Ensuring effective jurisdictional approaches based on value chain traceability to foster a sustainable palm oil industry in Indonesia

Case studies from Pelalawan in Riau and Kutai Kartanegara in East Kalimantan

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Cover photo by Ricky Martin/CIFOR
Landscape oil palm plantation in Muara Kaman Ilir village, Kutai Kartanegara, East Kalimantan.

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Abbreviations

AMDAL	*Analisis Mengenai Dampak Lingkungan* (Environmental Impact Analysis)
ASI	Assurance Services International
BPS	*Badan Pusat Statistik* (Statistics Indonesia)
CIFOR	Center for International Forestry Research
CPO	Crude Palm Oil
DBH	*Dana Bagi Hasil* (Revenue Sharing Fund)
DO	Delivery Order
EFI	European Forest Institute
EUDR	European Union Regulation on Deforestation-Free Products
EUR	Euro
FFB	Fresh Fruit Bunches
FPIC	Free, Prior, and Informed Consent
GPS	Global Positioning System
HCV	High Conservation Value
IDR	Indonesian Rupiah
IPOA	Indonesian Palm Oil Association (*Gabungan Pengusaha Kelapa Sawit Indonesia-GAPKI*)
ISCC	International Sustainability and Carbon Certification
ISCC-MB	ISCC-Mass Balance
ISPO	Indonesian Sustainable Palm Oil
JA	Jurisdictional Approach
JP	Jurisdictional Program
KAN	*Komite Akreditasi Nasional* (National Accreditation Body)
Kehati	*Yayasan Keanekaragaman Hayati* (Biodiversity Foundation)
MoU	Memorandum of Understanding
PKO	Palm Kernel Oil
RAD KSB	*Rencana Aksi Daerah Kelapa Sawit Berkelanjutan* (Regional Action Plan for Sustainable Palm Oil)
RSPO	Roundtable on Sustainable Palm Oil
RSPO-IP	RSPO-Identity Preserved
RSPO-SG	RSPO-Segregated
RSPO-MB	RSPO-Mass Balance
SEI-PCS	Spatially Explicit Information on Production to Consumption Systems
SIPERIBUN	*Sistem Informasi Perizinan Perkebunan* (Estate Crop Plantation Licensing Information System)
SPKS	*Serikat Petani Kelapa Sawit* (Oil Palm Farmers Union)
SPPL	*Surat Pernyataan Kesanggupan Pengelolaan dan Pemantauan Lingkungan* (Statement of Environmental Management and Monitoring Capability)
STDB	*Surat Tanda Daftar Budidaya* (Cultivation Registration Certificate)
TRASE	Transparency for Sustainable Economies
UNDP	United Nations Development Programme
USD	United States Dollar
WWF	World Wildlife Fund

Acknowledgments

This study is part of research with the theme 'Scaling Jurisdictional Approaches in the Indonesian Palm Oil Sector.' The research aims to increase the preparedness of four palm oil-producing regions to implement Jurisdictional Programs (JPs) through participatory, multistakeholder and gender-inclusive approaches, and to synthesize lessons learned from studies in these districts to strengthen Jurisdictional Approaches (JAs) at the national level. Any views expressed in this publication are those of the authors. They do not necessarily represent the views of the authors' institutions, or the research donor. We would like to express our thanks to all those involved in our research, as well as the reviewers Dr Hendrik Segah, Dr Suyanto and Dr Ahmad Dermawan, for their valuable feedback, which contributed to the improvement of this paper.

Executive summary

Indonesia is one of the world's largest producers of palm oil. The country's palm oil industry, whose growth has been driven mainly by international demand, is currently facing uncertain prospects in the global market. An important strategy being fostered in Indonesia is the integrated Jurisdictional Approach (JA) framework to underpin a responsible and sustainable palm oil industry. An understanding of the palm oil industry's value chain at the district and national levels is key to an effective and integrated JA based on the traceability of the palm oil industry's value chain, considering the involvement of actors in the production, processing and distribution of all related products. However, limited traceability data along the palm oil industry's value chain – from plantations to mills, refineries, and at the exporter level – is a major challenge.

This study analyzes the palm oil industry's value chain based on secondary baseline data, covering its structure and dynamics as well as the key business actors and government agencies involved in the value chain. Its aim was to formulate recommendations for policymakers, industry stakeholders and other parties to effectively apply JAs based on the traceability of the palm oil industry's value chain in order to foster a sustainable palm oil industry in Indonesia. Continuous and transparent monitoring is vital to ensuring effective policy implementation and should be supported by law enforcement and the involvement of stakeholders at district and national levels.

Key messages from the study:

1. Government plays an important role in leading the JA based on responsible practices at the district level both within and across administrative boundaries, covering smallholder farmers and large-scale oil palm plantations by involving various stakeholders collaboratively.
2. An effective and integrated JA based on traceability mechanisms supporting sustainable palm oil – particularly in preventing leakage – should be underpinned by a Memorandum of Understanding (MoU) between multiple jurisdictions beyond one district's administrative boundaries, involving business actors committed to implementing the regional action plan for sustainable palm oil.
3. The integrated JA based on the traceability of the palm oil industry's value chain is crucial for applying effective fiscal transfers between central and local governments through the mechanism of a revenue sharing fund *(Dana Bagi Hasil-DBH)*. However, this should be supported by adequate traceability processes based on integrated baseline data along the value chain.
4. Easily accessible and transparent company traceability reports and certification documents are essential to ensure an effective traceability and monitoring system of corporate governance along the value chain. Therefore, a district level reporting system could be developed and updated regularly for developing integrated baseline data on certified companies and exporters along the value chain.
5. Certification is an important mechanism in fostering a sustainable palm oil industry in Indonesia. But this is constrained by the high costs of wider implementation. Financing schemes to support the implementation of certification programs for independent smallholders could be developed in partnership with Crude Palm Oil (CPO) exporter companies and/or based on subsidized schemes from oil palm-producing provincial and district governments.
6. Harmonizing the various due diligence instruments developed for the palm oil industry at the national and global levels, including the European Union Regulation on Deforestation-Free Products (EUDR), should be coordinated by the relevant ministry, with the aim of developing a common platform among certification institutions and representatives of the destination countries for Indonesia's exports. Adopted policies should be based on a clear understanding of the effectiveness of due diligence instruments in ensuring the competitiveness of Indonesian palm oil at the global level.

1 Introduction: Challenges to the certainty and prospects of Indonesia's palm oil industry

Palm oil is the most consumed vegetable oil in Indonesia and across the globe. It is used in the food, cosmetics and health industries, and is a potential alternative fuel for bioenergy and transportation (Pande et al. 2012; Azizah 2015; IUCN 2018; Kaniapan et al. 2021). In 2021, Indonesia's oil palm plantation area reached 14.6 million hectares (ha), with the actual production of 45.1 million tons of Crude Palm Oil (CPO) and 9.1 million tons of Palm Kernel Oil (PKO) (BPS 2023). In 2022, this production increased to 46.8 million tons for CPO and 9.4 million tons for PKO, with an oil palm plantation area of 15.3 million ha (BPS 2023).

Growth in Indonesia's palm oil industry has been driven mainly by international demand (Khatiwada et al. 2021; Pareira 2023). Indonesia exports more than 58% of its production from this industry and accounts for 59% of total global exports of palm oil (Gardner and Rylander 2022). In 2021, palm oil export volumes reached 27 million tons with a total value of USD 28.8 billion (Directorate General of Estate Crops 2023a), an increase of around 0.6% on the export value in 2020 (IPOA 2022). The largest export volumes of Indonesian palm oil went to China, India and Pakistan (Directorate General of Estate Crops 2023a). China receives 17% of all palm oil exports from Indonesia, with a value of about USD 5.1 billion; India has market share amounting to 11%, with a value of approximately USD 3.4 billion; while Pakistan accounts for 9% of all Indonesian palm oil exports, with a value of around USD 2.8 billion.

Apparently, Indonesia is one of the world's largest producers of palm oil and is a significant contributor to the international palm oil industry (Nabila et al. 2023). However, the rapid expansion of oil palm plantations and the resulting palm oil production have given rise to concerns over deforestation, biodiversity loss and social conflicts resulting from competing land uses (Marti 2008; Vijay et al. 2016; Meijaard et al. 2018; van Houten and de Koning 2018; Suryadi et al. 2020). Major problems in the palm oil industry include limited mapping and a lack of integrated data, which lead to issues in ensuring transparency and sustainability (Ratnaningsih et al. 2020; UNDP 2020). Conversely, the dilemma between production and environmental sustainability in the palm oil industry requires better and more open data (Nurmalita and Bowo 2019; Pareira 2023). Limited traceability data along value chains in the palm oil industry – from plantations to mills, refineries, and at the exporters level – create huge challenges that need to be resolved by adopting a systematic approach supported by the collection of integrated baseline data and through intersectoral collaboration. The value chain is a series of business activities aimed at adding value to the product, focusing on enhancing value through product innovation, marketing and overall services, including post-purchase support, with an emphasis on creating competitive products (Pal and Sharma 2018; Global Sources 2024; Wijaya 2024). On the other hand, the supply chain in the palm oil industry involves production at the plantation level, marketing, milling, processing, and delivery of the final product to customers, with a primary focus on cost efficiency and effectiveness according to production schedules at a low cost (RSPO 2017; Global Sources 2024; Wijaya 2024).

With reference to the integrated Jurisdictional Approach (JA) framework in ensuring a responsible and sustainable palm oil industry in Indonesia, a sound understanding of the value chain is key to the implementation of an effective traceability mechanism and to any

Rapid growth in Indonesia's palm oil industry has raised global concerns over deforestation, biodiversity loss, and social conflicts, resulting from competing land uses. Photo by Ricky Martin/CIFOR

assessment of the involvement of actors in the production, processing and distribution of all products. An effective value chain is influenced by the management of supply chains with low transaction costs, particularly in ensuring efficient product transportation aiming to reduce carbon emissions and regional spatial planning is the basis for decision making on the location of plantations. Understanding value chain and supply chain structures and dynamics is crucial for industry stakeholders, policymakers and regulators as well as other key parties who care about efforts to encourage sustainability and overcome challenges in the palm oil industry in Indonesia.

The JA in the context of the palm oil industry in Indonesia focuses on development and enforcement of sustainable palm oil production practices at the provincial or district level, rather than solely on the management of plantations or companies (EFI 2023). This strategy aims to address various challenges associated with palm oil production – such as deforestation, biodiversity loss, social conflict and climate change – with the goal of sustainability by measuring district performance and facilitating communication between policymakers and business actors (Rafani et al. 2023).

This study analyzes the palm oil industry value chain, including its structure and dynamics as well as key business actors and government agencies involved in the value chain, such as the Department of Food Crops, Horticulture, and Plantation; the Department of Trade, Industry, Cooperatives, Small and Medium Enterprise; and others. The aim is to formulate recommendations for effective JA based on the traceability of the palm oil industry's value chain and to foster a sustainable palm oil industry in Indonesia. This study is part of overarching research with the theme 'Scaling Jurisdictional Approaches in the Indonesian Palm Oil Sector' focusing on four districts in Sumatra and Kalimantan.[1] Based on the availability and comprehensiveness of secondary baseline data – particularly companies' certification documents and traceability reports – this paper focuses on research in two districts: Pelalawan and Kutai Kartanegara. Through the analysis at the district level, valuable insights can be gained for the development of strategies to ensure the responsible and sustainable growth of the palm oil industry in Indonesia through a JA based on a responsible value chain.

1 Detailed results are included in the CIFOR report on 'Scaling Jurisdictional Approaches in the Indonesian Palm Oil Sector' (Purnomo et al. 2023, unpublished).

2 Sustainable palm oil policy in Indonesia: The vital role of certification and traceability for enforcing sustainability standards in the palm oil industry

Indonesia and several other palm oil-producing countries in Southeast Asia are implementing strategies to boost the palm oil industry's sustainability in the face of global pressures over deforestation, biodiversity loss and social issues associated with competing land uses (Saragih et al. 2019; Murphy et al. 2021; Wardhani and Rahadian 2021; Dermawan et al. 2022; Samosir 2023). Indonesian national policy on sustainable palm oil shows the government's commitment to balancing economic growth with environmental and social responsibility.

The market-driven certification scheme is the most important verification tool for assessing and monitoring traceability along the supply and value chains. It is also an important instrument in the district level JA, fostering positive change and supporting a sustainable palm oil industry in Indonesia (Brandi et al. 2013; Boyd et al. 2018; van Houten and de Koning 2018; Aurora and Seymour 2019; Buchanan et al. 2019; Saragih 2019; Seymour et al. 2020; RSPO 2021; Peteru et al. 2022; Abidin 2023; Palmer et al. 2023). Three certification schemes being implemented in Indonesia are Indonesian Sustainable Palm Oil (ISPO), Roundtable on Sustainable Palm Oil (RSPO) and International Sustainability and Carbon Certification (ISCC) (Kamim and Abrar 2020; Isharyadi et al. 2021).

Both ISPO and RSPO focus on traceability based on supply chain analysis. However, they cover quite different areas (Forest Peoples Programme 2017). ISPO is a mandatory mechanism according to the national regulations in Indonesia and focuses on traceability from the farm or plantation to the Crude Palm Oil (CPO) mill. RSPO is a voluntary certification scheme driven by market mechanisms and has been recognized globally for ensuring sustainability practices (Majid et al. 2021; Rahutomo et al. 2023). RSPO tracks products from the CPO mill to the refinery or processing points – with three options (identity preserved, segregated, or mass balance) – and could be extended manually from the plantation level down to retail products (RSPO 2015; Efeca 2016; Pareira 2023).

The ISCC is an independent multistakeholder initiative. Its certification covers not only oil palm plantation management and its processing industry, but also a range of different management areas, including mining, agricultural biomass, non-biological renewable materials and recycled carbon-based materials (ISCC 2024a). ISCC plays a role in ensuring economic, environmental and social sustainability in the sector through fully traceable, deforestation-free and climate-friendly supply chains (Majid et al. 2021; Rahutomo et al. 2023). Box 1 provides more details on the three schemes.

2.1 Applied certification mechanism

ISPO is mandatory according to Presidential Regulation Number 44 of 2020 on the Certification System for Sustainable Palm Oil Plantation in Indonesia, and specifically the Minister of Agriculture Regulation Number 38 of 2020 on Indonesian Sustainable Palm Oil Plantation Certification (Madani 2020; EFI 2024). These regulations have been implemented by the Indonesian Government to improve the acceptance and competitiveness of palm oil products in the global market while contributing to emissions reductions (Madani 2020; EFI 2024).

Box 1. Palm oil management and industry certification schemes currently applied in Indonesia

1. The Indonesian Sustainable Palm Oil (ISPO) certification system

Indonesia has established its own national sustainable palm oil standard in the form of the ISPO certification system. The system aims to ensure that oil palm growers comply with sustainability practices, including environmental protection, social well-being, and efficient management. To secure ISPO certification, oil palm companies must demonstrate compliance with specific criteria relating to land use, workers' rights, waste management and conservation efforts. ISPO certification is compulsory for all palm oil producers in Indonesia (Bagaskara 2023).[a]

2. The Roundtable on Sustainable Palm Oil (RSPO) certification system

Indonesian palm oil certificates issued by RSPO constitute formal acknowledgements of sustainable palm oil production practices in Indonesia. As a multistakeholder organization, RSPO promotes the growth and use of sustainable palm oil through a series of standards and voluntary certification. These standards cover various environmental and social aspects, including deforestation, land rights, greenhouse gas emissions and labor practices. By complying with RSPO certification requirements, palm oil companies in Indonesia show their commitment to sustainable practices and responsible production. Supply chain models approved by RSPO (RSPO 2020) comprise:[b]

a. RSPO - Identity Preserved (RSPO-IP)
   The IP supply chain model guarantees that RSPO-certified palm oil and derivative products delivered to end users can be clearly identified by mill and supply source. Palm oil products in this supply chain model must be physically isolated during transportation and storage from all other palm oil sourced from all supply chains (including other sources of RSPO-certified sustainable palm oil).
b. RSPO - Segregated (RSPO-SG)
   The SG supply chain model guarantees that RSPO-certified palm oil delivered to end users originates only from IP-certified mills. This model allows mixing with RSPO-certified palm oil from various sources. RSPO-certified palm oil is segregated from non-RSPO-certified palm oil for all supply chains. Palm oil and derivative products delivered to end users can be traced to RSPO-certified mills.
c. RSPO - Mass Balance (RSPO-MB)
   The MB supply chain model monitors the administration of RSPO-certified palm oil trading in all supply chains. This model allows all stakeholders in supply chains to demonstrate their commitment to palm oil production and actively promote the trading of RSPO-certified palm oil products. The mixing of RSPO-certified and non-RSPO palm oil can occur in controlled locations with overall quantities recorded. Every party involved in a palm oil supply chain must have a combination of RSPO certification models. An exception is made for independent mills, which are only required to have IP and/or MB supply chain certification.

3. International Sustainability and Carbon Certification (ISCC)

ISCC applies rules and regulations for certification that aim to reduce greenhouse gas emissions, use land sustainably, and protect natural habitats. ISCC-certified biomass cannot be produced on high carbon stock, areas of high biodiversity and conservation value, or on peatlands. ISCC certification types consist of ISCC EU, ISCC PLUS, ISCC CORSIA, ISCC Credit Transfer System, ISCC Japan FIT, ISCC Carbon Footprint Certification, and ISCC Voluntary Add-Ons (ISCC 2023).[c]

a ISPO: https://mutucertification.com/apa-itu-ispo-serta-manfaat-dan-tujuan/
b RSPO: https://rspo.org/wp-content/uploads/RSPO_Supply_Chain_Certification_Standard_2020-English.pdf
c ISCC: https://www.iscc-system.org/

ISPO is implemented by certification bodies that are authorized by the *Komite Akreditasi Nasional-KAN* (national accreditation body of Indonesia) and registered with the Directorate General of Estate Crops in the Ministry of Agriculture. The ISPO assessor team members are appointed by designated certification bodies. In addition, a certification body has the authority to issue and revoke ISPO certifications. There are 26 certification bodies under ISPO. As included in the regulations, companies and smallholders must fulfil certain conditions for processing the ISPO certification. Companies need to conduct an environmental

impact analysis (*Analisis Mengenai Dampak Lingkungan-AMDA*L) and promote structural improvement of the industry through public service.

In supporting the effective implementation of ISPO and other certification schemes, the Directorate General of Estate Crops, Ministry of Agriculture, has developed a licensing and reporting system for palm oil companies through the estate crop plantation licensing information system (*Sistem Informasi Perizinan Perkebunan-SIPERIBUN*) and the cultivation registration certificate (*Surat Tanda Daftar Budidaya-STDB*) for independent smallholders. The development of this system aims to enhance the effectiveness and efficiency of plantation planning and monitoring. Through SIPERIBUN and STDB, governance-based data and information on business licensing for estate crops could be strengthened, while improving the supervision and monitoring of business licenses for estate crops and enhancing coordination between national ministries/ agencies and local governments in the estate crop sector (Directorate General of Estate Crops 2017; Rayasti et al. 2024).

STDB implementation aims to provide baseline data that meets the demands of the European Union Regulation on Deforestation-Free Products (EUDR), including oil palm, coffee, cocoa and rubber. Specifically, STDB could provide relevant information that meets the EUDR's due diligence and traceability requirements, including the geolocation, planting area and year, as well as proof of legality (EFI 2024). Guidelines for issuing STDB are outlined in the Decree of the Directorate General of Estate Crops Number 105/KPTS/PI.400/2018.

Under ISPO, for independent smallholders, an STDB and statement of environmental management and monitoring capability (*Surat Pernyataan Kesanggupan Pengelolaan dan Pemantauan Lingkungan-SPPL*) are required (Pareira 2023). By 2023, ISPO-certified palm oil plantations accounted for 5.3 million ha, and the area of RSPO-certified palm oil plantations in Indonesia reached 2.1 million ha (Directorate General of Estate Crops 2023b; RSPO 2024). Under the RSPO certification system, audits are conducted by third-party certification bodies accredited by Assurance Services International (ASI). These bodies are first audited by the accreditation body and must sign a certification agreement with RSPO (RSPO 2020). There are 24 certification bodies under RSPO.

As of 2024, a total of 5,274 ISCC certifications have been issued to companies in Indonesia, with 708 palm oil certifications still valid. In Riau, there are 116 valid ISCC certifications related to palm oil (17 certifications in Pelalawan), while in East Kalimantan, there are 27 valid certifications (10 certifications in Kutai Kartanegara) (ISCC 2024b). There were 10 certification bodies in Indonesia, and an additional 11 certification bodies that are based around the world and conduct certification processes in Indonesia (ISCC 2024c).

In 2023, oil palm plantations independently managed by smallholders accounted for almost half of total Indonesian production of CPO, occupying 6.3 million ha (37% of total oil palm plantations in Indonesia) and producing CPO at 16.3 million tons (35% of total CPO production in Indonesia) (Directorate General of Estate Crops 2024). However, the latest figures show that only 0.2% of total smallholder plantations were certified under ISPO and RSPO in the same year (Supriatna et al. 2024).

For certification processes to be effective and widely implemented at the level of plantations managed by smallholders, it is important to address the difficulties associated with generalizing about the typology variations along the supply chain, as well as the trading practices in different producing regions. Technically, the typology variations are reflected in a range of different document formats, such as Fresh Fruit Bunches (FFB) payment, Delivery Orders (DO), weighing slips, recapitulation of FFB deliveries, and invoices (Kehati 2019). As long-term challenges persist, smallholder plantations still have difficulties administering the legal documents of their plantations as part of the requirements to be certified, and this condition could lead to land conflicts (Kehati 2019). Facilitated by the coordinating ministry, collaboration among the three certification schemes is needed, particularly in harmonizing the various required documents and processes for implementing traceability. Further, certification

at the plantation level should be supported by integrated baseline data as well as a simple and accurate registration system for the management of existing oil palm plantations at the district level. Therefore, it is crucial to effectively implement STDB at the district level, while keeping the SIPERIBUN updated and monitored.

2.2 Certification and traceability mechanisms as part of the jurisdictional approach

Certification schemes are important instruments in ensuring a credible traceability assessment and to foster a sustainable palm oil industry in Indonesia. However, the value chains for current practices are complex, and associated certification schemes have been tailored to align with these complexities, for example in dealing with the certificate of origin of the FFB.

From the local governments' perspectives, a traceability system based on an integrated JA needs to be developed to ensure that the distribution mechanism of the revenue sharing fund (*Dana Bagi Hasil-DBH*) from palm oil production aligns with the management performance in promoting the sustainability of oil palm plantations. According to the Minister of Finance Regulation Number 91 of 2023 on the Management of DBH fiscal transfers from oil palm plantations, 20% of the total DBH is allocated to the government of the province where the oil palm plantations are located, 60% to the producing districts, and 20% is allocated to other districts directly related to product processing (InfoSAWIT 2023b). This regulation also includes data on provinces receiving income from oil palm plantation management through the DBH mechanism, such as Riau with IDR 83 billion, North Sumatra with IDR 75 billion, and West Kalimantan with IDR 66 billion (Gunawan 2023). The performance-based incentive mechanism for fiscal transfers aims to reduce fiscal imbalances and mitigate the negative external impacts of economic activities in oil palm plantations. The specific allocation of palm oil DBH in each province or district is determined on the basis of the plantation area, land productivity and/or other indicators applied by the minister.

Effective JA implementation could address the leakage issues along the value and supply chains by ensuring the traceability of supply from various palm oil plantations to the mills.[2] According to the regulation, the trading mechanism for FFB should be based on a partnership agreement between the farmer cooperatives and the palm oil processing factory.[3] The partnership agreement ensures that the standard buying price and the FFB quality meet the standards required by the mills. However, there are unsustainable practices on the ground that are counterproductive to the effective traceability mechanism supporting the sustainable palm oil supply chain. Specifically, leakage is related to activities involving unlicensed (illegal) traders buying farmers' FFB at the plantation sites and then selling these bunches to unlicensed mills that require no traceability documentation nor proven compliance with sustainability requirements (Kaynar et al. 2021). Further, practices involving unlicensed traders selling FFB to unlicensed mills indicate that the mills do not have their own plantations (SPKS 2020) – these practices are considered illegal according to the regulation.[4] These growing practices on the ground have hindered the implementation of traceability mechanisms that ensure responsible value chains as one of the important requirements for effective JA (Buchanan et al. 2019). If these transactions occur between farmers, collector traders and mills across districts and/or provinces, they can lead to leakage at the landscape level due to deforestation (Miller 2015). Farmers have been expanding their plantations through unsustainable practices to respond to the increasing demand for FFB coming from unlicensed traders and unlicensed mills.

2 See Forest News on 'Indonesia: Jurisdictional approach helps drive sustainable palm oil', 4 January 2024 (https://forestsnews.cifor.org/85007/indonesia-jurisdictional-approach-helps-drive-sustainable-palm-oil?fnl=en)

3 Minister of Agriculture Regulation Number 01/KB.120/2018 on Guidelines for Determining the Purchase Price of Fresh Fruit Bunches of Palm Oil Produced by Smallholders (https://jdih.pertanian.go.id/fp/peraturan/detail/850)

4 Minister of Agriculture Regulation Number 98/OT.140/9/2013 on Guidelines for Plantation Business Licensing (https://jdih.pertanian.go.id/fp/peraturan/detail/460)

To address the potential impacts of unsustainable practices associated with mixing products from certified and non-certified sources at the mill point, three 'chain of custody' options have been used by ISPO, RSPO and ISCC with slightly different terminologies. In principle, the three methods are (ISCC 2018; RSPO 2020): (1) Guaranteed separate treatment of palm oil and derivative products coming from one source of certified plantation up to the manufacture point for final product; (2) Allowed mixing of certified palm oil from various sources, and segregation of non-certified palm oil; and (3) Mass Balance method that allows mixing of certified and non-certified palm oil in monitored locations with separate recording systems.[5] The current scaling-up of certification mechanism implementation is constrained by the high cost of wider implementation (Choiruzzad et al. 2021; Pareira 2023). Many studies have discussed the high costs for certification that business practitioners in the Indonesian palm oil value chain must bear (IPOA 2016; WWF 2022; InfoSAWIT 2023a).

Costs vary depending on the certification scheme and the stages in the value chain being certified (i.e., plantations, mills or refineries). As an illustration, simulations calculating initial certification costs for plantations in the Pelalawan and Kutai Kartanegara study locations ranged from IDR 67 million to IDR 145 million (about USD 4,224 to USD 9,143 based on the exchange rate at the time of writing). Other cost components yet to be factored in were application and adequacy audit costs (IDR 500,000 or USD 31); certification decision costs (IDR 3 million or USD 189); accommodation and transport costs (depending on location) and value added tax of 10% (PT Mutu Hijau Indonesia 2023). These were still exclusive of survey and recertification costs. According to another source, audit costs for a cooperative can necessitate funds of around IDR 150 million (USD 9,458) (InfoSAWIT 2023a). On the other hand, according to Pareira (2023), the certification costs for ISPO and RSPO are the same, approximately IDR 250 million (USD 15,764). However, for ISPO, this cost covers two audits: verification of legal documents and a field audit. Meanwhile, for RSPO, the cost is for only one audit. The difficulty facing RSPO is finding funding sources to help independent smallholders in applying certification programs, in which the certification could be co-financed through partnership (de Vos et al. 2023). Assessment of the effectiveness of various certification schemes in enhancing the competitiveness of products from Indonesia's palm oil industry in the global market must consider the high cost of certification at each point along the value chain (Morgans et al. 2018).

The ISCC certification fee is charged once for each issued certificate and depends on the total annual turnover in euros (EUR). The range of fees for ISCC certification is EUR 200 to EUR 2,000 (about USD 211 to USD 2,114 at the current exchange rate) for annual turnovers ranging from < EUR 3 million to > EUR 500 million (< USD 3 million to > USD 528 million). These fees do not include the costs for the certification body and the quantity-dependent fee, which is paid for output material declared as sustainable by the system user in accordance with ISCC. If the output material is zero, ISCC will charge a minimum fee of EUR 250 (USD 264) (ISCC 2022). In addition, for ISCC certification that meets EUDR compliance, there are additional costs ranging from EUR 300 to EUR 500 (USD 317 to USD 528) (ISCC 2024d).

Due to these various certification schemes, as well as the associated certification and transaction costs, a harmonization of certification schemes for the palm oil industry at national and global levels should be conducted to ensure that it is sustainable and responsible based on comparable standards. A joint study was conducted in 2016 on the similarities and differences between ISPO and RSPO (Pareira 2023), discussing the commonalities and distinctions between these two certification schemes. This study, supported by the Ministry of Agriculture, identified several key findings, such as the common goals of reducing deforestation and greenhouse gas emissions, while ensuring legal compliance; as well as

5 See Sections 4.2 and 4.3 in Chapter 4 on the implementation of these 'chain of custody' methods in Pelalawan and Kutai Kartanegara.

The certification scheme is an important verification tool for assessing and monitoring traceability along the palm oil value chain, but only a small proportion of oil palm plantations have been certified due to the high costs involved. Photo by Ricky Martin/CIFOR

identifying differences in protected areas, High Conservation Value (HCV) concepts, land-rights transfer, the implementation of Free, Prior, and Informed Consent (FPIC), and new planting procedures (RSPO 2016).

Effective and responsible traceability of the palm oil industry's value chain as part of JA implementation may result in the establishment of incentives at the plantation level by resolving leakage issues, particularly by putting in place systematic monitoring systems to reduce illicit trading and transactions between unlicensed mills and unregistered traders buying FFB from farmers. Additionally, to guarantee the sustainability of palm oil industry management, the DBH for palm oil should be implemented based on local government performance and the traceability system in the execution of an integrated JA.

3 Research approach and research location descriptions

The palm oil industries in Sumatra and Kalimantan play important roles in Indonesia's economy (Matondang and Budiman 2019). Sumatra has the largest area of oil palm plantations at 61% of the nation's total, while Kalimantan has 36% (Directorate General of Estate Crops 2023a). This study aimed to analyze the palm oil industry's value chain to formulate recommendations for policymakers, palm oil industry stakeholders and other parties to effectively apply Jurisdictional Approaches (JAs) based on the traceability of the palm oil industry's value chain. A value chain traceability study began by identifying national level exporters and exporter groups, right back to management at the plantation level, including stages in palm oil processing and distribution in two districts: Pelalawan in Riau and Kutai Kartanegara in East Kalimantan. These two districts are among four districts chosen for the Walmart-CIFOR study on 'Scaling Jurisdictional Approaches in the Indonesian Palm Oil Sector.' There are at least six categories for a total of 5,843 cases at the national level of different business actors along the palm oil industry's value chain, including mill (19%), mill group (6%), refinery (4%), refinery group (3%), exporter (37%), and exporter group (31%) (TRASE 2022). In this chapter, we discuss our research approach, providing case study descriptions covering value chain business practitioners, production and palm oil management models.

3.1 Research approach

In-depth studies based on integrated secondary data focused on understanding the characteristics, behavior and dynamics of different palm oil management models, as well as the key business actors along the value chain. For the initial baseline data, the study adopted the SEI-PCS (Spatially Explicit Information on Production to Consumption Systems) Indonesian palm oil v1.2 supply chain map produced by TRASE (Transparency for Sustainable Economies), which aims to provide transparency and access to information on palm oil supply chains (TRASE 2022).[6] The TRASE initiative has a crucial role in improving our understanding of the relationships between palm oil production and deforestation, and of the sustainability of Indonesia's palm oil industry (Choiruzzad et al. 2021). The TRASE supply chain model integrates sustainability indicators of environmental, social and economic impacts of the trade in commodities (TRASE 2022).

TRASE baseline data cover all oil palm production provinces in Indonesia and provide information on year of production; country of production; province and district location of FFB production; mill; mill group; refinery; refinery group; exporter; and exporter group. Since there was no data at the plantation level for the two districts analyzed, additional secondary data needed to be collected for more comprehensive traceability analysis, particularly through individual company certification documents and traceability reports, including from the company traceability dashboard website (Box 2). Traceability reports and the traceability dashboard provide information on product origin and its traveling tracks. To identify the name of the plantations and their locations, we used Google Maps Tracking[7] and manually input data into a GPS converter[8] from GPS latitude-longitude data.

6 TRASE methodological document is available at https://resources.trase.earth/documents/data_methods/SEI_PCS_Indonesia_palm_1.2._EN.pdf and the TRASE baseline data are available at https://trase.earth/open-data/datasets/supply-chains-indonesia-palm-oil.

7 The link is https://www.google.com/maps/

8 The link is https://gps-coordinates.org/coordinate-converter.php

Box 2. Variables compiled from certification documents, traceability reports and the traceability dashboard

1. Plantation

Provincial plantation site, city or district plantation, subdistrict plantation, name of the plantation, plantation area in hectares, annual FFB production, GPS coordinates, plantation management practices, plantation group affiliation, traceability from mill to plantation, and certification status.

2. Mill level

Provincial mill site, city or district mill, subdistrict mill, name of palm oil mill, mill management, parent company, mill capacity (tons per hour), forecast annual output of CPO, PKO, FFB (tons per year), GPS coordinates, certification, name of mill group, traceability mill to plantation, and traceability refinery to mill.

3. Refinery level

Provincial refinery site, city or district refinery site, subdistrict refinery site, name of refinery, refinery process, capacity of refinery (metric tons per hour), GPS coordinates, refinery certification, and name of refinery group.

4. Exporter and exporter group level

Provincial exporter site, city or district exporter site, subdistrict exporter site, name of exporter, current operating status, GPS coordinates, and name of exporter group.

Sources: 100 traceability reports from traceability dashboard and 109 certification documents from all relevant companies and exporters.

The compiled TRASE data were supplemented with traceability information gleaned from 100 traceability reports, from the traceability dashboard and from 109 certification documents of all relevant companies and exporters, resulting in 1,209 cases (n) of baseline data being analyzed with unique coding. Certification documents and traceability reports for each company cover data from 2015 to 2023. A descriptive and cross-tabulation analysis was conducted, and the results of the analysis are presented in Chapter 4.

3.2 Case studies: Locations, value chain business practitioners, production and palm oil management models

Considering the availability and comprehensiveness of data and information in companies' certification documents and traceability reports, this paper focused on in-depth studies in two districts: Pelalawan in Riau and Kutai Kartanegara in East Kalimantan.[9] Oil palm plantations cover about 25% of Pelalawan, whose terrestrial area is 1.3 million ha. Its oil palm expansion rate over the 2014 to 2018 period was quite high (137%), though lower than Kutai Kartanegara at 184%. Kutai Kartanegara has a total area of 2.5 million ha, with oil palm plantations covering 8% of this area. At 0.4%, its deforestation rate from 2014 to 2018 was lower than that of Sintang District in West Kalimantan at 1.3%. More detailed information describing the districts and criteria for selecting research locations is shown in Figure 1.

There are five categories with a total of 298 cases in Pelalawan and 232 cases in Kutai Kartanegara of different business actors along the value chain, with the highest proportions being exporter groups and exporters, followed by cases of identified plantations. The proportion of exporter groups is 27% in Pelalawan and 32% in Kutai Kartanegara, and the proportion of exporters is 32% and 39%, respectively. These trends are similar to the national level, as discussed earlier in this chapter. Descriptions of case studies based on value chain business actors, production and palm oil management models in Pelalawan and Kutai Kartanegara are presented in Box 3.

9 Part of the research sites of 'Scaling Jurisdictional Approaches in the Indonesian Palm Oil Sector' in four districts in Sumatra and Kalimantan, including Pelalawan in Riau, Sintang in West Kalimantan, Pulang Pisau in Central Kalimantan and Kutai Kartanegara in East Kalimantan.

Sintang

Total area: 2.2 million ha
Remaining forest cover: 0.9 million ha
Deforestation risk score: 0.25
Oil palm plantations cover: 8%
Peatland areas: 3%
Oil palm expansion rate (2014-2018): 27%
Deforestation rate (2014-2018): 1.3%

Kutai Kartanegara

Total area: 2.5 million ha
Remaining forest cover: 0.6 million ha
Deforestation risk score: 0.24
Oil palm plantations cover: 8%
Peatland areas: 4%
Oil palm expansion rate (2014-2018): 184%
Deforestation rate (2014-2018): 0.4%

Pelalawan

Total area: 1.3 million ha
Remaining forest cover: 0.3 million ha
Deforestation risk score: 0.41
Oil palm plantations cover: 25%
Peatland areas: 21%
Oil palm expansion rate (2014-2018): 137%
Deforestation rate (2014-2018): 0.9%

Pulang Pisau

Total area: 0.9 million ha
Remaining forest cover: 0.3 million ha
Deforestation risk score: 0.67
Oil palm plantations cover: 5%
Peatland areas: 68%
Oil palm expansion rate (2014-2018): 27%
Deforestation rate (2014-2018): 0.3%

Figure 1. Research location descriptions: Pelalawan and Kutai Kartanegara compared with the other two districts

Source: Purnomo et al. (2023) (unpublished)

From the total plantation data analyzed, about 33%–44% of total cases could not be identified clearly based on geospatial data analysis in Pelalawan and Kutai Kartanegara. Comparing the oil palm area, Pelalawan has a slightly higher area at 2,263 ha, compared with 1,456 ha in Kutai Kartanegara. However, Pelalawan has almost three times higher FFB production at 64,812 tons per year, with communities serving as the dominant model of plantation management. By contrast, Kutai Kartanegara's FFB production is 25,306 tons per year, with plantation management predominantly carried out by affiliated companies. There are only two types of oil palm plantation management models in Kutai Kartanegara, while Pelalawan has five categories, including those managed by affiliated companies, contracted to third companies, exporter companies, managed by communities, and plasma estates. Overall, the variations of typology and characteristics have affected how the traceability of the palm oil industry's value chain could effectively support the JA.

Box 3. Descriptions of value chain business practitioners, production and palm oil management models in Pelalawan and Kutai Kartanegara compared with the other two districts

Pelalawan

Value chain business practitioners

From total data (n = 298)

1. Exporter groups: 27% (n = 79)
2. Exporters: 32% (n = 95)
3. Refineries: 6% (n = 18)
4. Mills: 16% (n = 48)
5. Plantations: 19% (n = 58)

From total plantation data (n = 549)

1. Location and name identified: 56% (n = 308)
2. Unidentified: 44% (n = 241)

Production and palm oil management models

1. Oil palm area (ha): 2,263 (n = 198)[a]
2. Plantations as % of total land area: 84% (n = 183)
3. FFB production: 64,812 tons per year (n = 161)
4. Oil palm plantation management models (n = 280):
   a. Managed by affiliated companies: 33% (n = 91)
   b. Contracted to third parties: 9% (n = 24)
   c. Exporter companies: 4% (n = 12)
   d. Managed by communities: 50% (n = 141)
   e. Plasma estates: 4% (n = 12)

Sintang

Value chain business practitioners

From total data (n = 211)

1. Exporter groups: 36% (n = 77)
2. Exporters: 43% (n = 90)
3. Refineries: 9% (n = 20)
4. Mills: 11% (n = 23)
5. Plantations: 0.50% (n = 1)

From total plantation data (n = 172)

1. Location and name identified: 8% (n =14)
2. Unidentified: 92% (n = 158)

Production and palm oil management models

1. Oil palm area (ha): 1,738 (n = 7)[b]
2. Plantations as % of total land area: -
3. FFB production: -
4. Oil palm plantation management models: -

Pulang Pisau

Value chain business practitioners

From total data (n = 174)

1. Exporter groups: 40% (n = 70)
2. Exporters: 45% (n = 79)
3. Refineries: 6% (n = 10)
4. Mills: 6% (n = 11)
5. Plantations: 2% (n = 4)

From total plantation data (n = 95)

1. Location and name identified: 4% (n = 4)
2. Unidentified: 96% (n = 91)

Production and palm oil management models

1. Oil palm area (ha): 1,900 (n = 4)[c]
2. Plantations as % of total land area: 91% (n = 4)
3. FFB production: -
4. Oil palm plantation management models: -

Kutai Kartanegara

Value chain business practitioners

From total data (n = 232)

1. Exporter groups: 32% (n =75)
2. Exporters: 39% (n = 90)
3. Refineries: 6% (n = 15)
4. Mills: 10% (n = 24)
5. Plantations: 12% (n = 28)

From total plantation data (n = 393)

1. Location and name identified: 66% (n = 259)
2. Unidentified: 34% (n = 134)

Production and palm oil management models

1. Oil palm area (ha): 1,456 (n = 259)[d]
2. Plantations as % of total land area: 67% (n = 259)
3. FFB production: 25,306 tons per year (n= 259)
4. Oil palm plantation management models (n = 259):
   a. Managed by affiliated companies: 63% (n = 163)
   b. Managed by communities: 37% (n = 96)

Note: n = number of cases

Sources: TRASE data (2020), company traceability reports and average area of oil palm plantations certification documents

a 2015, 2017, 2019, 2020, 2021, 2022
b 2020
c 2020
d 2019, 2020, 2021, 2023

4 Ensuring effective jurisdictional approaches based on traceability of the palm oil industry's value chain to foster a sustainable palm oil industry in Indonesia

4.1 Lessons from Pelalawan and Kutai Kartanegara: A review of district level palm oil industry value chains

The discussion below covers palm oil production and management models, value chain dynamics, exporter and exporter group profiles, traceability by value chain channel, traceability by certification scheme and important lessons learned from study outcomes in each district.

4.2 Pelalawan District in Riau Province

Palm oil production and management models: Of a total 549 cases, only 56% of oil palm plantation locations and names could be identified. Plantation production and productivity data showed the average planted area for these plantations being 2,263 ha, averaging 84% of the total plantation area (Box 3).

Small-scale oil palm plantations are critical to the livelihoods of local communities, including women, but only a small proportion of these plantations are registered to benefit from risk protection from value chains that have met due diligence requirements. Photo by Ricky Martin/CIFOR

Table 1. Average traceability levels by value chain points in Pelalawan District

Value chain points	Traceability		
	No. of cases	% of total	Average traceability level (%)
Mill to plantation	268	43	97
Refinery to mill	245	39	96
CPO production	21	3	89
PKO from third-party supplier to mill	44	7	10
Company-managed PKO production	44	7	68
PKO production from other suppliers	2	0.3	100
Total	**624**	**100**	

Notes: CPO = Crude Palm Oil (*minyak sawit mentah*), PKO = Palm Kernel Oil (*minyak inti sawit*).

Sources: TRASE data (2020); traceability reports for each company; and certification documents for each company (years 2015, 2017, 2019–2023).

Average FFB production from 2015 to 2022 was 64,812 tons per year, with an average productivity of around 29 tons per hectares (ha), which is around the median value for a range of productivity figures from different locations in Indonesia (18.2-41.6 ton/ha/year). The predominant management model, at around 50%, was by independent community smallholders, followed by companies at around 33%.

Value chain dynamics: Study results showed two value chain types: Type 1 accounts for 402 cases (70%), and Type 2 has 171 cases (30%). These two value chain types differed, with palm oil processed in mills going directly to exporters in Type 2, rather than being purified in refineries, as in Type 1. Traceability from each point in both value chain types is shown in Box 4. Average traceability levels were above 80% for mills to plantations, refineries to mills and CPO production, but the numbers of cases were very low for the latter, and for other production processes (Table 1).

Exporter and exporter group profiles: Baseline data traceable to the plantation level in the district showed nine exporter groups (six multinational and three national) (Drost et al. 2021; CNN Indonesia 2022; PT SMART Tbk 2022; Rasdianto 2022) owning a total of 17 exporter companies. These exporter groups have at least one exporter company, a refinery and mill, and manage their own plantations. The multinational exporter groups' domestic market share ranged from 28%–65% and 26%–60% for markets in Asia, Africa, Europe, Australia, Oceania, the United States of America, South America, North America, and Central America (Drost et al. 2021; CNN Indonesia 2022; Rasdianto 2022).

These multinational corporations had more oil palm plantations and were involved in managing plantations directly, milling, refining and exporting palm oil and derivative products. Most exporters were located outside Pelalawan, with only one located within the district. Several exporters had their own refineries and processed CPO themselves. These refineries were all located outside Pelalawan, either in Dumai District in Riau, or Medan Municipality in North Sumatra. Some mills were in Pelalawan, while others were in other districts within the province, such as Siak, Indragiri Hulu, Indragiri Hilir and Kampar.

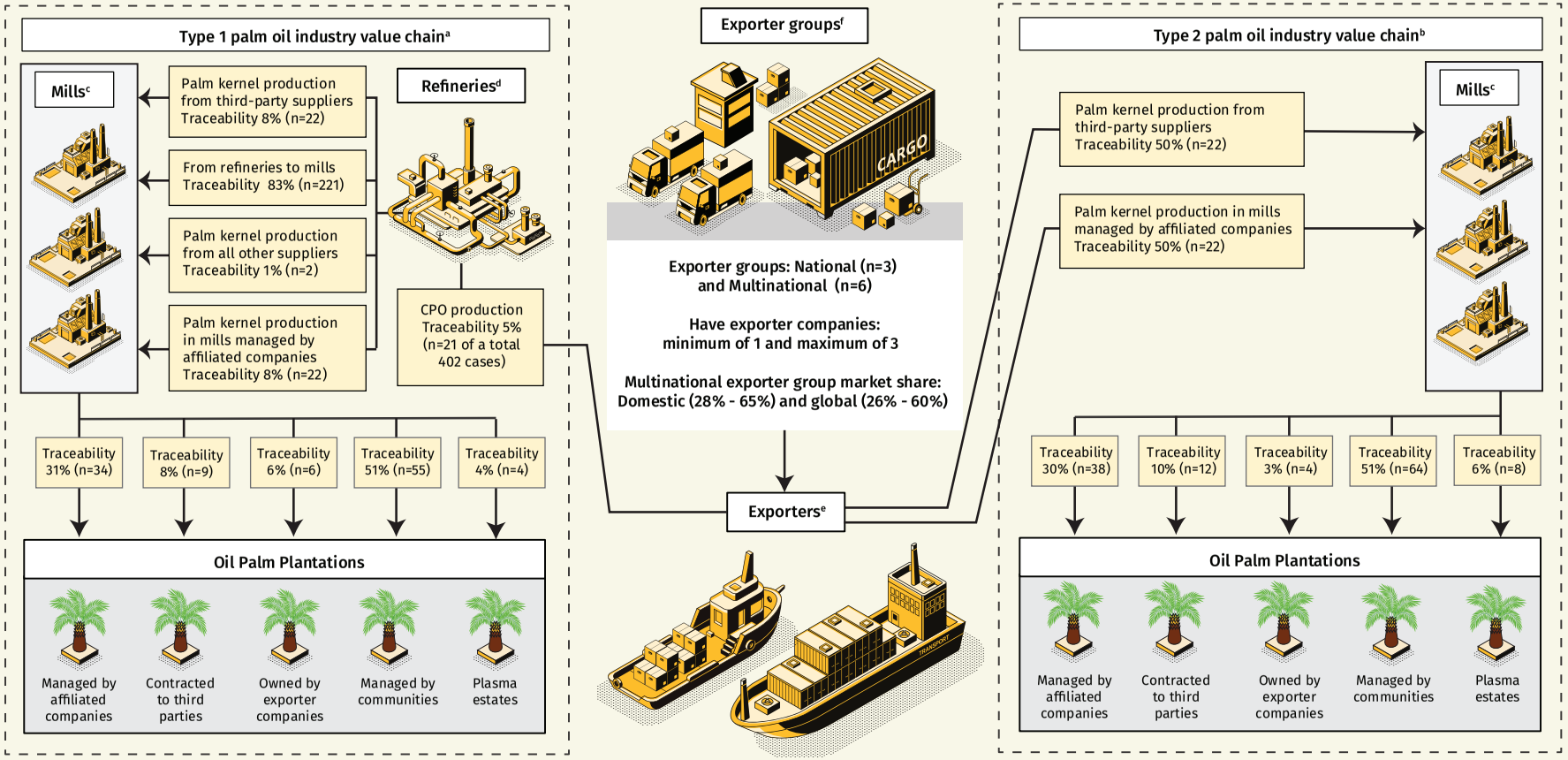
Traceability by value chain channel: For Type 1 value chains, from exporters to refineries, there was only 5% traceability for CPO production (n=21 of 402) cases (Box 4). From refineries to mills for PKO production, a significant amount of data was traceable (83%, n=221), particularly when going directly to mills belonging to the same corporate groups. There were three other channels where very small numbers of cases were traceable, i.e., PKO production from third parties, from other suppliers, and from mills managed by the same groups as refinery companies. The highest percentages of data

traceable to the plantation level were for those managed by affiliated companies (31%) and by communities (51%). For Type 2 value chains, which did not involve refineries, traceability was only possible from exporters directly to mills, and from mills to plantations. A total of 44 cases from exporters to mills involved only two types of supply systems: from third parties, and from companies within the same corporate groups. Out of a total of 126 cases from mills to plantations, the highest traceability percentage was for plantations managed independently by communities at 51%.

Traceability levels, from mills to plantations, differ depending on the management model (Box 5 - Figure 5a). The highest traceability levels, ranging from 51% to 75%, were for all plasma estate smallholders whose data had been recorded, though the number of cases was very small. Traceability was possible for 42% of all oil palm plantations managed by plantation companies, though 34% still had traceability levels below 25%. The same was true for two other management models – plantations owned by exporter companies, and plantations managed independently by communities – where significant numbers had traceability levels below 25%.

Traceability by certification scheme: RSPO certification was more commonly used than ISPO for management at the plantation level in Pelalawan, particularly for oil palm plantations managed by exporter companies, where 58% were RSPO-certified. The same applies to plantations managed by communities and for plasma estates, with 31% and 33%, respectively. For company-managed plantations without community involvement, 35% had RSPO and 24% had ISPO certification. For all 24 cases where plantation management had been contracted to third parties, there was either no certification, or their certification status was unknown. The same applied to 50% of community-managed plantations and 67% of plasma estates (Box 5 – Figure 5b). At the mill level, the combination of ISPO and RSPO had the highest percentage (32%), followed by ISPO (24%), and a combination of RSPO-MB and ISCC-MB (17%). For refineries, the most common certification was a combination of RSPO and ISCC. Further information is presented in Table 2.

Box 4. Numbers of cases where traceability was possible in the palm oil industry's value chain in Pelalawan District

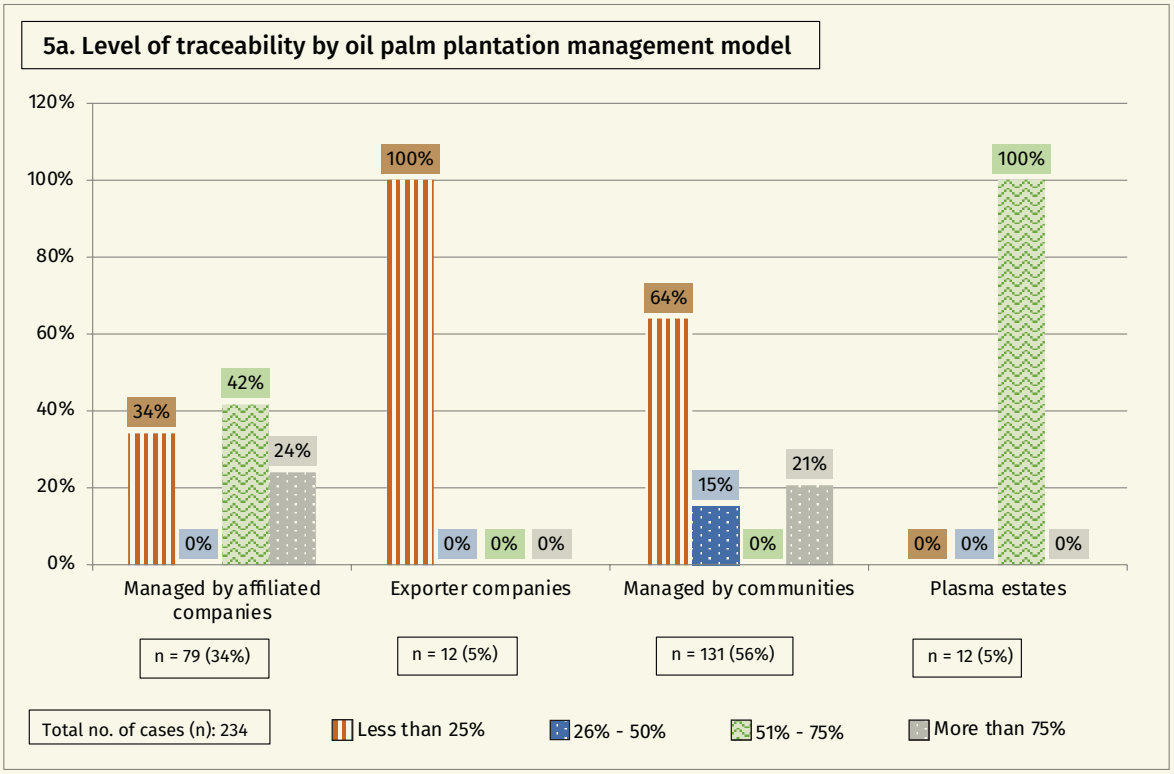


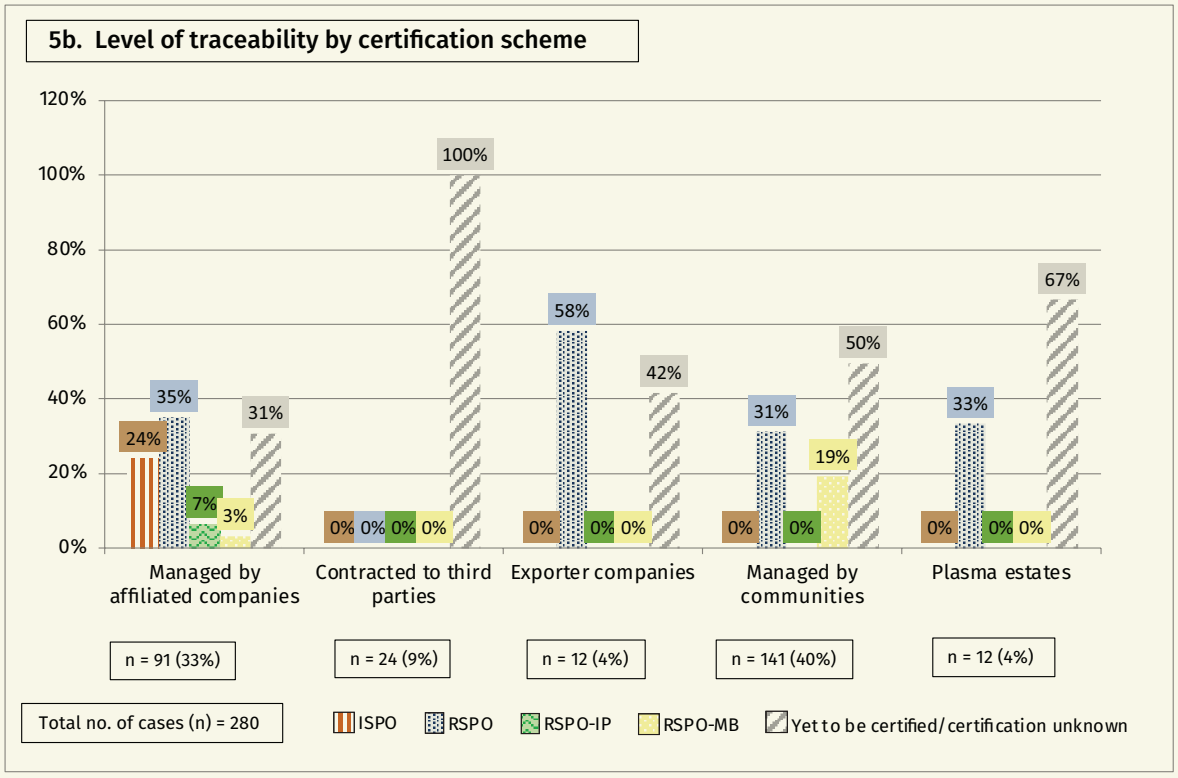
Note: CPO = Crude Palm Oil (*minyak sawit mentah*)

Sources: Analyzed from TRASE data (2020); traceability reports for each company; and certification documents for each company (years 2015, 2017, 2019–2023).

a Type 1 value chains: 70% with number of cases (n) = 402 of a total n = 573
b Type 2 value chains: 30% with number of cases (n) = 171 of a total n = 573
c Mill locations: Pelalawan, Indragiri Hulu, Indragiri Hilir, Kampar, and Siak Districts (Riau Province)
d Refinery locations: Dumai District (Riau Province) and Medan Municipality (North Sumatra Province)
e Exporter company locations: Dumai District (Riau Province), Medan Municipality (North Sumatra Province) and Central Jakarta Municipality (Jakarta Special Capital Province)
f National bases of exporter groups: Indonesia, Singapore, Hong Kong, China and Malaysia
Multinational exporter group destinations: Asia, Africa, Europe, Australia, Oceania, USA, South America, North America, and Central America

Box 5. Traceability by oil palm plantation management model and certification scheme in Pelalawan District





Sources: Analyzed from TRASE data (2020); traceability reports for each company; and certification documents for each company (years 2015, 2017, 2019–2023).

Table 2. Data on certification schemes applied in value chains in Pelalawan District, Riau Province

Value chain and certification scheme	No. of cases	%
1. Oil palm plantations by certification category		
a. ISPO	22	13
b. RSPO	110	65
c. RSPO-IP	6	4
d. RSPO-MB	30	18
Total	**168**	**100**
2. Palm oil mills by certification category		
a. ISCC-MB	11	3
b. ISPO	83	24
c. RSPO	1	0.28
d. RSPO, ISCC, ISPO	31	9
e. RSPO, ISPO	112	32
f. RSPO-IP, ISCC-MB	28	8
g. RSPO-MB, ISCC-MB	59	17
h. RSPO-MB, ISPO	28	8
Total	**353**	**100**
3. Refineries by certification category		
a. RSPO	2	2
b. RSPO-ISCC	75	84
c. RSPO-MB	2	2
d. RSPO-MB, ISCC	3	3
e. RSPO-MB, RSPO-SG	8	9
Total	**90**	**100**

Notes:
1. ISPO = Indonesian Sustainable Palm Oil
2. RSPO = Roundtable on Sustainable Palm Oil
3. ISCC = International Sustainability and Carbon Certification
4. Palm oil value chain system:
   a. Identity Preserved (IP) = Sustainable palm oil originating from a single identifiable certified source and stored separately from other palm oil in the supply chain.
   b. Segregated (SG) = Sustainable palm oil obtained from various certified sources for subsequent separate storage from other palm oil in the supply chain.
   c. Mass Balance (MB) = Sustainable palm oil obtained from certified sources and subsequently mixed with other palm oil in the supply chain.

Sources: Analyzed from TRASE data (2020); traceability reports for each company; certification documents for each company (years 2015, 2017, 2019–2023); RSPO (2020); Adiwinata et al. (2023) (unpublished); Bagaskara (2023); and ISCC (2023).

4.3 Kutai Kartanegara District in East Kalimantan Province

Palm oil production and management models: The locations and names of around 66% of oil palm plantations in Kutai Kartanegara were identifiable from studies of company certification documents for 259 plantations. The average oil palm planted area was 1,456 ha, or around 67% of the average total plantation area (Box 3). Average FFB production was 25,306 tons per year, with an average productivity of around 17 tons per ha; this was lower than productivity in Pelalawan and in some other locations in Indonesia (Global Yield Cap Atlas 2023). Two oil palm plantation management models were identified in Kutai Kartanegara, with the largest percentage being managed by companies themselves at 64%, compared with community-managed plantations at 36%.

Value chain dynamics and processes: Traceability numbers for every point along value chains, from plantations to exporter companies, can be seen in Box 6. The only value chains studied were for the Type 1 value chain (291 cases – 66% of total cases) as traceability data were unavailable for Type 2 (147 cases). Mills were in Kutai Kartanegara and East Kutai, both of which are in East Kalimantan, whereas all refineries were located outside Kutai Kartanegara, in Gresik District (East Java), Central Jakarta Municipality (Jakarta Special Capital Province) and Balikpapan Municipality (East Kalimantan Province). Traceability levels along value chains averaged above 90% for refineries to mills (the largest number of cases), CPO production, and PKO production from third-party suppliers and other supply sources (Table 3).

Exporter and exporter group profiles: Two national and five multinational exporter groups can be traced back to the plantation level in Kutai Kartanegara District (Box 6). The exporter groups had between one and five exporter companies. Ten exporters had companies along value chains, including refineries and mills, and managed their own oil palm plantations. The multinational companies also had significant numbers of oil palm plantations and were involved in various activities, including developing plantations directly, milling, refining and exporting palm oil and derivative products. Exporter companies were in Gresik District (East Java), Labuhan Batu Municipality (North Sumatra), and Central Jakarta Municipality (Jakarta Special Capital Province). Multinational exporter groups had domestic market shares of 52%–65% and 26%–60% for markets in Asia, Africa, Europe, Oceania, the United States of America, South America, North America and Central America (Drost et al. 2021; CNN Indonesia 2022; PT SMART Tbk 2022; Rasdianto 2022).

Traceability by value chain channel: Traceability was possible for 12% of CPO production from exporters to refineries (n=34) (Box 6). Data was available for four PKO production processes from refineries to mills: PKO production from

Table 3. Average traceability levels by value chain points in Kutai Kartanegara District

Value chain points	Traceability		
	No. of cases	% of total	Average traceability level (%)
Mill to plantation	41	14	69
Refinery to mill	126	43	100
CPO production	34	12	100
PKO from third-party supplier to mill	28	10	94
Company-managed PKO production	28	10	6
PKO production from other suppliers	34	12	100
Total	**291**	**100**	

Notes: CPO = Crude Palm Oil (*minyak sawit mentah*), PKO = Palm Kernel Oil (*minyak inti sawit*).

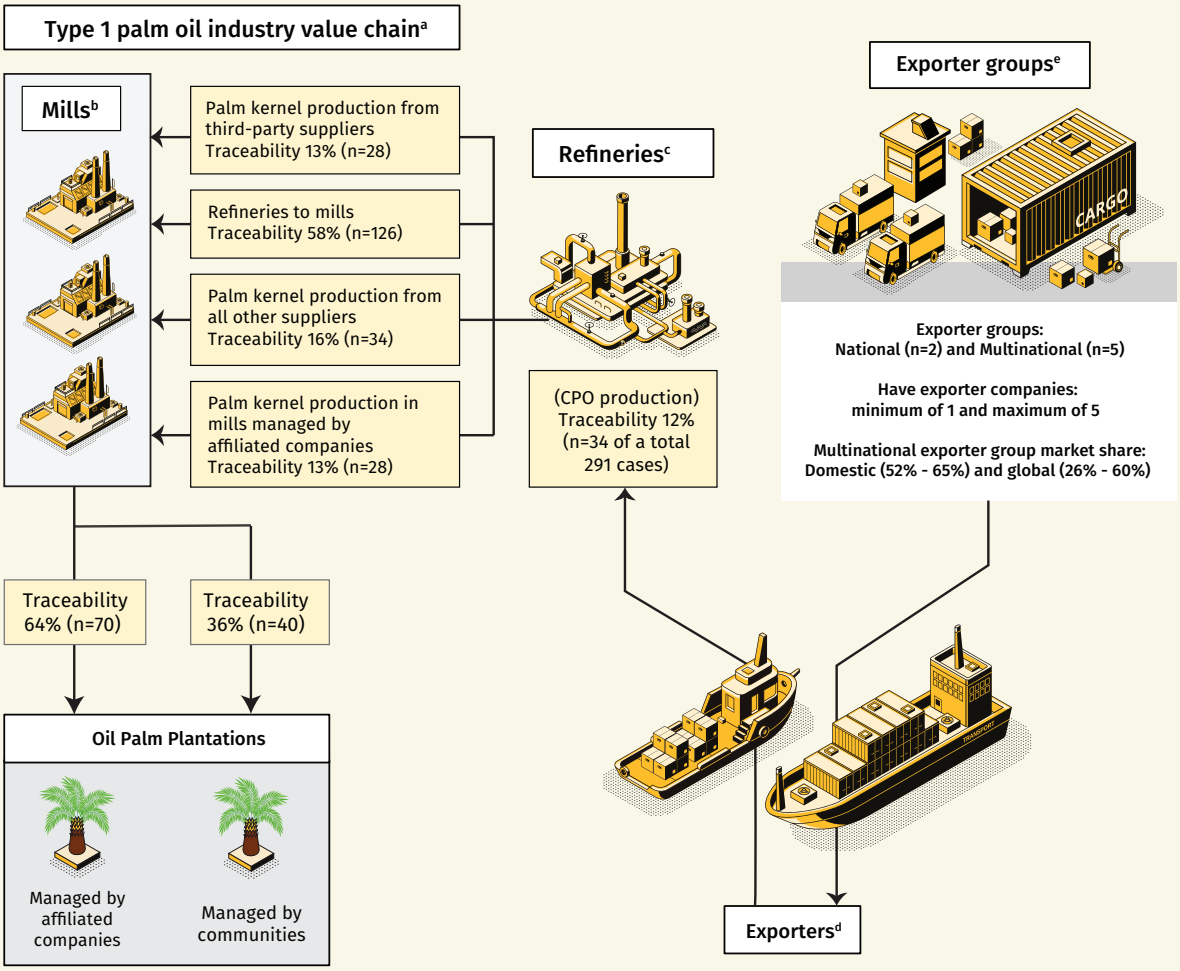
Sources: Analyzed from TRASE data (2020); traceability reports for each company; and certification documents for each company (years 2019–2021, and 2023).

Traceability along the value chain is essential in addressing leakage issues at the plantation level to support effective implementation of the jurisdictional approach. Photo by Ricky Martin/CIFOR

third-party suppliers; directly from refineries to mills; from other suppliers; and from mills managed by companies in the same corporate groups as refineries. Production processes directly from refineries to mills had the largest amounts of data, i.e., 126 cases. Traceability levels from mills to plantations were above 75% for 63% of oil palm plantations managed by companies, while traceability levels for the remaining 37% were below 25% (Box 7 – Figure 7a). Meanwhile, for independent, community-managed plantations, out of a total of 16 cases where data were available, 50% had traceability levels above 75%, while the other 50% had traceability levels below 25%.

Value chain traceability by certification scheme: RSPO certification was more commonly used than ISPO for management at the plantation level in Kutai Kartanegara, particularly for plantations managed by communities (100%) and by companies themselves (74%) (Box 7 – Figure 7b). At the mill level, a combination of RSPO-MB, ISPO and ISCC was most common at 68%, with 21% using ISPO. For refineries, the highest percentage (63%) combined RSPO and ISCC certification mechanisms, with 25% using only RSPO. Further information is presented in Table 4.

Box 6. Numbers of cases where traceability was possible in the palm oil industry's value chain in Kutai Kartanegara District

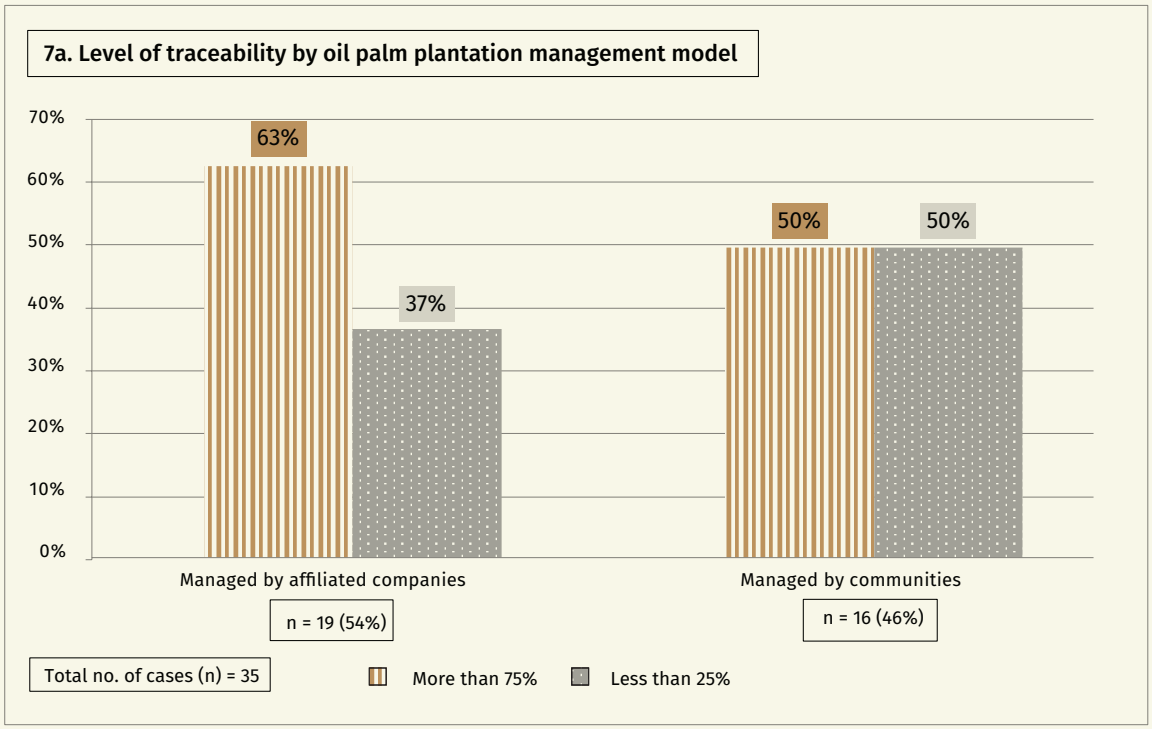


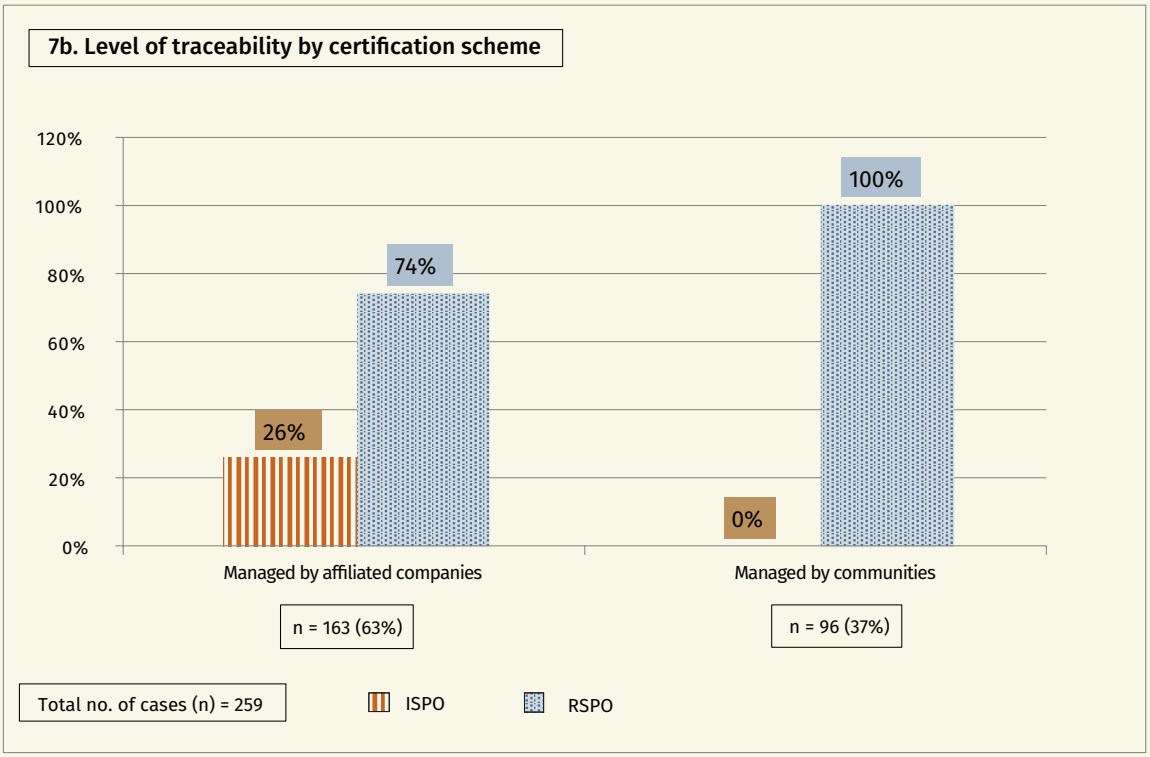
Note: CPO = Crude Palm Oil (*minyak sawit mentah*)

Sources: Analyzed from TRASE data (2020); traceability reports for each company; and certification documents for each company (years 2019–2021, and 2023).

a Value chain: 66% with the number of cases (n) = 291 of a total n = 438
b Mill locations: Kutai Kartanegara and East Kutai Districts (East Kalimantan Province)
c Refinery locations: Gresik District (East Java Province), Central Jakarta Municipality (Jakarta Special Capital Province), Balikpapan Municipality (East Kalimantan Province)
d Exporter company locations: Gresik District (East Java Province), Labuhan Batu Municipality (North Sumatra Province), and Central Jakarta Municipality (Jakarta Special Capital Province)
e National bases of exporter groups: Indonesia, Singapore, Hong Kong, China, and the Netherlands
Multinational exporter group destinations: Asia, Africa, Europe, Oceania, USA, South America, North America, and Central America

Box 7. Traceability by oil palm plantation management model and certification scheme in Kutai Kartanegara District





Sources: Analyzed from TRASE data (2020); traceability reports for each company; and certification documents for each company (years 2019–2021, and 2023).

Table 4. Data on certification schemes applied in value chains in Kutai Kartanegara District, East Kalimantan Province

Value chain and certification scheme	No. of cases	%
1. Oil palm plantations by certification category		
a. ISPO	42	16
b. RSPO	217	84
Total	**259**	**100**
2. Palm oil mills by certification category		
a. ISPO	58	21
b. RSPO	3	1
c. RSPO-MB, ISCC-MB	28	10
d. RSPO-MB, ISPO, ISCC	186	68
Total	**275**	**100**
3. Refineries by certification category		
a. RSPO	35	25
b. RSPO, ISCC	90	63
c. RSPO-MB	2	1
d. RSPO-MB, RSPO-SG	16	11
Total	**143**	**100**

Notes:
1. ISPO = Indonesian Sustainable Palm Oil
2. RSPO = Roundtable on Sustainable Palm Oil
3. ISCC = International Sustainability and Carbon Certification
4. Palm oil value chain system:
   a. Identity Preserved (IP) = Sustainable palm oil originating from a single identifiable certified source and stored separately from other palm oil in the supply chain.
   b. Segregated (SG) = Sustainable palm oil obtained from various certified sources for subsequent separate storage from other palm oil in the supply chain.
   c. Mass Balance (MB) = Sustainable palm oil obtained from certified sources and subsequently mixed with other palm oil in the supply chain.

Sources: Analyzed from TRASE data (2020); traceability reports for each company; certification documents for each company (years 2019, 2020, 2021 and 2023); RSPO (2020); Adiwinata et al. (2023) (unpublished); Bagaskara (2023); and ISCC (2023).

The palm oil industry's certification scheme instruments should be harmonized at the national and global levels, and at the plantation level, different certification bodies should apply standardized requirements. Photo by Nanang Sujana/CIFOR

4.4 Important lessons learned in fostering effective jurisdictional approaches based on traceability in the palm oil industry's value chain to promote a sustainable palm oil industry in Indonesia

Profile of baseline data in Pelalawan District. Overall, baseline data for value chain business practitioners in Pelalawan were more comprehensive than for the other three districts. Nevertheless, it is still necessary to think about how 100% of plantations can be identified, as the current figure is only around 56% of 549 datasets. Value chain dynamics influence traceability levels in every process, with each one greatly affected by value chain type. Exporter and exporter group roles are important in the value chains. Nine exporter groups (18 exporters) have integrated businesses, from plantation management to processing in palm oil mills and refineries. However, there were 132 cases where certification documents at the refinery level were not published by companies.

Profile of baseline data in Kutai Kartanegara District. Only around 66% of 393 datasets on oil palm plantations were identified, so the same challenge exists in reaching 100% to support the implementation of effective Jurisdictional Approaches (JAs). There were only two oil palm plantation management models in the district: by affiliated companies and by communities. Seven exporter groups (11 exporters) were also found to have integrated businesses, from plantation management to processing in palm oil mills and refineries. There were 141 cases in which certification documents at refinery level were not published by companies.

Palm oil industry traceability by value chain points and the role of exporters. The data analyzed were challenged by up to 50% of unidentified cases of product sources in the analysis in both districts. Dominant cases of traceability could be identified at the point of mill to plantation, and at the point of refinery to mill, particularly in Pelalawan. Only a small number of cases could be analyzed at PKO production level, particularly with sources from third-party suppliers to the mill (7% in Pelalawan and 10% in Kutai Kartanegara from total cases).

At the mill level, the MB specification of supply chain model was applied in both districts under RSPO and ISCC, which means that the mixing of certified and non-certified products was still quite common in practice. Furthermore, there are a few cases where the RSPO-SG scheme could be found in both districts (eight cases in Pelalawan and 16 cases in Kutai Kartanegara), representing separate storage for certified palm oil sources from other sources in the supply chain.

In both districts, exporters and exporter groups' roles are highly influential. There are more multinational exporter groups with more global market destinations than national exporter groups. Most exporters and exporter groups implement integrated businesses, from plantation management to processing in palm oil mills and refineries. However, the analysis showed that the same companies administered individual certification schemes at various points along the value chain, starting from the plantation up to the refinery. Exporters are responding to the greater demands of the EUDR by administering the ISCC certification scheme, which is more tailored to the ISCC EU standards (ISCC 2024a). The applied ISCC complemented the existing RSPO certification by the same exporters.

Exporters usually operate across jurisdictional boundaries of districts, provinces and islands to support the implementation of effective JAs. Mapped value chains show the necessity for an MoU under JAs between districts in the province, between provinces in the same region, and between regions, to connect business practitioners in value chains located outside single district administrations. This ensures effective traceability monitoring mechanisms for business practitioners' value chain governance. The MoU will be important as the platform to collaborate on addressing leakages and developing an integrated baseline for production for DBH in identifying the direct and indirect FFB production area as the basis for calculating the revenue sharing beyond one district boundary. Further, in effectively preventing leakage under an integrated JA, the MoU is important to accelerate the verification of FFB and palm oil product flows across district or provincial administrative boundaries.

The jurisdictional approach focuses on the development and enforcement of sustainable palm oil production practices at the provincial or district level to address the challenges of deforestation, biodiversity loss, social conflict and climate change. Photo by Nanang Sujana/CIFOR

Traceability at the plantation level: Challenged by unidentified plantations. More than 50% of plantations have unidentified names and locations, hindering full coverage of oil palm plantations in the implementation of effective traceability mechanisms along the palm oil industry's value chain. About 67% of plasma estates had no certification, or their certification status was unknown, neither plantation management that was contracted to third parties (100%) and community-managed plantations or independent smallholders (50%).

On community plantations managed independently, specific challenges to traceability processes being effective include the difficulties of generalizing typology due to many variations in mechanisms that are part of the flow along the value chain, such as the trading system, standardized documents for FFB payment, Delivery Orders (DO), weighing slips, recapitulation of FFB deliveries, and invoices (Kehati 2019). Smallholders still have difficulties dealing with the legal documents for their plantations (to meet the legal requirements), which could lead to land conflicts (Kehati 2019).

Further, with the integrated baseline, the targeted strategies and programs for improving productivity – particularly for community-based smallholders – could be tailored to a specific type of management model, as productivity was below average at the provincial level of both districts. In Pelalawan, with productivity at 2.7 tons/ha, this was lower than productivity at the provincial level at 11.4 tons/ha (BPS 2023). In Kutai Kartanegara, productivity was 2.8 tons/ha, and the overall productivity at the provincial level was 8.7 tons/ha (BPS 2023).

Fostering effective JA based on traceability of the palm oil industry's value chain. Considering the complexities, effective processes for implementing traceability and certification at the plantation level are needed. These should be supported by integrated baseline data, as well as a simple and accurate registration system for the management of existing oil palm plantations at the district level, for example, by enforcing the effective implementation of STDB as part of SIPERIBUN baseline data.

Due to these various certification schemes and the associated certification and transaction costs, the palm oil industry's certification scheme instruments should be harmonized at the national and global levels to ensure that the industry is sustainable and responsible based on comparable standards. Harmonization should also be fostered nationally at the technical level by synchronizing technical document formats used at the plantation level by different certification bodies. The harmonization and synchronization of standardized requirements for applied certification mechanisms are also needed for different certification bodies active in Indonesia.

5 Conclusions

Indonesia is one of the world's largest producers of palm oil. The growth in Indonesia's palm oil industry has been driven mainly by international demand. For the improvement of the industry's prospects in the global market, the integrated JA framework has been implemented to ensure a responsible and sustainable palm oil industry in Indonesia. To develop recommendations for an effective JA based on the traceability of the palm oil industry's value chain and to promote a sustainable palm oil industry in Indonesia, this study aimed to analyze the value chain based on secondary baseline data, cover its structure and dynamics as well as key business actors and government agencies involved. Based on the availability and comprehensiveness of secondary baseline data, particularly companies' certification documents and traceability reports, this paper focused on research in two districts: Pelalawan and Kutai Kartanegara.

Indonesian national policy on sustainable palm oil shows the government's commitment to balancing economic growth with environmental and social responsibility. The market-driven certification scheme is also the most important verification tool in assessing and monitoring traceability along the supply and value chains. The ISCC, the RSPO and the ISPO are the three certification programs now in use in Indonesia. In 2023, there were close to 7.3 million ha of RSPO- and ISPO-certified plantations, and 708 certifications were being issued by the ISCC (Directorate General of Estate Crops 2023b; RSPO 2024; ISCC 2024b). Despite these achievements, the certified oil palm plantations were still a small proportion of the total 16.8 million ha in Indonesia. Among these, smallholder-managed oil palm plantations accounted for nearly half of Indonesia's total CPO production from a managed area of 6.3 million ha, or 37% of total oil palm plantations in Indonesia. Only 0.2% of all smallholder plantations received both ISPO and RSPO certification in the same year.

According to the study's findings, traceability differs based on the category of value chain, the type of certification scheme, and the type of plantation management model. Based on the value chain categories, Type 2 palm oil is processed in mills and sent straight to exporters, as opposed to Type 1 palm oil, which is refined in refineries and is the predominant type for traceability cases identified in the two locations. Additionally, traceability differs according to the value chain's points, including plantations, mills, refineries, CPO production, PKO production, and the changes at each of these points. The two phases of 'mill to plantation' and 'refinery to mill' had the largest percentage of traceability cases.

This analysis has shown that conducting an effective traceability mechanism along the value chain of the palm oil industry is quite challenging and involves a very complex process. More than half of the plantations' names and locations are unknown, which presents a major obstacle to fully covering the oil palm plantations for the implementation of the certification and traceability analysis. Further, there were 67% of plasma estates with no certification, or their certification status was unknown, and the plantation management was sometimes contracted to third parties.

To increase certification coverage at the plantation level, processes for developing integrated baseline data are required, supported by a simple and accurate registration system for existing oil palm plantations at the district level – whether they have been certified or not.

With a significant amount of missing information on plantations and locations, there are greater risks from unsustainable plantation management practices involving unlicensed traders selling FFB to unlicensed mills, indicating that the mills do not have their own plantations. More systematic in-depth studies are needed to have a clear understanding of the nature and pattern of practices leading to leakage. Action plans could then be tailored to address the leakage effectively on the ground.

Further, the study found that there was insufficient traceability information along palm oil value chains, varying between the two districts of Pelalawan and Kutai Kartanegara. In particular, there were unidentified at the refinery and mill companies along the value chain analysis, and there were more than 100 cases in which certification documents were not published by refinery companies. Exporter and exporter group roles are very important in the palm oil industry's value chains. The study demonstrated that the exporters administered several certification schemes at different stages in the value chain – from the plantation to the refinery – despite the nature of integrated operations ranging from plantation management to processing in palm oil mills and refineries. Companies could reduce the risk of combining certified and non-certified products by putting in place an integrated business management model. This would be useful for evaluating and tracking traceability along the palm oil industry's value chain.

Overall, an effective JA supported by responsible traceability could create incentives at the plantation level by addressing leakage issues through the establishment of systematic monitoring systems to minimize illegal trading and transactions between unregistered collectors' FFB and unlicensed mills. Further, the traceability system in an integrated JA should be the basis for implementing the revenue sharing mechanism (*Dana Bagi Hasil-DBH*) for palm oil, based on local government performance, to ensure the sustainable management of the palm oil industry.

Through the cooperative involvement of numerous stakeholders, the district administration plays a significant role in spearheading the JA based on responsible practices at the district level within and across administrative boundaries, encompassing both smallholders and large-scale oil palm operations. Effective policy implementation towards a sustainable palm oil business in Indonesia requires constant and open monitoring, which should be backed by law enforcement and the participation of all stakeholders, from the district to the national level.

6 Recommendations

Understanding value chain structures and dynamics at the district to national levels is vital for policymakers, industry stakeholders and other parties in applying effective Jurisdictional Approaches (JAs) to foster a sustainable palm oil industry in Indonesia.

Here are seven recommendations for applying for an effective JA based on the traceability of the palm oil industry's value chain:

1. **Simplify the processes for implementing traceability and certification at the plantation level using a standardized format of documents, supported by integrated baseline data as well as a simple and accurate registration system for the management of existing oil palm plantations at the district level.**
   A priority for regional governments is to prepare integrated baseline data based on more systematic and comprehensive oil palm plantation data-collection mechanisms at the district level, including data on independent smallholders. This is particularly important since companies' certification documents and traceability reports have not provided comprehensive baseline data on plantations and the associated value chains. In the latter stage, integrated baseline data are useful in alleviating pressures to expand oil palm plantations because they provide a reference point for implementing improved guided-monitoring policies. They also form the basis for designing strategies to increase the productivity of independent oil palm smallholders. Such strategies can be tailored to various management conditions at the plantation level – partnership schemes with companies (beyond plasma schemes) could be designed for this purpose.
2. **Implement effective reporting mechanisms for related government agencies at the district level to register plantations and companies that have been certified through various schemes along the value chains.**
   Related government agencies at the district level include the Department of Food Crops, Horticulture, and Plantation; and the Department of Trade, Industry, Cooperatives, Small and Medium Enterprise. An effective reporting mechanism supports the development of integrated and accurate baseline data on value chain governance, covering management activities in plantations, mills, refineries and by other business practitioners. Specifically, the reporting mechanism should be applied for significant numbers of exporter groups and companies that have practiced integrated business governance – from plantations to refineries and exporters – so that traceability processes could be more straightforward since the data are available under one integrated management.
3. **Assess the effectiveness of various certification schemes in enhancing the competitiveness of products from Indonesia's palm oil industry in the global market, considering the high cost of certification for each point along the value chains.**
   A study is urgently needed to assess the degree to which certification at all stages of the value chain increases the global competitiveness of products from the Indonesian palm oil industry. In particular, an analysis should be conducted on the effectiveness of various certification schemes in ensuring sustainable plantation management, supply chains and value chains. Based on the results of such a study, strategies could be developed to: (a) expand the potential global market committed to certified products from the Indonesian

palm oil industry; (b) provide more cost-effective certification schemes along the value chains based on JA; (c) establish a funding mechanism that covers all smallholder plantations in one district and could include partnerships with exporter companies, or subsidy systems of district governments; and (d) provide a basis for discussion, led by the coordinating Ministry of Agriculture, in harmonizing the various due diligence instruments in the palm oil industry (more details in Point 7).

4. **To effectively prevent leakage under an integrated JA, it is very important to ratify the Memorandum of Understanding (MoU) across district or provincial administrative boundaries.**
   The MoU includes a cooperation agreement across districts and provinces to effectively monitor the flow of FFB and/or processed palm oil products, such as CPO, that cross multiple administrative boundaries. This is important to ensure traceability of supply from various palm oil plantations based on actual practices by business actors in the value chain, with raw materials originating from different districts or provinces.
5. **The traceability system in an integrated JA should be the basis for implementing the revenue sharing mechanism (*Dana Bagi Hasil-DBH*) for palm oil, based on local government performance, to ensure sustainability management of the palm oil industry.**
   The performance-based incentive mechanism for fiscal transfers aims to reduce fiscal imbalances and the negative external impacts of economic activities in the palm oil industry, particularly between provincial governments, producing regions, and regions directly associated with the producing areas.
6. **The participatory development of a regional action plan for sustainable palm oil *(Rencana Aksi Daerah Kelapa Sawit Berkelanjutan-RAD KSB)*, based on the implementation of a responsible value chain, is crucial for district governments in facilitating a sustainable palm oil industry.**
   The five previous recommendations (1–5) are important elements in preparing a RAD KSB with clear targets in the development of strategies that foster responsible value chains through mechanisms for the implementation of an effective JA.
7. **Harmonize the palm oil industry's various due diligence instruments developed at the national and global levels to provide a common platform for certification institutions and representatives of destination countries for Indonesian palm oil exports.**
   Under the coordination of relevant ministries, the harmonization of various due diligence instruments for the palm oil industry at both national and global levels (including the European Union Regulation on Deforestation-Free Products or EUDR) can unify the expectations of all parties to ensure a sustainable and responsible palm oil industry based on the value chain.

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An understanding of the palm oil industry's value chains is key to ensuring effective integrated Jurisdictional Approaches (JAs) based on traceability, considering the involvement of actors in the production, processing and distribution of all products. Value chain traceability studies began by identifying national exporters and exporter groups, right back to management at the plantation level, including stages in palm oil processing and distribution. This in-depth study uses baseline data supported by companies' certification documents and traceability reports data in two districts: Pelalawan in Riau Province and Kutai Kartanegara in East Kalimantan Province.

The results show that traceability varies depending on the category of value chain, the type of certification scheme, and the type of plantation management model. According to the value chain types, Type 2 palm oil is processed in mills and sent straight to exporter companies, as opposed to Type 1 palm oil, which is refined in refineries and is the predominant type for observed traceability cases in the two sites. Traceability also varies according to stages in the value chain – from plantation, mill, refinery, CPO production, PKO production, and the variations in each of these stages. The highest proportion of traceability cases was found in the two stages of 'mill to plantation' and 'refinery to mill'.

It was apparent that the smallest amount of data for which traceability could be identified was at the plantation level. The study results also show that the most important business actors in the value chain are exporters and exporter groups, which play highly influential roles and apply the various certification schemes at every stage of the value chain, involving significant costs. A high percentage of exporters have integrated businesses ranging from plantation management to processing in palm oil mills and refineries. Understanding value chain structures and dynamics at the district and national levels is vital for policymakers, industry stakeholders and other parties in applying effective JAs to foster palm oil industry sustainability in Indonesia. District government plays an important role in leading the JA based on responsible practices within and across administrative boundaries by involving various stakeholders collaboratively.

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