP in both Indonesia and Malaysia face additional challenges when compared to other palm oil producers/smallholders seeking certification. Ranging from difficulties in having customary lands and rights recognized by the government to often not possessing a land title, it is challenging for IP to get certified – this is in addition to the issue of certification-associated cut-off dates for forest clearing and establishment of new plantations. Mechanisms that address land recognition and land tenure issues are needed. Additionally, the acknowledgement of local and customary (indigenous) rights is important, especially as indigenous and local communities have been recognized in realizing commitments to stopping deforestation (Fa et al. 2020).

Most certification systems do not provide a certification without documentation or proof of ownership or allowed use of land. Obtaining land titles require IP to prove their rights with the onerous burden placed on them to provide evidence. To deal with the issue of land titling, unlike other certifications implemented in Indonesia and Malaysia, RSPO allows for a letter proving customary ownership to be used instead of a land title for certification. In Malaysia, Dayak Oil Palm Planters Association (DOPPA) provides its members in Sarawak with training and awareness building in sustainability standards. Various incentives have been provided by government and channelled through DOPPA. DOPPA acts as a bridge between smallholders and the palm oil industry and government. The most sensitive and major challenge facing Dayak communities in Sarawak to get certification is to ascertain the land legality status.[76] Dayak communities have native customary lands, inherited from ancestors, but it is often a lengthy verification process to verify ownership. Another challenge identified during the interviews making it difficult to obtain certification, is the low level of education among indigenous communities and that many members are elderly, which makes it harder to communicate the benefits of certification. This leads to resistance in implementing the certification standards.

In Malaysia and Indonesia, conflicts occur between the indigenous communities, government, and other actors (e.g., companies). Indigenous or customary land has been allocated as concessions or used by the state for other purposes. In some cases, oil palm expansion onto indigenous lands has occurred without consent or consultation (Indonesian regulations and FPIC were not followed and left IP without compensation[77]). For example, the Marind in West Papua claim there is encroachment on their customary lands and oppose oil palm development (Chao 2019). Similarly, a Malaysian stakeholder mentioned instances where the government has issued land titles that overlap with native customary lands and that the extent of indigenous lands remains unknown, corroborating other reported

[75] https://www.bloomberg.com/news/articles/2022-01-10/investing-titans-can-no-longer-ignore-malaysia-s-labour-abuses
[76] Identified during an interview
[77] https://www.hrw.org/report/2019/09/23/when-we-lost-forest-we-lost-everything/oil-palm-plantations-and-rights-violations

instances.[78] Though mechanisms for conflict resolution are in place in both countries, they can be lengthy. Often coordination with local civil society organizations needs to be strengthened to achieve resolution (e.g., Sintang district in West Kalimantan, Indonesia[79]).

Overlapping land allocation continues to result from the uncertainty of where IP lands are located. To this end, the mapping of indigenous territories and making this information public would be a supportive step in recognizing IP rights and a necessary step in conflict resolution. Mapping would also enable IP to enter into partnerships and agreements with developers or concession/plantation owners and ensure benefit sharing. Efforts in Malaysia and Indonesia to map indigenous lands are on-going. For Indonesia the goal is to have comprehensive mapping of all land uses through Satu Data Platform. However, despite containing a lot of information, the map of indigenous lands still needs to be integrated in Satu Data. Mapping efforts have been supported and conducted with assistance from NGOs and but have been scattered. AMAN along with other organizations[80] established the Badan Registrasi Wilayah Adat (BRWA) to clarify and strengthen customary rights over lands through the consolidation of customary maps that includes registration, verification, validation and publication processes. BRWA (2021) has registered 12.4 million ha (19.8%) of customary lands across 29 provinces and 136 districts as of August 2021. Some provincial and district governments have issued local regulations on the recognition of customary lands, which laid a foundation for further strengthening communities' rights over lands, covering a total area of 7.66 million ha across the country. Despite the country's effort to address unclear land tenure through the Satu Data geoportal, there are issues regarding the lack of transparency and inclusion of traditional customary lands in government geospatial planning documents (NYDF 2020).

In Malaysia, IP lands are legally treated differently in the Peninsular, Sabah, and Sarawak since Sabah and Sarawak are more autonomous than other states and have their own land codes.[81] Community mapping of IP lands in Malaysia is an on-going effort. In Peninsular, the federal agency tasked with overseeing the indigenous affairs is the Department of Orang Asli Development (JAKOA) and it began mapping and surveying IP lands in 2020.[82] The Indigenous People's Network of Malaysia (JAOS) has hoped that community IP territory mapping efforts by NGOs as part of Global Call to Action on Indigenous and Community Land Rights would be recognized and added to the maps prepared by the Land and Survey Department. This would allow for better project planning and reduce conflicts.[83]

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[78] https://rightsandresources.org/blog/malaysias-indigenous-orang-asli-continue-struggle-for-customary-lands/; https://www.landportal.org/news/2016/08/malaysia-indigenous-communities-want-their-maps-recognised

[79] https://earthinnovation.org/wp-content/uploads/2018/09/profiles_led/SJS_Profiles_ENG/Indonesia/Profile_SINTANG_Sukri_2020_ENG.pdf

[80] BRWA was established by Aliansi Masyarakat Adat Nusantara (AMAN), Jaringan Kerja Pemetaan Partisipatif (JKPP), Forest Watch Indonesia (FWI), Konsorsium Pendukung Sistem Hutan Kerakyatan (KpSHK) and Sawit Watch (SW)

[81] Laws governing IP rights in Peninsular Malaysia - Federal Constitution, the Aboriginal Peoples Act 1954, the Land Acquisition Act 1960, and the National Land Code 1965; Sabah - Sabah Land Ordinance 1975; Sarawak - Sarawak Land Code 1958

[82] https://www.channelnewsasia.com/asia/malaysia-orang-asli-ancestral-land-rights-1317616

[83] https://www.landportal.org/news/2016/08/malaysia-indigenous-communities-want-their-maps-recognised

Stakeholders consulted in this study in both Indonesia and Malaysia indicated that smallholders and indigenous people can benefit from certification even if price premiums are not being obtained for the production, as discussed previously. They mentioned that through the process of becoming certified, smallholders and IP have now become more aware of the importance of environment, legal requirements, adoption of good agriculture practices (e.g., weed control, pay attention to the safety aspect of the use of chemical substance) and the proper use and management of fertilizers to improve production.

5.4 Governance and decision making

All certification systems have a management, governance, and decision-making structure, and though they vary, they are very similar in certain aspects (see Appendix 6 for illustrations of the governance structures).

RSPO's Board of Governors comprises 16 members (from oil palm growers, palm oil processors, consumer goods manufacturer, retailers, banks/investors, and NGOs) designated by the General Assembly, for 2 years. The Board directs and controls the management of RSPO to execute the decisions of the General Assembly meeting and to take all measures to reach the established RSPO objectives. To ensure an efficient and progressive management, the Board of Governors is supported by 4 Standing Committees (standard, market development, assurance, smallholder) and advisors. The Standing Committees are comprised of members from the Board of Governors, including the alternate board as well as RSPO members. The RSPO Secretariat runs the day-to-day activities of RSPO, this includes organizing Board of Governors meetings, coordinating Roundtable meetings and General Assemblies, coordinating activities of the Standing Committees and Working Groups, and providing services to RSPO members.

In responding to critiques of ISPO [2015], the Government of Indonesia has restructured the institutional governance and certification decisions of ISPO [2020]. Now under a stronger legal basis, a steering council (Dewan Pengarah) is mandated by the President (GoI 2020a) to set up general policies, oversee the implementation of the certification system and set members, organization and work procedure of ISPO committee. Previously, often many oil palm governance issues could not be tackled by a single ministry (e.g., Ministry of Agriculture) and required cross-sectoral coordination for effective resolution. Thus, the Coordinating Ministry for Economic Affairs is tasked with leading the steering council and supervising cross-sectoral coordination across environment, forestry, land, trade, industry and agriculture.[84] The ISPO Certification Committee (Komite ISPO) chaired by the Minister of Agriculture oversees the (1) development of P&C, standards for assessment, certification requirements, and the scheme, (2) develops information systems, and (3) coordinates with relevant ministries and institutions, local governments and other stakeholders. To enhance credibility of the ISPO system and promote transparency, its members include government, private sector, academics, and the new independent monitoring agents (e.g., Indonesian incorporated institutions or observers with concerns about the sustainable palm oil sector) (Fahamsyah 2020).

[84] Regulation of Coordinating Minister for Economy No. 10/2020 regarding organization and work procedure of ISPO Steering Council

MSPO is operated by the MPOCC, which was established as a non-profit organization in December 2014 to implement and operate the certification scheme. MPOCC is governed by a 13-member Board of Trustees and started its operation in October 2015. The Board of Trustees manages the governing body which manages the affairs of the MPOCC and decides the overall policy and direction in carrying out MPOCC's activities. The members of the Board of Trustees consist of representatives from the Ministry of Plantation Industries and Commodities (MPIC), MPOB, academia, research and development institutions, NGOs, oil palm industry associations, smallholder's organizations, and civil society. While MPOCC oversees the majority of the operations, MPOB is mandated to implement MSPO for smallholders.

The ISCC is governed and controlled by the ISCC Association (ISCC e.V.), a legally registered body (non-profit[85]) whose members may include natural or legal persons or other entities with legal capacity (except for certification bodies to avoid conflict of interest). Members share ISCC's goals and missions, and they can participate and have voting rights within the organization. All members participate in the general assembly convened by a board. During the annual general assembly, members of the ISCC Association elect the Board of the ISCC Association discuss and decide on strategically important matters. The ISCC Board represents the three different stakeholder groups participating in ISCC: (1) biomass producers and processors, (2) trade, logistics and other system users, and (3) NGOs, social sector, science and research, public sector. Additionally, the Association guides strategic decisions taken by ISCC, unifies and represents ISCC's stakeholders, and guarantees adherence to a multi-stakeholder process that includes dialogue and transparency. ISCC has also set up a working group on transparency that will publish summary audit reports.

In the RSB, the Assembly of Delegates is the highest decision-making and governing body and is elected by the RSB members, who are organized in five Chambers (producers/growers, environmental, social, end-users/blenders/investors, and UN - governments and research). The Assembly appoints a Board of Directors to give oversight to the Secretariat. The Board of Directors is responsible for the management of the RSB (incl. changes to policy and effective management of activities) and represents the RSB at various functions and conferences. RSB Secretariat is responsible for the day–to–day management of RSB activities, ensuring ongoing development of the RSB Standard as well as its promotion and implementation through certification and policy. Each chamber of RSB members elects three Delegates to deliberate and sometimes vote on issues of governance and standard development. The Assembly approves modifications to the RSB Standard and appoints the Board of Directors.

On behalf of the AWS members, the AWS International Board of Trustees (the Board) and the Technical Committee are responsible for guiding and monitoring the operations and affairs of AWS. Trustees are elected by AWS members or appointed by the Board based on their knowledge, skills, experience to effectively govern and direct the organization; and do not represent the interests of any specific organization or sector. The Board not only has fiduciary duties but is also responsible for compliance; risk management; strategy; financial and budgetary matters; and CEO appointment, performance, and management. The

[85] https://www.forumpalmoel.org/certification/certification-standards

Technical Committee develops or revises the AWS standard(s), guidance, and assurance requirements and other related documents. The Board and Technical Committee are expected to work collaboratively.

Though not a certification system, the HCS and HCV approaches also have governing bodies. HCS approach is governed by an Executive Committee, which is elected from the different sectors of the Steering Group (NGOs, Smallholder/farmer support organizations, plantation companies, commodity users, and technical support organizations). The Executive Committee members represent their sector and consult with other group members and decisions are made through consensus, though the committee can make final decisions if consensus cannot be reached. The only exception being any changes to the HCS Approach – depend on involvement of the Science Advisory Committee – which must be approved by the full Steering Group. The Executive Committee elects two co-chairs, one from NGO and the other from plantation company or smallholder grower sector. The co-chairs develop meeting agendas and overseeing the Secretariat function. Expert and technical groups can be established by the Executive Committee. There is also an open Consultative Forum, for those with an interest in HCS Approach but unable to join the Steering Group, established to contribute to the work of the Steering Group. A Secretariat is established to provide support through management of day-to-day tasks.

HCV Approach is governed and managed under the HCV Resource Network (HCVRN) membership, founded in 2014 with three constituencies: not-for-profit, producer/supply chain companies, and standards/service providers. The HCVRN Management Committee is elected by Members and governs in line with its Terms of Reference. Members participate in the Network's governance by standing for election and voting for the Management Committee. The Secretariat is the executive arm of the HCVRN and provides information, coordinates projects, and conducts day-to-day management and communications.

Through the examination of the governance and decisions making structures of the various certification systems and HCV and HCS approaches, some similarities and differences can be noted. The role of the government in the mandatory certification systems is much larger compared to the others. But even these certifications systems have multi-stakeholder bodies involved in the governance structure. It can also be noted that generally day-to-day tasks and management of the organization is separate from the stakeholder interests – usually being distinguished as the secretariat versus the board. For the mandatory certifications of ISPO, a secretariat headed by the director general of plantations was established to help day-to-day tasks of ISPO Committee. MPOCC serves as the secretariat to the MSPO certification scheme for some of the tasks and activities implemented under the scheme.

5.5 Monitoring and verification

Across the certification systems, the aspects of monitoring and verification are crucial and can enhance market acceptability of the certified products. Further, all of them rely on third-party accredited companies (certification bodies) to carry out certifications and audits. To ensure that growers or millers continue to remain qualified for certification, regular monitoring or audits are undertaken by the same accredited certification bodies. Audits may lead to decisions that certified units are able to continue their operation or get their

certification cancelled or revoked, if irregularities or non-conformities are identified and there is a failure to implement corrective actions.

To ensure that RSPO assessments are carried out with objectivity and consistency, and that the required levels of technical rigor and stakeholder credibility are maintained, RSPO states that growers must be assessed for certification once every 5 years, and if certified, annual assessments for continued compliance – audits – need to occur. RSPO certifications and audits are conducted by accredited certification bodies that need to be hired by entities seeking the certification.

Both ISPO and MSPO require that certified growers and millers are subject to annual audits/surveillance within the five-year period of certification validity. The first audit must be conducted between the ninth and twelfth month after the certification is issued. The subsequent audits take place one year after the initial audit. Managers of company plantation, smallholders, or palm oil millers and processing facilities will need to apply to an accredited certification body to conduct an audit ascertaining their conformity with the requirements of the ISPO and MSPO certification standards. Similar to RSPO, accredited certification bodies need to be hired to conduct verification assessing palm oil growers or millers against the set of P&C, issue certificates (5-year validity), conduct annual audits, and respond to any complaints or grievances. When making decisions, the certification bodies are responsible for ensuring competency and no conflict of interests on whether requests for certificates are granted or rejected. MSPO specifies that (1) decisions on certification must be made by a representative of the certification body who did not participate in the audit and (2) certification bodies need to inform MPOCC about all the certificates issued and changes concerning the validity/scope of the certificates each month.

Under ISPO, certification bodies are obligated to report to the ISPO Certification Committee about the certifications issued and certification progress, as it provides oversight on the issued certification. With independent monitor agents/organizations (pemantau independen) are now integrated into the ISPO [2020] governance structure, they play an important role in monitoring, verification, and assessment of how ISPO certified units perform against the P&C. Within the ISPO certification process, these agents can submit complaints in the event of irregularities in ISPO implementation. The presence of independent monitoring agents, particularly experts and NGOs are expected to strengthen ISPO implementation and credibility, as it is a mechanism to address past criticisms of ISPO.[86]

ISCC certificates are valid for 12 months and a certification audit is conducted once a year by accredited certification bodies. In case of reasonable suspicion of any operations under the ISCC, accredited certification bodies are entitled to conduct announced or unannounced surveillance audits at any time during the certificate's period of validity. If necessary, ISCC is entitled to request certification bodies to conduct surveillance audits at any time during the certificate's period of validity. ISCC publishes summary audits of its certified units on its website.

[86] Heavy inclusion of independent monitoring agents for issuing ISPO certificate and audits is in response to the criticisms and highlighted shortfalls of ISPO (e.g., Reily 2018: Pemerintah Bentuk Tim Pemantau Independen untuk Sertifikasi Sawit - Pertanian Katadata.co.id)

Applications for RSB certifications are submitted via the RSB website after which an RSB approved auditor can be contacted for an audit within six months of the application. All applications are posted online for 14 days for public comments. All audits include a stakeholder consultation in addition to site visits. In terms of the application and considerations between the EU RED and Global fuel certification, it is the consideration of land conversion, GHG calculations and chain of custody. Certifications are not issued if there are any major non-compliances, but certifications can be given despite minor non-compliances, but the issues have to be resolved prior to the next audit. After the initial certification, subsequent audits are conducted at a frequency based on the risk score.[87] Like the RSB, AWS certification applications are submitted through their website. The application is then reviewed by the Water Stewardship Assurance Services (WSAS),[88] a conformity assessment body for AWS System which allots different levels (core, gold, and platinum) of certification based on performance. WSAS also monitors and audits sites through the surveillance and re-certification processes.

Since the structure of smallholder certification is different under the various systems, the associated monitoring and verification is also different. ISPO 2020 requires that smallholder groups must have an internal control system (ICS) that takes on the responsibility for ISPO adoption. The ICS team will need to be familiar with ISPO P&C – acquired through trainings organized by ISPO training institutions. Similarly, RSPO sets ICS requirements for smallholder groups to demonstrate that they are not only legally formed but also have a group manager in place to plan the implementation of the ICS and have policies and procedure for operational management (e.g., FFB tracking, premium distribution). RSPO provides capacity building programs including group formation and strengthening training through RSPO Smallholder Trainer Academy. For smallholder group certification under the ISCC, the Central Office (CO) and trainings play an important role in the successful integration of independent smallholders into sustainability certification. CO acts as a representative body of at least one group of independent smallholders that are certified together but are independent from a first gathering point or an oil mill. CO is responsible for independent smallholder management including training, internal audit and certification audit, administration, certain sustainability requirements and management of funds, if applicable. ISCC uses train-the-trainer strategy to train the CO regarding the certification framework, requirements, and benefits, who will then train the smallholders. RSB's smallholder group certification requires the appointed "management unit" handle responsibilities of managing the certification process and ensuring individual compliance by carrying out internal inspections of certified members. However, an independent certification body assesses the group management system on a regular basis and compliance of individuals on a sample basis.

In the HCS and HCV approaches, there is an agreement to collaborate due to the overlaps between the two. In integrated HCS-HCV assessments, the reports are prepared by licensed assessors, and the HCV Network monitors the performance of assessors and evaluates reports using a panel of qualified professionals. The option for sole assessment under HCS verified through a peer review process by the HCS Approach Secretariat will be phased out;

[87] https://rsb.org/wp-content/uploads/2020/06/RSB-Certification-Guide-2020-update_compressed.pdf
[88] https://watersas.org/

currently only HCS assessments with reports completed before November 2017 are allowed for peer review[89].

The additional approaches, tools, and data sources discussed earlier can also be used in conjunction with certification systems as an additional monitoring and verification system if repeated periodically (frequency could be set based on goals and aspects being monitored). Specific ones like the SLRT, KDSD, Green Jurisdictions Database, SPOTT, CDP States and Regions assess whether a monitoring and verification system at the jurisdictional level exists for deforestation, land use change, biodiversity loss, etc., and track progress on the establishment or growth of such a system. The supplementary data sources can provide data as independent, verifiable sources that can be used for validation of information that is self-reported by jurisdictions or internally assessed (i.e., in smallholder group certification schemes). These approaches and tools also come with their own guidance for transparency and verification of data that is collected. AFi and SPOTT make a distinction between data that is reported by companies and data that is externally verified by an independent auditor. LandScale provides guidance on how to verify and validate the assessment through carefully reviewing data sources, data collection and synthesis rigor, and data gaps. Similarity SLRT also provides guidance on how to conduct a multi-stakeholder validation and verification workshop at the relevant jurisdictional level to review, assess, and update the assessment as needed. Green Jurisdictions Database, KDSD, Terpercaya, and SourceUp have internal mechanisms of validating and verifying the data based on source and quality before the data regarding the jurisdictions are made public or reported.

5.6 Implementation and non-compliance within certification systems

Non-compliance within certification systems can be identified through various mechanisms including initial certification, audit/surveillance, and complaints/grievances. Issues during the certification and audit process are raised by certification bodies while complains/grievances are submitted to the certification system by others. All voluntary and mandatory sustainability certification/standards have grievance and dispute resolution mechanisms in place to resolve any complaints raised by stakeholders including business actors, independent agents, NGOs, impacted communities, etc. There may be a slight difference in the procedure among the systems, complaints depending on their nature are resolved through different stages. An appeals committee under ISPO, for example, is established to handle complaints that cannot be resolved at the first stage between certified businesses and certification bodies. All certification systems require that complaints and how they are resolved must be accessible to public and all have complaint filing mechanisms either through online forms or emails[90]. However, in practice the resolution of the complaints and the mechanisms through which the issue was corrected are not always transparent.

[89] More details at can be found at https://highcarbonstock.org/hcs-approach-quality-review-process/about-the-quality-review-process

[90] Complaints for each certification system can be filed in the following manner: AWS - https://a4ws.org/about/comments-complaints-and-appeals/; ISCC - https://www.iscc-system.org/process/how-to-submit-complaints; ISPO – complaints can be filed to individual certification bodies via email and followed up with an appeal to the ISPO Committee, if needed;

RSPO certification requires compliance with normative part of the RSPO principles, criteria, and indicators. Any non-conformities may result in suspension or loss of certification and a certificate cannot be issued while there are any outstanding major non-compliances. All indicators are clearly designated as either major or minor in the previous P&C and as critical indicators in the P&C 2018 (endorsed by the RSPO Board of Governors on 12 October 2018). Minor non-compliances will be raised to major if they are not addressed by the subsequent audit. Major non-compliances raised during surveillance and re-certification must be addressed successfully within 90 days to avoid certificate suspension, and if issues remain unaddressed after the mutually agreed upon timeframe (no longer than six months), the certificate is withdrawn. When major non-compliances remain outstanding for longer than twelve months, a full re-assessment is required for re-certification. Recurring minor and major non-compliances on the same indicator in successive audits will result in being raised to major non-compliances and to immediate certificate suspension, respectively. RSPO ordinary and affiliate members are required to submit Annual Communication of Progress (ACOP) specifying how they progressed towards 100% RSPO certified sustainable palm oil. RSPO regularly publishes on its website a list of companies or organizations that do not submit their ACOP and indicates three categories of sanctions: termination, suspension, and first-time warning.[91]

The RSPO complaint system has been critiqued for its lengthy process (on average complaints are open for 700 days) and not reaching a satisfactory solution (Grassroots & EIA. 2019) on reported non-compliances. Despite RSPO generally being recognized as having more stringent criteria for certification, there have been cases when complaints or grievances for non-compliance have been brought up on RSPO members, they have chosen to withdraw their certification/membership and did not facing any consequences due to the voluntary nature of the certification (Owens 2021, Kurniawati 2019). This highlights an advantage of a properly enforced mandatory certification that is aligned with national regulations: there can be follow through for non-compliance.

In both the previous (2015) and current version of ISPO, disincentives in the form of severe penalties are issued for companies failing to get ISPO certification by dates as stated in relevant regulations: Ministry of Agriculture's Regulation No. 11/2015 and Ministry of Agriculture's Regulation No. 38/2020 (GoI 2020b). ISPO 2020 states that administrative sanctions will be imposed on companies without an ISPO certificate as of November 24, 2020; they will receive gradual warnings after this date. Initially, non-compliant companies will receive a written warning letter and allowed 6 months to obtain ISPO certification. If the company fails to act within the allotted time, the business license is suspended for 6 months and can be revoked after an additional 6 months of inaction. However, based on previous ISPO implementation, the lack of supervision and oversight by relevant authorities, absence of independent monitoring, and lack of transparency on the part of evaluation process have led to ineffective sanctions (FWI 2017). District governments issue and essentially revoke palm oil business licenses, however they vary in terms of applying the sanctions in practice. Similar to findings by Luttrell et al. (2018), interviewees in this study mentioned that decisions on the oil palm business sanctions are obscured by the complex structures of authorities spread across a wide range of sectors (e.g., business, land, forest) and the need

MSPO - https://mspotrace.org.my/Complaints/; RSB – via email to grievance@rsb.org; RSPO - https://rspo.secure.force.com/complaintform or complaint form filed via email to complaints@rspo.org

[91] https://rspo.org/members/acop

for investments towards economic development. Some officials from oil palm producing districts, for instance, argued that rather than implementing strict sanctions, they take a development (pembinaan) approach to improve poor adherence to regulations to anticipate and consider potential adverse impacts on the resource, revenues, and labour.

Recently however, oil palm plantation licenses revoked by the Indonesian government[92] were due to the failure to adhere to laws and regulations. Forestry and plantation licenses revoked in January 2022 were due to the failure of permit holders to develop concession areas as per the permit allocation or the violation of regulations by diverting permit to another company or conducting business outside of the permit areas (Antara 2022; CRR 2022) – these relate to compliance with land legality aspects, a key ISPO principle. The Minister of Environment and Forestry[93] decided to revoke the licenses based on indications of allegations by companies, as verified from the satellite imageries and administrative checks. Further, the Ministry has established a desk to respond to complaints by holders of the revoked licenses and to carry out field evaluations. Definitive decisions on license revocation or enhancing the productivity or protection of forest areas under target will be made based on the result of the final evaluation.

Though it is unclear what will happen to the land associated with the revoked permits and whether the companies will be held accountable for past mistakes, the Indonesian government has mentioned offering it to CSOs and farmers under agrarian reform or social forestry initiatives[94] (CRR 2022, Jong 2022). The decision to revoke the licenses could benefit agrarian reform, indigenous land rights (conflict resolution), and conservation, if, as some critics have noted, there is transparency, consideration of communities, and forest conservation and restoration (where degraded) is prioritized (Jong 2022) – however these will require a coordinated effort from various government agencies.

The current ISPO system[95] enables independent monitoring agents, businesses, and impacted communities to file complaints against ISPO certification process and decision to certification bodies. Necessary supporting documents and information in writing needs to be provided along with suggestions for resolving the problem. The certification bodies commissions a dispute resolution team to deal with grievances and make decisions within 20 days of receiving a complaint and is required to make the process accessible to public. However, if the complaint is not address in a satisfactory manner by the dispute resolution team, the complainant can submit an appeal to the ISPO Committee, who will establish an

[92] Minister of Environment and Forestry's Decree No. SK.01/MENLHK/SETJEN/KUM.1/1/2022 regarding revocation of state forestland concessions: Natural and plantation forest concessions, forestland business licenses including for oil palm are subject to the revocation. Minister Siti Nurbaya Bakar stated that she has revoked 42 licenses (812,000 ha of forest) between September 2015 and June 2021, and 192 licenses (3.1 million ha of forest) as of 6th January 2022. Further, an additional 106 licenses (1.37 million ha of forest) are to be evaluated.

[93] This statement was made by the Minister during a working meeting between the Ministry and Environment and Forestry and the Commission IV of the People Representative Council on 25 January 2022 (https://www.youtube.com/watch?v=dNcnfVu4XL4, from 1:03:08 to 1:05:18).

[94] Though the Omnibus law (National Regulation No. 20/2021) was not mentioned by the government, the permit revocation is understood to be a result its implementation, specifically the article states permit for lands or concessions that are abandoned within two years of permit issuance will be revoked (CRR 2022).

[95] Article 35-38 of Agriculture Minister's Regulation No. 38/2020 regarding Indonesian Sustainable Palm Oil Certification (GoI 2020b)

Appeals Committee to resolve the case and make a final and binding decision within 20 days.

Companies failing to obtain the MSPO certification or committing offenses are subject to penalties or the suspension/revocation of licenses as detailed in the 2005 MPOB licensing regulation. Smallholders, both independent and organized, in Malaysia are also mandated to become MSPO certified. They were initially given time until 31 December 2019 to prepare, after which they were obliged to implement MSPO (Kannan et al 2021). However, due to slow uptake of MSPO by smallholders, the registration deadline for MSPO certification to be made compulsory was shifted to January 1, 2021[96]. As of December 2021, 5.36 million ha or 91.3% of the total plantation area of 5.87 million ha has received MSPO certification including around 530,000 ha cultivated by independent smallholders[97] (Kadir 2021a). The MPOB is tasked with assisting independent smallholders in implementing MSPO certification. Strategies adopted to accelerate the uptake include the clustering of smallholders, financial assistance, and deployment of extension services under the name TUNAS - who also act as internal control system officers (Yap et al. 2021; Kannan et al. 2021). MPOB's licensing and enforcement department also issues warning letters to non-certified smallholders, which MPOB reports to be effective in getting the smallholders on the path to certification. Warning letters to estates and oil mills in early 2020 also saw an increase in the percentage certified in the first half of 2020 (The Edge Markets 2020). If the MSPO certification process is not started after the letter, licenses (including for smallholders) face suspension or termination. However, public information on license suspensions in 2021 was not found. A CRR (2021) report indicates some non-transparency issues related to oil palm companies' early stages of operation.

Under ISCC, farms or plantations violating Principle 1 – a critical non-conformity on a "major" must for certification – on the protection of land with high biodiversity value or high carbon stock are excluded from ISCC certification. If a farm or plantation has received individual certification and violations of Principle 1 are detected, the certificate will not be issued or will be withdrawn immediately. Though farms or plantations seeking ISCC certificate are required to comply with relevant national and regional laws and regulations, if these laws and regulations allows for a certain degree of forest clearance for agricultural production that would violate ISCC principles and the requirements of the RED II, then producing such biomass under the ISCC certification is not allowed – the stricter of the two will apply. Non-conformities under ISCC are categorized into minor, major and critical ones. If such non-conformities are found, various sanctions may be applied. Minor non-conformities may only be subject to corrective actions to be implemented by the system users by the next audit (i.e., 12 months). In case of major non-conformities, the issuing certification bodies must suspend the validity of the certificate with immediate effect for a period of 40 days (with a possible 30-day extension), within which all non-conformities must be corrected. If all major non-conformities are not corrected within the suspension period, the certification body will declare the certificate invalid and withdraw it immediately. ISCC may exclude the system user from ISCC recertification for up to 60 months. ISCC publicly publishes all certificates

[96] Deputy Minister of Plantation Industries and Commodities stated that warning letters regarding the MSPO certification would be distributed to SH license holders after this date (DayakDaily 2020).
[97] As of November 30, 2021, 98.1% of plantations (4.16 million ha) and 96.35% (449 of 466) licensed mills are MSPO certified (Kadir 2021b)

through its website,[98] including valid, expired, withdrawn, and suspended ones. It also presents fake certificates and excluded system users along with name, address, and date of exclusion. After the issues highlighted in 2019 through the Kampen case, where the Dutch company sold uncertified cooking oil as ISCC certified between 2015-2016, the ISCC began strictly tackling non-compliant users.[99] However, the question on the effectiveness of such measures remains.

For the AWS Standard, there is an online form to submit complaints regarding AWS Standard, AWS assurance procedures and approvals process, AWS Standard development and revision process, AWS governance, staff, policies, or procedures, the performance of a service provider, and the performance of a certified, self-verified, or registered site. AWS states that a conflict resolution would be proposed within 60 days. Complaints against certified sites will be directed to the appropriate accredited service, with the AWS technical staff tracking the handling of the complaint. Any decision by the Accredited Service Provider to suspend or withdraw certification will be according to the certification requirements. If issues remain unresolved AWS may meditate on behalf of the individual/entity submitting the complaint.[100]

The travel restrictions imposed due to the Covid-19 pandemic have highlighted the importance of on-site audits in the certification process. Without inspectors being able to travel (whether EU based or in many cases even based domestically), the auditing process has been hampered, though all six identified certifications allowed for remote verifications temporarily and developed guidelines to adjust to the conditions. However, this makes the task of catching and flagging violations for corrections even more difficult, especially violations of human/worker rights and conflicts with local/indigenous communities.

5.7 Traceability within certification systems

Certifications allow companies or producers to make claim about their products. The type of claim depends on the level of traceability of palm oil. There are four different supply chain models or chain of custody to demonstrate traceability:

1. Identity preserved. Identity preserved assures that sustainable palm oil from a single identifiable certified source (one palm oil mill) is kept separate from other palm oil throughout the supply chain.
2. Segregated. Segregated model keeps certified sustainable palm oil separate from conventional palm oil.
3. Mass balance. Mass balance model allows for sustainable certified palm oil to be mixed with non-certified palm oil at specific proportions, but it does not allow for physical traceability of palm oil.
4. Book and claim. Book and claim model (similar to RSPO credits described in Section 5.2.2) allows buyers to purchase a certificate equivalent to a volume of certified palm oil

[98] www.iscc-system.og/certificates/all-certificates
[99] https://www.dutchnews.nl/news/2019/05/dutch-company-embroiled-in-biodiesel-scandal-earning-millions-vk/
[100] https://a4ws.org/wp-content/uploads/2017/03/AWS-Comments-Complaints-and-Appeals-Procedure-V1-0-Feb-2017.pdf

and the value is transferred to the producer but this does not involve any physically trading of products between the specific buyer and producer.

RSPO has a supply chain certification system in place to control RSPO certified oil palm product flow from the primary producer through to the product manufacturer (i.e., oil palm growing, palm oil milling, storage, transport, refining, manufacture, end product, etc.). It offers all four supply chain models detailed above. RSPO's PalmTrace[101] - part of the RSPO certification program - is RSPO's traceability system for certified oil palm products. From the mill to the refineries, certified members of RSPO register their physical sales and processing activities of palm oil, palm kernel and its (double) fractions under the four supply chain models. It includes a marketplace and the possibility to register off market deals (Book and Claim) for RSPO Credits.

Both ISPO and MSPO include traceability as part of their principles. Under ISPO only companies are required to have a system in place to trace the sources and identify who are suppliers of FFB, while smallholders shall be required to provide information on the sale and agreed price and who are buyers (companies or mills) of FFB (GoI 2020b). Regarding MSPO, MPOCC in 2019 launched the MSPO Trase[102] platform comprising of four modules: Certification, Logo usage, Complaints and Grievance, and Traceability. The platform allows for data on certified entities from both the MSPO [2013] Oil Palm Management Certification and Supply Chain Certification, traceability information of transactions along the supply chain to its source, and the MSPO claims on certification and commitment. The traceability aspect is integrated with the certification aspect to be able to trace FFBs from plantations and through the supply chain (milling, refining, processing, and manufacturing). This complies with the MSPO [2013] Supply Chain Certification Standard and those certified under this scheme are required to use this platform to maintain certification status. Though some information is currently available, the platform is still under development (to be completed by 2025). Under MSPO 2022, all actors including independent (DSM 2022a) and organized smallholders (DSM 2022b) as well as companies (DSM 2022c and DSM 2022d) are required to have a system or procedure(s) in place for traceability along the supply chain. This system or procedure is required to include maintaining a standard operating procedure and keeping records of sales, MPOB license, planted areas, and FFB tonnage and delivery.

While 90% of the planted areas have been MSPO certified, bigger players, such as Sime Darby, have their own traceability system that is more straight forward and integrated. To trace the whole supply chain, MPOB continues to develop the e-trace system where information on all smallholders, estate, mills and refiners will be included, in an attempt to cover the whole supply chain. Further, MPIC has indicated interest in exploring the ability to adopt blockchain technology to meet the country's traceability goals (MPOC 2021). One of the current challenges with traceability is figuring out who smallholders are selling to - dealers, collection centres, or straight to the millers. Despite the challenge, MPOB states it is adequately staffed (2500 staff, 1300 permanent staff, 2000 staff are contract) to address the issue.

Both MSPO and ISPO adopt two models of supply chain certification standard: segregation and mass balance. Both certification standards require that palm oil products with the

[101] https://rspo.org/palmtrace
[102] https://mspotrace.org.my/

segregation model must contain 100% of MSPO and 100% ISPO certified material originating from MSPO and ISPO certified oil palm planted areas that will be verified through the supply chain certification. However, the standards differ in the percentage of certified material under mass balance model. MSPO's Mass balance model requires that the products must contain a minimum of 70% of MSPO certified material originating from MSPO certified oil palm plantation, while ISPO's mass balance require at least 30% of FFBs come from ISPO certified plantations. Under ISPO, this percentage applies during the first time for plantations that are integrated with mills and increases gradually the following year. The percentage also applies to mills during the first cycle of ISPO certificate and increases every subsequent year. In both cases, percentage increase is not specified by ISPO. ISPO points to plantations, processing, and bulking as the supply chain scope. MSPO highlights that the source of non-MSPO certified palm oil in mass balance must be from Malaysia. The two models for ISPO traceability are not yet functioning, as they will only be mandatory for all by 16 November 2025.

In addition to the criteria and indicators for plantations – both for companies and smallholders (ISPO 2020), the DG Plantation of the Ministry of Agriculture is currently developing certification criteria and indicators for supply chain to ensure that FFB and palm oil products can be traced to the growers. Further, sustainable palm oil guidelines and NSPK are also being developed for the jurisdictional level by the BAPPENAS.

RSB EU RED has developed specific guidance on procedures for traceability[103] of certified material from the origin to the end user. The material is tracked each time that it passes through the supply chain points, resulting in a "chain of custody." RSB certified operators throughout the supply chain are required to establish an effective and transparent chain of custody tracking systems, which will be verified to increase transparency and decrease risk of fraud by the certification body during the audit process. RSB provides three options for the chain of custody system that must be put in place: identity preserved (product lots (batches) are kept separately), product segregation (certified products are kept separate from non-certified products), and mass balance (products may be mixed, as long as documentation remains separate).

Some large plantation and trading companies, particularly those committed to no deforestation, no peat and no exploitation (NDPE) have their own traceability systems accessible to public through their websites, in addition to complying the traceability requirements of certification systems, as applicable. Here some information about the biggest companies operating in Indonesia and Malaysia is provided. Wilmar's mills, for example, source 46.1% of FFB from its plantations, 1.4% from scheme smallholders, and remaining 52.5% from third-party suppliers.[104] This group has achieved close to 98% of traceability to mills, putting them on track to reach 100% traceability to mills by 2022 (Wilmar 2020). At the end of 2020, only 14% of Wilmar's third-party supplying mills within its global supply chain were estimated to have traceability to the plantation level (Wilmar 2022). About 89.5% of palm oil and lauric volumes to Wilmar's origin refineries in Malaysia and Indonesia are from suppliers that have at least company or group level commitments and/or action

[103] https://rsb.org/wp-content/uploads/2020/06/RSB-PRO-11-001-20-001-v.3.7-RSB-EU-RED-Procedure-for-Traceability.pdf
[104] https://www.wilmar-international.com/sustainability/supply-chain-transformation/traceability/traceability-back-to-mill

plans in place to address the NDPE requirements. Another example is Cargill, whose refineries buy palm oils directly from mills and indirectly from mills through traders/refineries on the global market. RSPO certified palm oils they source from Indonesia, Malaysia, and other countries account for 42%, 38%, and 20%, respectively. Cargill claimed to have achieved 52% of traceability to plantations by 2020 (Cargill 2020). Having some of its plantations and mills ISCC, RSPO and ISPO certified,[105] GAR reported that by 2020 it had achieved full traceability to the plantation level in 90% of its palm oil supply chain, and it is now working to with its 380 third-party mills towards 100% traceability.[106]

Despite the establishment and efforts of certification systems and companies, traceability is still challenging from the farm to the mill, hindering fully traceable and transparent supply chains. Additionally, companies' commitment to NDPE policies poses the challenge of ensuring that all actors including third-party suppliers along the supply chain comply. The assessment of palm oil companies by SPOTT (2021b) indicate some challenges in ensuring third-party companies, particularly those not having strong commitments to NDPE policies. Of 100 palm oil companies assessed globally, nearly 70% have a commitment to zero deforestation applicable to all suppliers with 52% having a commitment to conduct HCV assessments that applies to all their suppliers and 45.9% having a commitment to HCS approach that applies to all their suppliers (SPOTT 2021b). However, only 32.9% have undertaken HCV assessment for all estates planted since January 2015 (SPOTT 2021b). The HCS commitment percentage is indicated by companies' declared policies and adherence to certification standard (e.g. RSPO), but as shown here fewer companies have undertaken HCS assessment with its HCS reports publicly available. HCS and HCV commitments are important as they identify and protect environmental and social values that need to be conserved and also contribute to the implementation of commitments to no deforestation, reducing greenhouse gas emissions, and safeguarding the rights of local communities, thus Delabre et al. (2018) highlight the need for companies to fully realize the business case for conserving HCV areas and HCS forests and the risks associated with lack of effective management of these areas. Cargill (2020) suspends suppliers who continue with unsustainable practices and operate in leakage markets (i.e., selling to buyers not enforcing NDPE standards) but attempts to work with these suppliers and smallholders to incentivize to follow NDPE policies that include protecting HCV areas and HCS forests and peatlands regardless of depth. Similarly, Wilmar revised its 2015 target of achieving full palm oil mill traceability to 2022 due to challenges related to commodity transportation and trading structures in certain markets and put in place additional processes for ensuring that third-party refiners/traders/bulkers make efforts to comply with its NDPE policy which includes no development of HCV and HCS areas (Wilmar 2020). However, various grievances and complaints as described on Wilmar, Cargill, and GAR websites indicate some transparency and verification issues, potentially in breach of NDPE policies including human rights and labour issues, some of which have been settled while others are still pending.

[105] https://www.goldenagri.com.sg/sustainability/certifications/
[106] https://www.goldenagri.com.sg/sustainability/responsible-sourcing/

4. Linking to EU regulations

The palm oil sustainability approaches and certifications explored in this study can be linked to the recent EU regulations seeking to reduce deforestation impacts of commodities entering the EU market, specifically Communications Nos. 706[107] and 352[108] and the EU Renewable Energy Directive II[109].

Through Communication No. 706 (Proposal for Regulation of the European Parliament and of the Council on the making available on the Union market as well as export from the Union of certain commodities and products associated with deforestation and forest degradation and repealing Regulation (EU) No 995/2010), issued in November 2021, the EU intends to minimize consumption of products coming from supply chains associated with deforestation and forest degradation and increase the EU demand for legal and 'deforestation-free' commodities and products. This will be achieved through the establishment of a tiered, mandatory due diligence system. This regulation proposal is expected to be applied together with the Renewable Energy Directive (RED 2018/2001) which concerns commodities used as biofuels or to produce biofuels, such as wood pellets or derivatives of soy and palm oil. Additionally, other relevant initiatives such as the Commission's earlier Communication No. 352 (Stepping up EU Action to Protect and Restore the World's Forests), the European Green Deal, the UN SDGs, the New York Declaration on Forests, and the 2021 Glasgow Leaders' Declaration on Forests and Land Use have also been regarded as references for strategizing the implementation of Communication No. 706.

Communication No. 706 highlights major issues and points as part of the due diligence system (more details are expected to be defined through a separate regulation), many of which align with sustainability certifications, approaches and tools, and impact palm oil producing countries discussed in this report. Some important points to note include:

- Focuses on both **legality** and sustainability requiring products to have been produced in compliance with the laws of the country of production and **deforestation-free** definition.
- Adopts legally binding policy measures such as **mandatory due diligence**, mandatory public certification, mandatory labelling, setting a deforestation-free requirement for products on the EU market, and a benchmarking system with risk ratings for countries or regions. The mandatory nature of the due diligence system is expected to increase the effectiveness of the policy intervention by preventing loopholes associated with legal deforestation and to prevent the creation of wrong incentives for partner countries who might otherwise be tempted to lower environmental standards to facilitate the process to access EU markets for their products.
- Sets a deforestation **cut-off date** of 31 December 2020 – meaning that no commodities and products mentioned by the regulation (i.e., beef, palm oil, soy, wood, cocoa, and coffee) would be allowed to enter or exit the EU market if they were produced on land subject to deforestation or forest degradation after that date. This date was selected as

[107] https://ec.europa.eu/environment/forests/pdf/COM_2021_706_1_EN_Proposal%20for%20Regulation%20on%20Deforestation.pdf
[108] https://ec.europa.eu/info/sites/default/files/communication-eu-action-protect-restore-forests_en.pdf
[109] https://eur-lex.europa.eu/eli/dir/2018/2001/2018-12-21

the cut-of date to minimize the disruption of supply chains and potential negative impacts in partner countries.

- Complements the objectives of Renewable Energy Directive (2018/2001) that require the determination of **indirect land-use change (ILUC)** risk of feedstock.
- Specifies **information requirements**, documents, and data to demonstrate that commodities and products for the EU market are deforestation-free, have been produced in accordance with the relevant legislation of the production country and covered by a due diligence. Evidence required includes the geo-localization coordinates of all plots where the commodities and products are produced, verifiable information that relevant commodities and products are deforestation-free, and that production has been conducted in accordance with relevant legislations of the producer country.
- Additionally, **labor, environmental, and human rights laws** applicable in the country of production (both national and international) will need to be taken into account when assessing the compliance of products with this initiative. This includes the rights of indigenous peoples, which is expected to contribute to protecting the rights of vulnerable local communities.
- Highlights the importance of working in **partnership** with producer countries to support the transition to sustainable forest management and address global challenges while meeting local needs and paying attention to the **challenges faced by smallholders**.

Relatedly, with Communication No. 352 the EU has set some priorities for stepping up action against deforestation and forest degradation. With the objective of protecting and improving the health of existing forests, especially primary forests, and significantly increasing sustainable, biodiverse forest coverage worldwide, it includes priorities to:

- **Reduce the footprint** of EU consumption on land and encourage the consumption of products from deforestation-free supply chains in the EU
- **Reduce pressures on forests** by working with partner countries and **strengthening international cooperation** to stop deforestation and forest degradation and encourage forest restoration
- **Redirect finance** to support more sustainable land-use practices.
- **Support data availability** and quality of information on forests and commodity supply chains.

This Communication aims to encourage the consumption of products from deforestation-free supply chains and highlights the importance of the credibility of different certification standards and schemes.

In responding to the points above, the potential of existing certifications and approaches to address the issues highlighted in the EU Communications No. 706 and 352 and identify some areas for improvement can be observed. Reflecting on these major issues and having reviewed various aspects of sustainability certifications, approaches, and tools, CIFOR asserts that these can be instrumental in supplying the complementary information on palm oil production, the supply chain, and production conditions, to demonstrate that the two countries meet the EU regulation requirements, support risk assessment, and develop mitigation measures. We mainly focus on RSPO, ISCC, ISPO and MSPO here as they are currently the dominant certification systems in Indonesia and Malaysia. These certifications have transformed substantially from their respective initial versions, signalling integration of

concerns such as environmental thresholds, smallholder inclusion, protection of indigenous people and labour, governance and decision making, monitoring and verification, and traceability. These certifications have also improved on their credibility and there are efforts towards transparency. Though RSPO and ISCC have publicly available information on their websites on certifications, complaints, etc., there are still improvements that can be made. ISPO and MSPO have made some improvements but are still lacking in their transparency, especially during the accreditation processes. Additional and independent monitoring elements further integrated into these certification systems would strengthen the claims the certifications make regarding deforestation-free and sustainable production to meet the EU criteria.

6.1 Legality

Both Indonesia and Malaysia have national regulations governing oil palm. To determine compliance with these regulations (i.e., legality), there are requirements (e.g., land use zones, EIA, management plans, minimum wage) for oil palm growers and millers. The two mandatory systems, MSPO and ISPO, whose standards are developed based on existing laws and regulations in each country reinforce compliance with the regulations, and if thoroughly monitored and enforced they would likely ensure that many social, economic, and ecological outcomes are achieved. Though voluntary systems and third-party schemes, such as RSPO and ISCC, require the following of national laws, they cannot penalize non-compliance other than revoking certification and depend on countries to follow up. The biggest challenge with legality is the enforcement of the regulations and requirements – which falls on the countries' governments.

Additionally, there are approaches and tools within the two countries that can help in providing additional information related to legality, though most of the tools contain information beyond legality. In Indonesia, the mentioned tools of KDSD and Terpercaya examine existing regulations and compliance with national requirements at the district level, helping growers and millers within these jurisdictions fulfil legality requirements. Also, at the jurisdiction level, completing or reporting through CDP States and Regions or SourceUp can demonstrate compliance and commitment to transparency. However, so far these tools are only used by or piloted in a few jurisdictions. Expansion of their use will depend on support from the national governments as well as demonstrable evidence of compliance ensured through the implementation/completion of these tools. Further international and national support can aid in the development, adaptation, and adoption of tools to better fit the Indonesia and Malaysian contexts.

6.2 Cut-off date and deforestation

The identified certifications contain similar criteria as the Communications, but in some cases, such as cut-off dates for deforestation and plantings on peatland, there are fundamental differences in definitions. In addition to providing a cut-off date (i.e., 31 Dec. 2020), Communication No. 706 defines deforestation as the conversion of forests to agricultural use, whether human-induced or not, and forest refers to land spanning more than 0.5 ha with trees higher than 5 meters and a canopy cover of more than 10% of trees

able to reach those thresholds in situ.[110] Considering the definitions of forests in the explored certification systems and approaches, we find that only the RSB definition matches. ISCC EU REDII standard (version 4[111]), still waiting for acceptance, does include a new land category 'highly biodiverse forest and other wooded land,' renaming the land category from 'sparsely forested areas' to 'forested areas with 10-30% canopy cover' that are five (5) meters tall and one (1.0) ha in size and giving more definite locations to be prevented from clearing (ISSC 2021). The other certifications do not contain the specificity of land area, height, or canopy cover, meaning that additional details using a clearer definition of a forest than those considered in these certification systems or most of the sustainability approaches and tools would be needed for due diligence.

As for the cut-off date, compliance with all certifications discussed here would demonstrate the ability to meet this criterion except for ISPO 2020 and MSPO 2013, which do not specify a cut-off date. RSPO sets November 2005 and November 2018 as cut-off dates for primary forests and HCV areas and HCS areas, respectively. The ISCC sets January 2008 as a cut-off date, after which raw material should not be obtained from land with high biodiversity value, high carbon stock areas, or peatlands. ISPO, despite not having a cut-off date, does require compliance with national regulations including a requirement for EIA or environmental management plan and compliance with a moratorium issued in 2011[112] banning conversion of primary forest and peatlands. ISPO [2020] includes the protection of primary forests and peatlands as one criterion under the environmental, natural resources and biodiversity management principle. Despite the ineffectiveness of the moratorium in the early years of implementation (Murdiyarso et al. 2011; Wijaya et al. 2017), this policy effort plays a significant role in reducing deforestation on state forestland or forest lands allocated for other purposes than forestry (APL) between 2015 and 2018 (KLHK 2020, KLHK 2021a). However, the moratorium does not include secondary forest and logged-over forests, representing a missed opportunity to protect these types of forests (Wijaya et al. 2017). MSPO [2013] lacks a cut-off date and does not call for no deforestation, though conversion of high biodiversity value areas is not allowed unless permitted by local regulations. However, MSPO [2022] sets a cut-off date for 31 December 2019, after which natural forests, protected areas, and high conservation value areas must not be converted. When the revised MSPO is implemented beginning in Jan. 2024, producers and mills in compliance with it would be able to meet the EU criterion, but the proposed changes do not contain clear requirements for deforestation, other than the said prohibition of natural forests and HCV conversion. Deforestation in Malaysia is likely to depend on the Federal Government's pledge to cap the expansion of oil palm plantation at 6.5 million ha by 2023

[110] Article 2 of the Regulation (Communication No. 706)
[111] From 1st July 2021, only the version 4.0 of this ISCC document is applicable. This version of the document has been submitted to the European Commission to obtain the Commission's recognition. Note in the document states that the recognition of ISCC EU II is pending. This ISCC document may be subject to change depending on further legislation and further requirements of the European Commission.
[112] Presidential Instruction regarding postponement of granting new licenses on primary and peatlands to enhance governance of forests (commonly known as moratorium policy), was first issued in 2011 (No. 10), amended every two years in 2013 (No. 6), 2015 (No. 8), 2017 (No. 6) and lastly 2019 (No. 5). The Indonesian government made the last one a permanent policy, halting completely the issuance of new licenses on primary and peatlands aimed to reduce GHG emissions from deforestation and forest degradation. This enhanced policy was claimed to play a significant role in achieving the country's 2030 food and land use net sink target (KLHK 2021).

and the state governments of Sabah and Sarawak (CRR 2021) since much forest conversion could be potentially permitted by their respective land development ordinances under MSPO [2013], though further details are required to better understand the situation under MSPO [2022].

Given the lack of specific criteria and indicators of MSPO and ISPO that would ensure deforestation-free palm oil, there is a need to better understand and employ techniques on how deforestation or destruction of high carbon stocks can be prevented and protected. Despite safeguard measures like EIA adopted in both countries, these do not indicate areas prohibited for clearing, but rather identify areas of impact (slight, moderate, and critical) due to plantation development and create associated management plans. More details are required to provide clarity on how primary forests and high biodiversity value forests are identified and properly protected. Large-scale indicative maps on vegetation cover and HCS developed based on HCS Approach (e.g., for Indonesia, Malaysia, and Philippines developed by Lang et al. 2021) or locally calibrated maps at management or landscape levels developed by companies and others could be a good reference for identifying potential HCS areas that should be protected from clearing. The importance of such maps being developed at the provincial/state or district level is stressed further by the inclusion of these maps as an enabling condition for jurisdictional sustainability by many of the jurisdictional-level approaches and tools discussed in previous sections of the report (e.g., SLRT, LandScale, KDSD). However, as Wolosin (2022) noted, consensus needs to be built among stakeholders in respective countries on the agreed HCS levels or classes where plantations can be established, and enforceable rules need to be established.

Further, recommended options by Pacheco et al. (2019) and Wolosin (2022) to synergize corporate and public actions is particularly important to advance HCS approaches already adopted by the private sectors to meet requirements of voluntary standards. For Indonesia, this can be done by enforcing the use of HCS as one criterion of ABKT (Areal Bernilai Konservasi Tinggi)[113] by growers and smallholders prior to the establishment of a new plantation. This constitutes an essential component of a new planting procedure if it were to be developed for ISPO. In Malaysia, this could potentially build on the Ministry of Natural Resources and Environment's guidelines for managing biodiversity[114] to identify and protect HCS areas.

The use of additional data sources such as Maphubs, Starling, Global Forest Watch, and Transform Platform can also help jurisdictions and oil palm growers gain information on deforestation and support monitoring of forests from independent sources to provide supporting information to EU. However, if smallholders and IP are to use these tools, then mapping of their boundaries of production areas and their capacity to do so will need to be supported.

[113] This is specified in the Ministry of Environment and Forestry's Directorate General of Natural Resources Conservation and Ecosystem's Regulation *Peraturan Direktur Jenderal Konservasi Sumberdaya Alam dan Ekosistem* No. P.1/KSDAE/BPE2/KSA.4/2/2021

[114] Ministry of Natural Resources and Environment of the Government of Malaysia (2009). Managing Biodiversity in the Landscape: Guidelines for planners, decision-makers and practitioners. https://www.ketsa.gov.my/ms-my/pustakamedia/Penerbitan/Guideline%20-%20Managing%20Biodiversity%20in%20the%20Landscape.pdf

6.3 Traceability

Traceability is integrated with certification systems to enable the tracing of FFBs from plantations and through the supply chain (milling, refining, processing, and manufacturing). To meet the proposed EU regulation's specific information requirements for deforestation-free products, it is critical that the ISPO and MSPO certification systems strengthen and enforce the existing traceability systems. This system will also need to include geolocation (i.e., geographic coordinates to the plot level) of where FFBs are produced (i.e., plantations or production plots). Based on the current information required to obtain certification (within the six systems examined within this study), ISCC is the only certification that can meet the demand for the geolocation, since this is required by its first principle. The other certifications do not contain this specific requirement but here we discuss the possible paths for this information and traceability within the ISPO and MSPO certification systems.

For Indonesian smallholders, the registration letter (STDB) issued by the district head and granted to individual smallholders plays an important role for traceability in ISPO. As indicated earlier, STDB can only be issued when land legality is clear and there are no conflicting claims. While the letter is smallholders' evidence of ownership, it is the main responsibility of government plantation offices at district level to collect, record, and verify the relevant information regarding smallholder plots and issue the letter. The district heads are required to report every six (6) months to the Directorate General of Plantations within the Ministry of Agriculture on STDB progress and issues encountered.

Poorly documented palm oil production data by regions has challenged the proper sharing and allocation of revenues from the national to regional governments (Nurfatriani et al. 2022). Initiatives proposed to incentivize palm oil producing jurisdictions to adopt sustainability through special allocation fund or Dana Alokasi Khusus (DAK) as currently promoted by Bappenas/Terpercaya, or through Revenue-sharing scheme or Dana Bagi Hasil (DBH Sawit) (Nurfatriani et al. 2022) require that traceability mechanism be within local government system to monitor and trace FFB.

MSPO Trace provides a good database source of certified entities under MSPO, which enable us to readily track all certified processing facilities and plantations in Malaysia, including smallholders. It is supplemented not only with certification information such as certified area, issue and expiry dates, audit stage, but also with geolocation of certified estates or plantations. Certificates issued by certification bodies are presented along with audit reports describing methodologies and samples used and the results of audits, which enable readers to understand the context and reasons behind the issuance of the certificates. However, there are areas for improvement. While MSPO Trace has the ability to geolocate smallholders to the farm or plantation level for traceability purposes, GPS coordinates for all smallholder plantations are provided by some certification bodies[115]. Further, complaints and grievances, however, can only be accessed by those submitting the complaints, and the current system has not provided in transparent way what are the complaints and how they are resolved.

[115] e.g., https://mspotrace.org.my/audit_reports/asa2__OPMC22014.pdf, https://mspotrace.org.my/audit_reports/asa1_cert__OPMC204304.pdf

6.4 Smallholders

Through this study we documented challenges and needs smallholders are facing towards certification. These include legality (e.g., land legality, STDB in Indonesia), lack of organizational capacity, and lack of support that could enable smallholders to learn more about sustainability certification and other elements new to them. Further, programs treat smallholders as a homogenous group, where research in Indonesia has shown distinct groupings which would impact the effectiveness of these programs. In addition, lack of data on location of independent smallholders and associated difficulties on the ability to prioritize groups of smallholders and reach them, and the need for interventions specifically targeting smallholders are also challenges. This relatedly also poses a challenge for tracing FFBs to independent smallholder farms or plantation plots. Often data on smallholders and mills are available, but this data is not public nor shared by parties (generally private entities as they might see data as proprietary). For example, in Indonesia, the province of Central Kalimantan has a plantation information system, SISBUN (Sistem Informasi Perkebunan), which integrates all existing systems including the district level smallholder monitoring system (SIPKEBUN; Sistem Informasi dan Pemantauan Kinerja Perkebunan Berkelanjutan). If such initiatives are enhanced to be publicly accessible, independently verified, and expanded to cover all regions, it could offer a powerful tool to supply information regarding legal and sustainable palm oil as required by Article 9 of the EU Communication No. 706. Similarly, data on smallholders could be brought together into a publicly available database by MPOB, further streamlining traceability and monitoring efforts (e.g., work of TUNAS officers).

Incentives and ease of process for adoption of sustainable practices or certification is crucial for smallholders, including IP. There is a need to develop and implement incentive mechanisms for independent smallholder farmers to maintain and enhance ecosystem services, as their access is more limited to resources and knowledge when compared to organized smallholders. Part of being able to provide incentives at the right time and location will depend heavily on data availability to make decisions and monitor the impacts that incentives might be having on forest cover, emissions, biodiversity, GAP, livelihoods, and quality of life. Currently, incentives for smallholders remain minimal, with very few receiving any price premiums for certified products. However, as indicated during discussions with some stakeholders, smallholders have benefitted in other ways from certifications, e.g., GAP, improved understanding on fertilizer use and storage. Additionally, the benefits seen in Indonesia through the use of RSPO Credits (book and claim) show promise as an incentive for smallholders to transition to sustainability.

6.5 Human, indigenous, and worker rights

Being able to export to EU markets according to the criteria in EU communications and regulations, will also require Indonesia and Malaysia to address issues related to human and worker rights. Though both countries have relevant regulations with requirements included in both ISPO and MSPO, reports of violations (see Section 5.3) are cause for concern and likely indicate weak enforcement and monitoring of both certification systems and legal instruments. With the most recent revisions, ISPO has adopted detailed and distinct indicators and verifiers assessing workplace safety and health in practice, including those on

industrial relations, worker welfare, and establishment of worker union. The proposed changes to MSPO include a shift from referring to national laws on labour regulations to an explicit inclusion of no forced, trafficked, or child labour on farms and to protect migrants and workers, and living conditions are now required to be “decent” instead of “habitable.” Additionally, through more transparency around violations, trainings on recognizing violations, and strategies to tackle violations by mills, smallholder groups, workers associations, the situation of human and worker rights can be improved to be in compliance with the EU requirements.

MSPO mentions that FPIC needs to be recorded and ISPO has now adopted FPIC. However, unlike RSPO, ISPO and MSPO do not provide guidelines related to FPIC. In addition to the requirements for following and obtaining FPIC, the resolution of overlapping land claims and encroachment on IP lands needs to be resolved in both countries. As mentioned earlier, mapping of IP lands would go a long way in recognizing IP rights and lands, minimizing land conflicts and ensuring FPIC is implemented in both countries, especially prior to granting certifications. Such mapping efforts would also function as supporting the information requirements for showing compliance with EU policies.

The role of CSOs and NGOs cannot be underplayed in efforts and initiatives regarding human rights and IP rights. Thus, making support to them by national and international institutions important in the path towards sustainability. Support would not only be financial but also allowing them legitimacy to work and create IP land maps that have a pathway for integration into the maps of national land planning or surveying institutions.

6.6 Leakage and indirect land use change

If the goal is to achieve deforestation-free commodities, then any leakage from the commodity supply chain should be considered. Addressing the issue of ILUC risk (e.g., deforestation shifted to other locations, commodities, or actors; displacement of non-forested land uses such as subsistence farming) or land use leakage is difficult due to the challenges associated with measurement (only possible through modelling that has limitations; Mayr et al. 2020) and the pressure of the displaced farmers or the landless on forests is not well understood (Azhar et al. 2021). A potential strategy that has been suggested to reduce pressure from displaced smallholders or the landless is to reallocate portions of land from concessions so that forested areas are protected, and smallholders’ and the landless’ livelihoods are secured since crops and livestock are cultivated along with palm oil in these fields. A studying modelling of this strategy showed that 1-2% of deforestation globally and 10-23% in Peninsular and Bornean Malaysia could be prevented (Azhar et al. 2021).

Traceability and transparency also need to be considered in the context of ILUC, especially for a commodity like palm oil that is fungible and has a complex supply chain. There is a lack of transparency over the implementation of corporate commitments and supply chain traceability to minimize the risk of deforestation and forest degradation associated with commodities. While there are already some transparency efforts on the part of major companies that are committed to NDPE by making their supply chain public and traceable, there are challenges with disclosing and managing progress made to align with NDPE policies by third-party suppliers. CRR (2021) shows cases where forest clearings may have occurred in plantations linked to palm oil refiners with NDPE policies, with many private

companies claiming deforestation was being carried out by third party companies. As mentioned in Section 5.1.1, market prices can drive third-party suppliers to deforest or incentivize deforestation by smallholders of non-certified lands/forests. Further, a recent report (ten Kate et al. 2021) has shown how the companies involved in the palm oil supply chain can be causing deforestation in the production of other commodities (especially pulp and paper), despite companies having NDPE policies in place. Thus, land cover outside of [certified] oil palm plantations need to be considered. Potentially taking a jurisdictional approach to monitor land use leakage would help ensure production that is deforestation-free and that does not compromise food production. JAs could foster policies that cover multiple sectors or commodities further decreasing the risk of leakage.

An additional key challenge for leakage is considering leakage markets along the supply chain. If suppliers and producers that are not committed to NDPE and other sustainability criteria are able to sell to sections of the market not requiring these practices, then there are few incentives to change practices and transition to sustainability. Thus, providing incentives, especially to smallholders, is a crucial part of moving to deforestation-free production. If smallholders are not incentivized and do not meet the criteria of the mandatory ISPO or MSPO, then they risk being unable to access markets, further impacting their income and quality of life. Further, despite the expected effectiveness of demand-side restrictions on palm oil, this will be heavily dependent on what the demand for sustainable palm oil will be in India and China, two of the biggest consumers of palm oil and where increases in demand expected. Currently, there is low uptake of sustainable palm oil in the Asian markets (China, India, Indonesia, Malaysia, and Singapore) despite accounting for approximately 48% of global palm oil and palm kernel oil consumption in 2019. But Singapore and Malaysia have a higher percent of RSPO certified palm oil consumption (~10% each) compared to China (4-7%) and India (2-3%; WWF 2021). There are initiatives already in place to increase the demand of sustainable palm oil in Asia (ISEAL Alliance 2021). These initiatives along with commitments made by India and China to sustainability are likely to reduce these markets' role as places of leakage and promote further progress in sustainable production practices.[116] However, the expanding of markets in India and China for sustainable palm oil are highly price sensitive and might not draw a price premium for sustainable practices and this needs to be addressed, especially if smallholders are to be incentivized.

When the revised renewable energy directive (RED II) entered into force in 2018, it provided a basis for excluding biofuel feedstocks, such as palm oil, if classified as a high ILUC risk[117]. The implementing regulation on ILUC certification has yet to issued and there is not yet any palm oil certified as low ILUC.[118] However, since the EU communication 706 proposes that certification systems for low ILUC can also be utilized for due diligence, here the relevant identified certification systems are discussed in this context. Across the certifications examined in this report, ISCC is the only one that has aligned its EU standard with EU

[116] With efforts of China to reach carbon neutrality by 2050 and various other sustainably initiatives having been started recently, this is a potential market for where ISPO and MSPO certified palm oil can be headed. Some negotiations between these countries have already been taking place.
[117] In the revision of RED, provisions for a "freeze and phase out" of biofuels with a high risk of ILUC and high GHG emissions were added. Under this measure, there is no import ban on biofuels, there are limitations to which biofuels can be taken into account when calculating EU Member States' consumption of renewable energy. But based on the criteria in the regulation, palm oil is the only crop yielding high ILUC-risk biofuel and thus subject to the freeze and phase-out (Mayr et al. 2020).
[118] https://www.efeca.com/wp-content/uploads/2019/12/191212-Palm-Oil-Biodiesel_Final.pdf

policies and directives and revised its principle 1 to include changes based on Article 29 of RED II. Under the ISCC certification system, the protection of land with high biodiversity value or high carbon stock constitutes a key and critical principle and no certification is issued if this is violated, even if in compliance with national/regional regulations. RSB is still in the process of aligning its standards to REDII. In contrast, RSPO decided[119] in early 2020 to not renew and update its RSPO-RED scheme that complied with EU RED, once it expired on 30 June 2021. RSPO's decision not to renew the scheme was in part that it saw no use and a lack of interest from members in the using the scheme. Despite this decision, the updated 2018 RSPO P&C adopted substantially higher standards than its 2013 version, requiring growers to implement HCS approaches to better deliver on NDPE commitments. Given that both Malaysia and Indonesia have increased the inclusion of palm oil derived biodiesel, there are increased risks for ILUC, however, through certifications at a large scale they could be potentially managed better.

Public-private cooperation and partnerships have also been highlighted was potential ways in which monitoring for leakage and deforestation could be improved. Additionally, external data sources (e.g., Global Forest Watch) that provide real-time monitoring of forest cover could also supplement information for due diligence.

6.7 Jurisdictional approaches as a potential way forward

Given the challenges discussed in this report and the efforts required to show compliance with EU policies, JAs offer a path. However, there is uneven recognition and championing of JAs in Indonesia and Malaysia. In Indonesia, where JAs have been integrated into national policy and are recognized and implemented by many districts and provinces, guidelines for this approach would be well-received and support from national and international sources could help jurisdictions with implementation. In Malaysia, JAs are not as well known[120], currently only being employed in Sabah for a jurisdictional certification (though there are some discussions starting in Johor). Further, tools specific to Indonesia have been developed like KDSD and Terpercaya and other global tools like LandScale, SPOTT, AFi are being implemented/piloted in Indonesia, while similar tools need to be developed for Malaysia and only SourceUP is being implemented in both countries.

However, in part to tackle the issue of incentivizing and certifying millions of smallholders, some subnational JAs for certifications are already underway in Malaysia and Indonesia. Though progress and outcomes of these initiatives need to be monitored, we can see the organization of actors around the idea of the entire jurisdiction being certified and progress being made, especially in Sabah. This approach also reduces the burden of having to certify each individual independent smallholder and allows for monitoring on a larger scale than plantations and farms. This approach would also help in addressing and monitoring land use leakage between actors within the jurisdiction, and forests outside of oil palm plantations can be monitored and better protected. Though not all certification systems currently have

[119] https://rspo.org/news-and-events/announcements/rspored-scheme-not-to-be-renewed
[120] This could be due to limited international development organizations and aid operating within the country because of Malaysia's classification as an upper middle-income country by OECD for official development assistance (https://www.oecd.org/dac/financing-sustainable-development/development-finance-standards/daclist.htm).

jurisdiction level certification, like AWS standard and RSPO, we find that by potentially building on the framework offered by group certification, independent smallholders in jurisdictions (district or sub-district level) could be grouped together and certified. The issue however is that the certifications discussed here relate only to palm oil but since the jurisdictions are likely to be producing other commodities or products as well, certifications or standards for those might need to be adopted in addition as well, especially to avoid deforestation spill over from palm oil to other sectors, as shown by ten Kate et al. (2021). However, issues of land titling and land conflicts that are prevalent in both Indonesia and Malaysia would need to have viable and rapid conflict resolution mechanisms to allow for JA certification.

5. Points for consideration

CIFOR has found mixed evidence of effectiveness of certification systems to address environmental, social, and economic issues. Though certifications have some positive impacts and have the potential to help curb deforestation, monitor and address human rights violations, etc, they are not perfect in their implementation. Through revisions of the standards, many of the certification systems have attempted to improve on their shortcomings, however we find that they can still be improved.

Reflecting on the findings of this study, specifically in the context of gaps, lessons learnt, and best practices in relation to existing tools and approaches to palm oil sustainability discussed throughout the report, CIFOR outlines some future steps, improvements, and considerations relevant in demonstrating compliance with relevant global regulations. First, we have some broad areas for consideration and then focus on specific points for Indonesia (ISPO) and Malaysia (MSPO) individually.

1. Open and transparent discussions with all parties are needed on which certifications and tools would be acceptable as complementary information or as part of due diligence for the EU proposed regulation and a common understanding of definitions and metrics of measurements regarding sustainable supply chains and sustainability between EU-Indonesia and EU-Malaysia. For example, the thresholds of high carbon stock areas, mechanisms for measuring and detecting ILUC (e.g., crop level land use designations). The facilitation of these technical discussions and dialogues could be supported through existing projects, which can further support the work of Council of Palm Oil Producing Countries (CPOPC) and other organizations.
2. In examining the transition or progress to sustainability through implementation of certifications or international sustainability standards, the adoption of quantitative proportion-based performance indicators that account for baseline conditions and monitor performance relative to initial conditions are needed, allowing for performance monitoring and evaluations to be aligned with regulations of each country or jurisdiction (e.g., district). Varying baseline conditions of areas before certification or sustainability initiatives can lead to confusion between participation and performance.
3. Support for and further development of data collection and monitoring initiatives and frameworks being developed within producing countries (e.g., Terpercaya, KDSD, Satu Data, ICS) so the information produced can be utilized to demonstrate compliance. Through technical and financial support, various initiatives can further support work within countries.
4. Support integration or integrated platform initiatives to address the lack of integrated information regarding forests and commodity supply chains poses a major challenge for monitoring trade flows and transparency. Multiple data sources could be brought together on one platform that designed based on existing tools, approaches, and certification schemes.
5. Additional financial support for and partnerships with NGOs and CSOs involved in supporting smallholders and indigenous people is needed. NGOs and CSOs support smallholders in capacity building, GAP, and certifications and provide a path for additional funding and support to be channeled to smallholders via their programs and initiatives. Any initiative by the EU and the country governments should recognize these

organizations in their ability to support land conflict resolutions and reach smallholders, thus they should be supported to continue their work. Various on-going initiatives can support by identifying the appropriate actors working in this space for partnerships

6. Consider and explore mechanisms to establish traceability with geolocation information by expanding on on-going efforts. For example, existing mechanisms that could be expanded to include or provide geolocation data can be identified along with potential investors to allow for this work. Similarly, there is a need to conduct further research on book and claim traceability model for sustainable palm oil as a potential pathway to incentivize smallholders to adopt sustainable practices. Addition of this model to ISPO and MSPO traceability could theoretically offer a way to increase market share, especially if targeted to the Indian and Chinese markets. This model can still help meet the geolocation requirement of the proposed EU regulation and sustainability criteria when smallholders are grouped at the jurisdictional level.
7. Support and consider subnational jurisdictional initiatives (JAs) as a mechanism to meet the information requirements to show production of deforestation-free commodities throughout the jurisdiction in a manner that accounts for ILUC. The potential for the application of jurisdictional approaches (and traceability in the previous point) for sustainability in Indonesia and Malaysia can be communicated including by highlighting of existing resources and learning platforms, such as those established by Tropical Forest Alliance (TFA), Governor's Forest and Climate Task Force (GCF-TF), and LTKL.

7.1 Indonesia

In anticipation of the EU demand for 'deforestation-free' commodities and products, it is recommended to:

1. Integrate HCS approach into the ISPO criteria and indicators, which would strengthen land clearing standard operating procedures. This can be done by targeting plantation development at non-productive forests characterized by low carbon stocked areas such as shrubs, bare lands and mixed farms to protect high carbon stock areas and forests, while facilitating grower companies to adhere to government regulations and their own commitments. Existing guidelines for non-productive forests and vegetation classes as specified in both existing regulations and HCS approaches need to be further explored and synergized to set up criteria and indicators that would act as thresholds for determining go and no-go areas for plantations. Establish consensus among key stakeholders on the threshold for HCS particularly in high-risk forest landscapes (e.g., Papua) while seeking a balance between environmental sustainability, plantation development, and fulfilling of needs for local communities and indigenous people.
2. Establish detailed guidelines on governance and decision-making processes to enhance ISPO credibility, especially processes through which changes to ISPO criteria and indicators can be made. Relatedly, the establishment of independent monitoring agents (e.g., NGOs) to submit and monitor complaints of non-conformity is a step in the right direction to increase credibility and trust, however, their roles in influencing ISPO decision-making needs to be clarified.
3. On the issue of legality and need to identify geo-localization coordinates of smallholder plantations, it is recommended that relevant ministries (i.e., Ministry of Environment and Forestry, National Land Agency, and Ministry of Agriculture) and local governments

increase their coordination efforts to speed up smallholder land legalization processes through agrarian reform and social forestry “jangka benah” programs. Development of a centralized database of STDBs would also facilitate the provision of geolocation information.
4. Provide technical as well as human resources support and financial resources (from relevant ministries and agencies such as Ministry of Agriculture, BPDPKS, and provincial and district authorities) to facilitate the functioning of smallholder groups’ internal control systems and increase group certification (especially across a jurisdiction).
5. Where and when applicable, the allowance for the processes of the ISPO and RSPO certification audits to be combined to minimize the cost and reduce smallholder burden.
6. Establish a traceability system to be functional prior to November 2025, facilitated by an adoption of a phased approach by building on existing traceability efforts of companies that are certified through voluntary sustainability schemes.
7. Develop a publicly accessible website providing information on progress towards adoption of ISPO across the various stakeholders (i.e., companies, mills, and smallholders), complaints filed, and complaint resolution through grievance mechanisms.

7.2 Malaysia

The revised MSPO standard (MSPO 2530:2022) has been launched with its strengthened criteria and indicators for various areas such as deforestation avoidance measures, environmental conservation and protection, smallholder, labour, ethical conduct, etc. Based on the initial assessment of this new and current MSPO and the associated challenges, we have the following recommendations:

1. While requirements for new planting to restrict deforestation have been strengthened (e.g. cut-off date, integration of HCV, environmental, and social impact assessment), there is need to clarify how high carbon stock (HCS) areas are to be protected, and to set specific criteria and indicators for go-areas for new plantings.
2. There is a need to explore a possibility for integrating HCS principles into existing HCV assessment, considering NDPE. The absence of HCS reports submitted by oil palm companies operating in Malaysia to HCS Approach Network is worth exploring further. Adoption of HCS approaches to guiding new planting establishment would offer an effective contribution from MSPO to halting deforestation and help the government fulfill GHG reduction commitments.
3. Provide support and detailed guidelines establishing and maintaining working and living conditions in line with MSPO and regulatory requirements, especially in regard to migrant labor. Additional training needs to be provided to recognize violations would help resolve non-compliance issues due to imperfect knowledge, especially of smallholders.
4. Provide additional and adequate support especially to smallholders to increase the uptake and compliance with the proposed MSPO changes while encouraging mills to purchase from smallholders with sustainability practices.
5. Help reduce certification burdens on smallholders through further promotion of group certification and implement this strategy at a jurisdictional level. MPOB TUNAS program can be expanded to support this.
6. Develop MSPO Trace website further and sooner than 2025 to further enhance transparency which includes information on progress towards adoption of MSPO 2022

(once in effect) across various stakeholders, complaints received, and complaint resolution through grievance mechanisms.

7. Establish a streamlined mechanism for resolving land titling for IP and the smallholder certification delays associated with land use category (i.e., agriculture vs. building, oil palm vs. rubber) in land titles
8. Provide a clear and comprehensive list of situations and local legislations where land conversion (e.g., deforestation) can still occur, especially while MSPO 2013 certification standards are still utilized.

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7. Appendices

Appendix 1: Methods

The three main data collection methods utilized in this study, literature review, expert interviews, and online consultation/validation process, are detailed below

Literature review. A targeted review of journal articles, grey literature, and technical documents was utilized to identify and gather information about relevant certifications or approaches being implemented or piloted in Indonesia and Malaysia. Through the literature and document review we identified existing certifications, approaches, and tools following these specific criteria: (1) be operational, utilized, or in the piloting stage in Malaysia or Indonesia; and (2) explicitly address or include oil palm as a commodity of interest. After the initial identification process, we compiled information on the foundation framework (e.g., Initiators, funding source, objectives, scale, governance, etc.), goal setting (e.g., indicator selection, organization, and structuring, consideration of national regulations and targets, consideration of international regulations and targets, environmental sustainability targets/thresholds), and implementation process (e.g., national and international accreditation requirements, methods for data collection and analysis, traceability and monitoring/verification procedure).

Expert Interviews. Upon completion of the literature review, expert interviews were conducted to gain a further understanding, fill in the information any missing, and discuss any information that needs to be clarified. Experts were identified based on their role/position within the organization or agency. Initial contact was via email using publicly available information on the organization/agencies' website or documents to set up an interview. Points of discussion during the interview include updates on adoption progress, the question of the potential and effectiveness of standards or approaches, and confirmation on existing mechanisms for decision making, dispute resolution, etc.

Consultation/Validation. The certifications, approaches, and tools identified through the literature review and previous research experience on oil palm were validated through a short consultation and validation process with selected key stakeholders/organizations in both Malaysia and Indonesia. This consultation process also allowed us to ensure that any relevant certifications, approaches, and tools in Indonesia and Malaysia were not omitted. The initial list was expanded based on the consultation process carried out in August-September 2021.

Our interviews and consultations included stakeholders across Indonesia and Malaysia. We interviewed the Food and Agriculture Directorate of BAPPENAS, European Forest Institute (EFI), Indonesian Sustainable Forum for Smallholders (FORTASBI), and the ISPO Secretariat in Indonesia. We also interviewed the Malaysian Palm Oil Board (MPOB), National Organization of Smallholders (NASH), and Sarawak Dayak Oil Palm Planters Association (DOPPA) in Malaysia. Additionally, we consulted 47 relevant stakeholders during our online consultation process to validate the list of applicable certifications, approaches, and tools to sustainability, including individuals representing civil society

organizations (n=9), the government (n=10), private sector (n=3), research organizations (n=9), universities (n=4) and others (n=12).

Appendix 2: Comparison of ISPO (2015) to ISPO (2020)

Element	ISPO 2015	ISPO 2020
Legal basis	Agriculture Ministry Regulation No. 11/2015	Presidential Regulation No. 44/2020 and Agriculture Ministry Regulation No. 38/2020
Institutional governance	ISPO Commission lead by Directorate General of Plantations of the Min of Agriculture constitute the key element of ISPO institution or governance	ISPO Steering Committee lead by Coordinating Minister for Economics, and ISPO Committee led by Min of Agriculture are key element of the governance
Decisions on certification	ISPO Commission issue a recognition of certified units, based on assessor team's (tim penilai) assessment of audit reports prepared by certification institutions.	Independent certification institutions (lembaga sertifikasi, LS) make decision on, while ISPO committee comprising a mix of government officials and other actors including academics, NGO (independent monitor), the private sector and independent observers provide oversight on the issued certification
Nature of certification	It is mandatory for plantation companies and industries, but it is voluntary for schemed as well as independent smallholders, and plantation companies supplying CPO for renewable energy	It is mandatory for all business actors, but smallholders are given time-bound plan to have all are certified against ISPO standards. Cut-off date for smallholders is 5 years from the issuance of the agriculture Ministry's regulations (16 November 2025)
Certification monitoring	ISPO Commission and evaluation team have strong oversight and monitoring roles on certification	Being formally part of the ISPO Committee, independent monitor agent from NGOs plays a more critical role in overseeing certification and submitting complaints.
Standardization and compliance assessment	Not formally recognized by the national accreditation committee.	Formally recognized by the national accreditation committee.
Supply chain or chain of custody	Three models of supply chains, including segregation (100% ISPO certified requirements), mass balance (at least 70% ISPO certified CPO) and book and claim, are mentioned. However, it is not specified when they are applicable.	Two models of supply chain are specified, namely segregation (100% ISPO certified requirements) and mass balance (at least 30% of FFB are ISPO certified, gradually increase in percentage every year). The assessment of supply chain certification is only applicable from 16 November 2025. Traceability system, detailed transactions and sales (e.g. volume, sellers, destination, certification data) need be in place.
Principles, criteria and indicators	Need to identify and protect protected areas within plantation concessions	Need to identify, protect and conserve high conservation value areas within plantation concessions
Sanction application	Sanctions for failure will be imposed to companies having had not started any step towards ISPO certification. They will be lifted if they are already in any process towards ISPO certification.	Sanctions for failure will be imposed to those failing to demonstrate that they have ISPO certificate.

Element	ISPO 2015	ISPO 2020
Transparency	Did not exist	Enhanced transparency systems that require business to have system that trace and present in transparent ways: FFB sources, suppliers, prices, non-confidential data and information are accessible to public, grievance mechanism and how complaints are addressed. Business codes of ethic are in place (e.g., no corruption, briberies)
Smallholder certification criteria and indicators	Principles for smallholders are split into two modules for schemed and independent smallholders. They both cover similar principles and criteria for legality, organization and plantation management, environment management and monitoring, and continuous sustainable business. One difference lies on requirements for demonstrating land ownership (lighter requirements for independent smallholders, as often they acquire lands from their ancestral, customary documentation can be accepted)	Now have the same principles and criteria for both types of smallholders, but with more detailed indicators and verifiers. Addition of criteria concerning transparency in FFB sales, price, and partnership agreements, which need to be signed not only by smallholders and millers but also local authorities. Customary documentation for land ownership is still accepted.
Free Prior, Informed Consent (FPIC)	Prior to the transfer of land (particularly those originating from communal lands), consensus with customary communities shall be established through musyawarah, and compensation is paid.	Consensus shall be established with customary communities through musyawarah and free, prior inform consent (FPIC) shall be obtained, and compensation for the land shall be paid.
Work safety and health	Includes criteria on assessing how work safety and health procedure is implemented, worker welfare (e.g., minimum wage, insurance, facilities) and capacity (e.g., training) is developed, and worker unions are established and facilitated. Anti-discrimination (ethnic, race, gender, and religion) and no child labour policies are to be enforced according to national regulations. No detailed verifiers, verification methods and assessment norms are provided.	Inclusion of detailed and distinct indicators and verifiers assessing workplace safety and health in practice (e.g., prohibiting discrimination, force labour, slavery, worker rights, child labour), worker welfare (minimum wage, social insurance), and establishment of worker union and Workplace Safety and Health Advisory Committee (Panitia Pembina Keselamatan dan Kesehatan Kerja)
Financial assistance	Did not exist	Smallholders can apply for financial assistance sourcing from national (APBN) and regional (APBD) budgets, and other valid sources to cover training, facilitation, and initial certification costs.
Source: Agriculture Ministry Regulations, Permentan 11/2015 and Permentan 38/2020		

Appendix 4: Additional information on the sustainability approaches and supporting tools

Name (Website)	Initiators	Funding source	Spatial coverage	Target users
High Carbon Stock Approach (HCS Approach; http://highcarbonstock.org/)	Golden Agri-Resources (GAR), TFT and Greenpeace, Wilmar	Golden Agri-Resources (GAR), TFT and Greenpeace	Global	Plantation companies and manufacturers committed to unlinking deforestation and land development in their operations and supply chains. Voluntary certification schemes (e.g., RSPO) require that growers conduct HCS and HCV assessments
High Conservation Value (HCV) Approach (https://hcvnetwork.org/)	Forest Stewardship Council (FSC)	Forest Stewardship Council (FSC) for initial approach; multiple sources for the HCV Resource Network and toolkits	Global	Oil palm growers
Accountability Framework Initiative (AFi; https://accountability-framework.org)	Rainforest Alliance	Gordon and Betty Moore Foundation, Norway's International Climate and Forest Initiative (NICFI), the UK Department for International Development (DFID), the German Federal Ministry for Economic Cooperation and Development, and the Swiss State Secretariat for Economic Affairs (SECO)	Global	Supply chain companies, including producers, processors, traders, manufacturers, retailers, service providers, financial institutions
Carbon Disclosure Project (CDP) State & Regions (https://www.cdp.net/en/cities/states-and-regions; Haryono.Sirait@cdp.net)	CDP	Multiple sources	Global	Governments and stakeholders of regions and states
Sustainable Landscapes Rating Tool (SLRT; https://www.climate-standards.org/sustainable-landscapes-rating-tool/)	CCBA, (incl. Conservation International, Rainforest Alliance and Wildlife Conservation Society) and partners	Multiple sources	Global	Governments, producers, and other landscape, and external investors

Name (Website)	Initiators	Funding source	Spatial coverage	Target users
	(incl.EcoAgriculture Partners and Global Canopy Programme)			
Green Jurisdictions Database (https://greenjurisdictions.org)	Earth Innovation Institute (EII)	Not indicated	Global	Not defined
National Guidelines and Regional Plan for Regional Plans for Sustainable Plantation Planning Based on Jurisdiction Approach (https://perkebunanberkelanjutan.org/)	Bappenas supported by GIZ, IPB, LTKL	National/State budget (APBN), Regional Budget (APBD) and other valid sources	Indonesia	District or provincial government
LandScale (https://www.landscale.org/)	Rainforest Alliance, Verra, CI, CCBA	International Climate Initiative (IKI) of the German Federal Ministry of the Environment, Nature Conservation and Nuclear Safety (BMU), and the BHP Foundation's Environmental Resilience Global Signature Program	Global	Single organization, a group interested in developing a collaborative landscape program, or an existing multi-stakeholder landscape partnership
Landscape Assessment Framework (LAF; https://www.conservation.org/projects/landscape-assessment-framework)	Conservation International (CI)	CI, USAID, Walton Family Foundation	Global	Development and conservation organizations, Commodity sourcing and producing companies, Investors and financial institutions, and Governments
Regional Competitiveness Framework (KDSD; http://kabupatenlestari.org/kdsd/)	LTKL (Sustainable Districts Association)	Local Government Budget, Other funding sources	Indonesia	District governments and stakeholders
SourceUp - Verified Sourcing Areas (VSA; https://www.idhsustainabletr	IDH	Dutch Ministry of Foreign Affairs, the Swiss State Secretariat for Economic Affairs (SECO), the Danish Ministry of Foreign Affairs	Global	Any buyer, trader or interested party for the region/commodity

Name (Website)	Initiators	Funding source	Spatial coverage	Target users
ade.com/approach/sourceup/; https://sourceup.org)		(DANIDA) and the Norwegian Ministry of Climate and Environment (NICFI)		
Sustainability Policy Transparency Toolkit (SPOTT; https://www.spott.org/about/)	Zoological Society of London	Credit Suisse, David and Lucile Packard Foundation, Generation Foundation, The Government of Norway, The UK Government	Global	Producer, processor, traders
Terpercaya (https://inobu.org/terpercaya; Part of Transparency Pathway - https://transparencypathway.org)	INOBU/EFI	EU	Indonesia	Platform users include government, NGOs or businesses

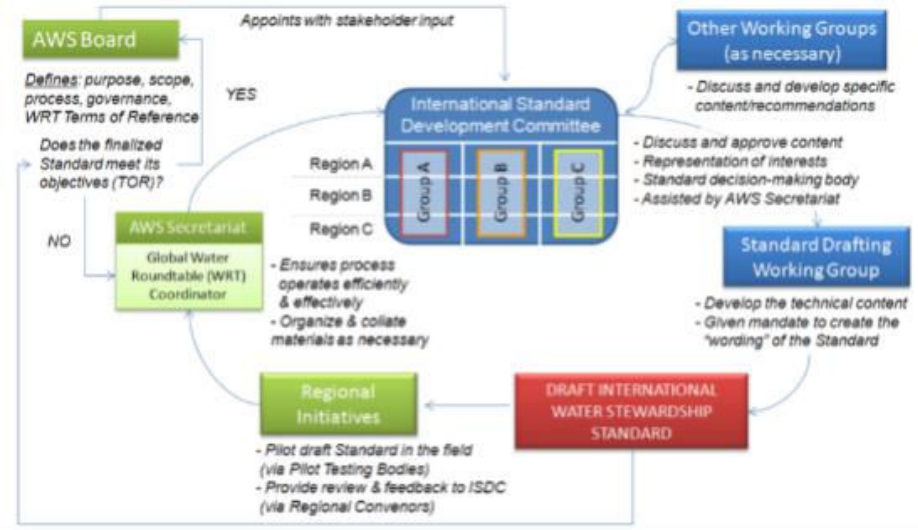
Appendix 5: Additional information on supplementary data tools

Name (Website)	Initiators	Funding Source	Objectives
TRASE (https://www.trase.earth)	Stockholm Environment Institute and Global Canopy	The Gordon and Betty Moore Foundation, Global Environment Facility through Good Growth Partnership via WWF US, European Commission, The Nature Conservancy, and others	Better understand progress and address the environmental impacts linked to supply chains that enables commodity buyers (traders, manufacturers, and retailers), governments, and financial institutions for risk management and civil society organizations, multi-stakeholder processes, journalists and campaigners for strengthened accountability and monitoring of progress
Nusantara Atlas (https://nusantara-atlas.org/)	CIFOR, PT Wawasan	USAID, UKCCU, Rainforest	Platform for monitoring deforestation trends and peatlands degradation and in tracking corporate actions of palm oil, pulp-and-paper, mining and timber industries, the main drivers of deforestation and forest degradation in the region
Maphubs (https://www.maphubs.com)	Leo Bottrill, Founder, Kristofor Carle, Co-Founder	Private enterprise	Provide software and services to organizations monitoring natural resources
Starling (https://oneatlas.airbus.com/service/starling)	Airbus Defence and Space, The Forest Trust (TFT), SarVision and Earthworm Foundation	Not indicated	Digital service that provides accurate land cover maps and forest cover change data, Remote sensing solution that uses a combination of optical and radar satellites images, such as Airbus' SPOT constellation, which combines large coverage capabilities with 1.5m resolution
Satelligence (https://satelligence.com/)	Niels Wielaard	4impact	Remote sensing company with mission to provide realistic information about what's happening on our planet, from space. We zoom out to zoom in. Our teams
Global Forest Watch (https://www.globalforestwatch.org/)	World Resources Institute (WRI)	Cargill, GEF, Generation Foundation, IDB, IDB-Invest, MacArthur Foundation, UKAid, USAid, Norwegian Ministry of Climate and Environment	Online platform that provides data and tools for monitoring forests
Transform Platform (https://transform-platform.org/)	Earthqualizer Foundation, PT. Inovasi Digital untuk Transformasi, My Transform Sdn. Bhd and Aidenvironment Asia	Not indicated	Commodity trade data platform designed to enable Business-to-Business verification of No Deforestation claims

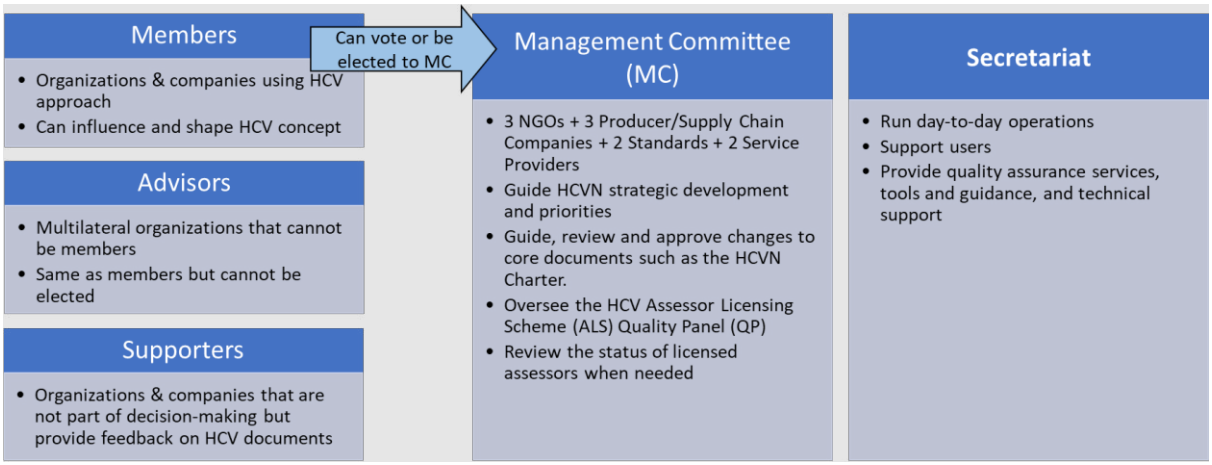
Name (Website)	Initiators	Funding Source	Objectives
DIBIZ (https://dibizglobal.com/about/)	Individual (Mr. Unnithan)	Private enterprise	A cloud-based platform providing a DigitalPipe connecting all stakeholders in a Supply Chain and accelerating the Digital Transformation of their Supply Chain activities. DigitalPipe creates a collaborative approach to supply chain transactions providing end to end visibility, traceability and trust using Distributed Ledger technology.

Appendix 6: Governance structures of the six certification systems and HCV and HCS approaches.

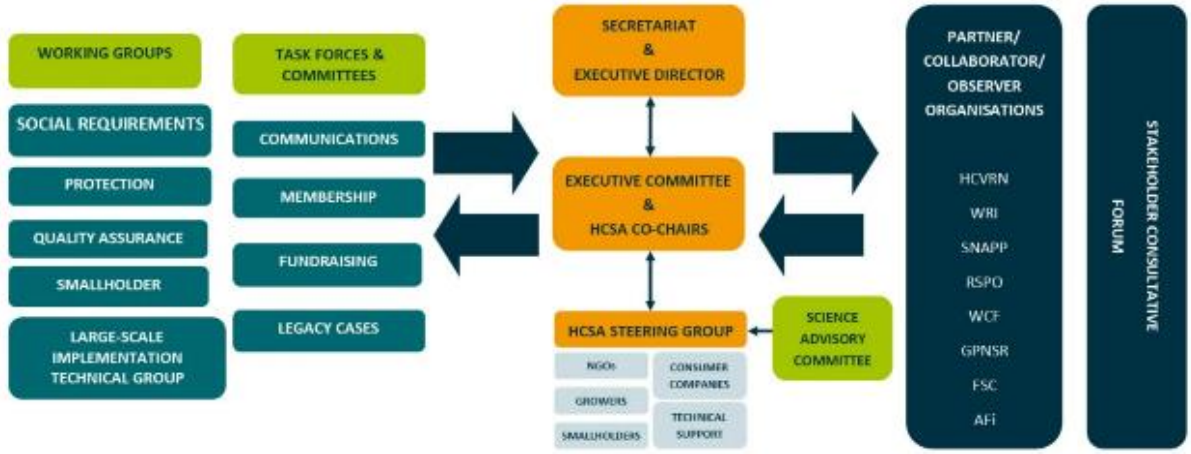
AWS Standard (https://a4ws.org/wp-content/uploads/2017/03/AWS-Standard-Setting-System-Report-April-2016-FINAL.pdf)



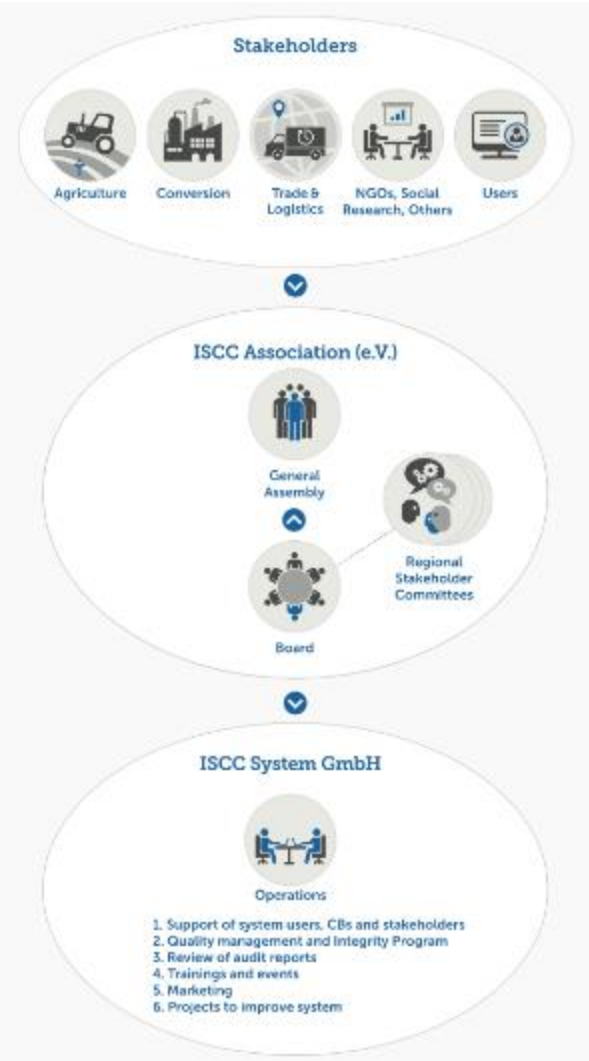
HCV Approach (author generated based on the 2019 HCV Network Management Committee Terms of Reference and Membership leaflet)

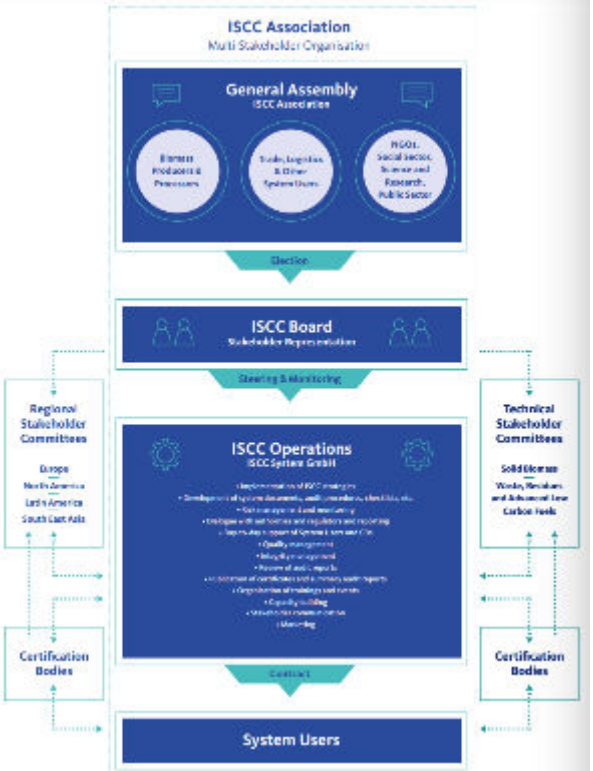


HCS Approach (https://highcarbonstock.org/governance/)

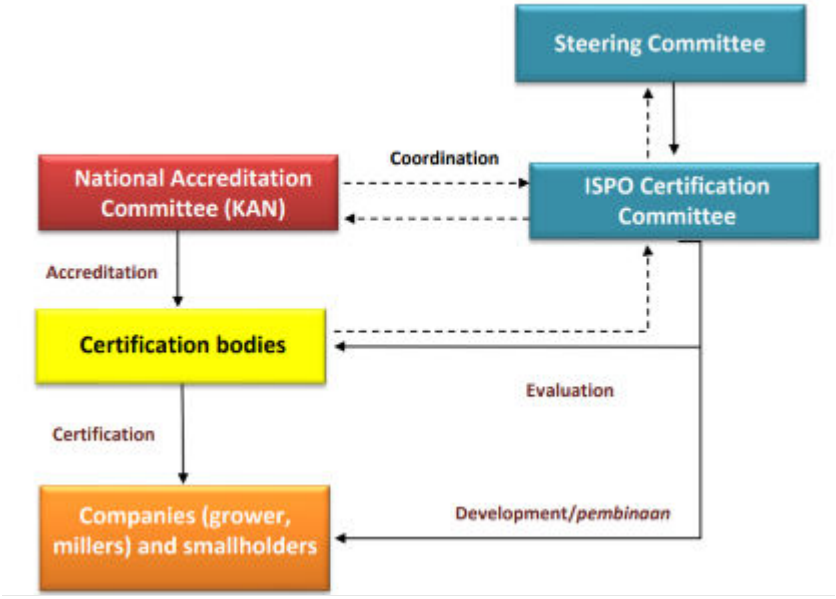


ISCC (https://www.iscc-system.org/stakeholders/multi-stakeholder-initiative/) (https://www.iscc-system.org/wp-content/uploads/2019/10/ISCC-Impact-Report-2018.pdf)

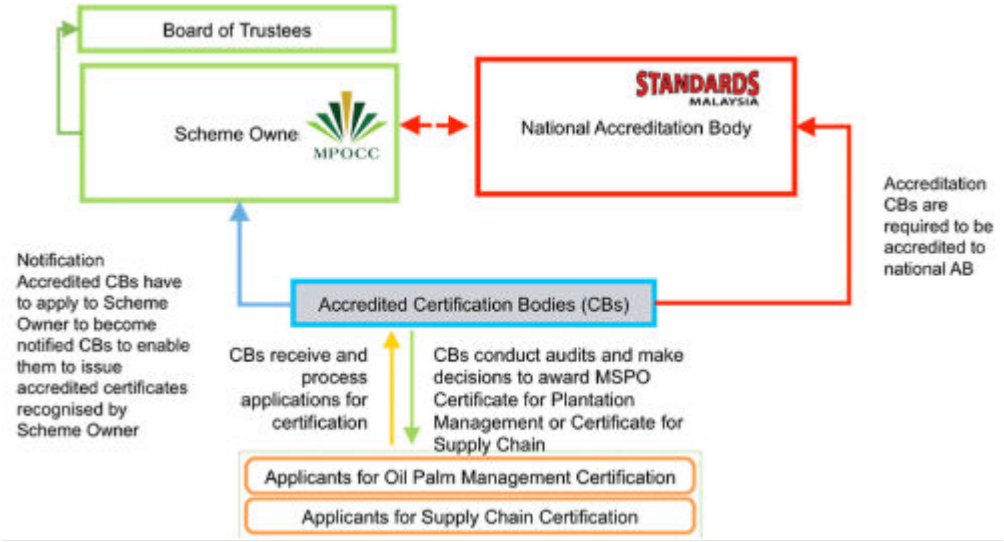




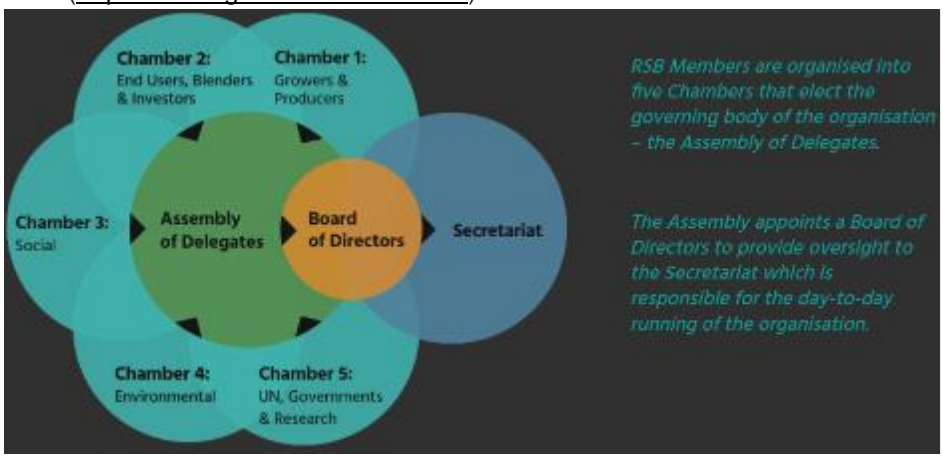
ISPO (Ministry of Agriculture 2020)



MSPO (Kumaran 2019)



RSB (https://rsb.org/about/who-we-are/)



RSPO (https://rspo.org/about/our-organisation)