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# Global Palm Oil Outlook 2025

## Shifting demand, constrained supply and pathways to sustainable palm oil

June 2026 Report

# Colophon

To cite this report: IDH (2026), Global Palm Oil Outlook 2025: Shifting demand, constrained supply and pathways to sustainable palm oil

Research conducted in 2026 by NewForesight Consultancy for IDH.

**Acknowledgements :**

- Tendai Jonhasi, Olivia Langford, Daniel Viviers-Rasmussen, Bram Stoffele, and Andrea Viviers from NewForesight Consultancy
- Leony Aurora, Ruxandra Pirvu, Tessa Meulensteen and Matthew Spencer from IDH
- Julia Majail, Director of the Sabah JASPO Secretariat, for expert advice and review.
- CDP for the valuable data, insights, and review provided during the development of this report. Particular thanks to Norma Mercedes Pedroza Arceo, Tomasz Sawicki and Claire Prescott.
- The Roundtable on Sustainable Palm Oil (RSPO) for sharing valuable data and providing a review.
- The analysis draws on interviews with stakeholders across the palm oil sector, including traders and processors, consumer goods manufacturers and retailers, certification bodies, financial institutions, civil society organisations, and producer-country government representatives. The authors thank these contributors for the time and insight they provided.



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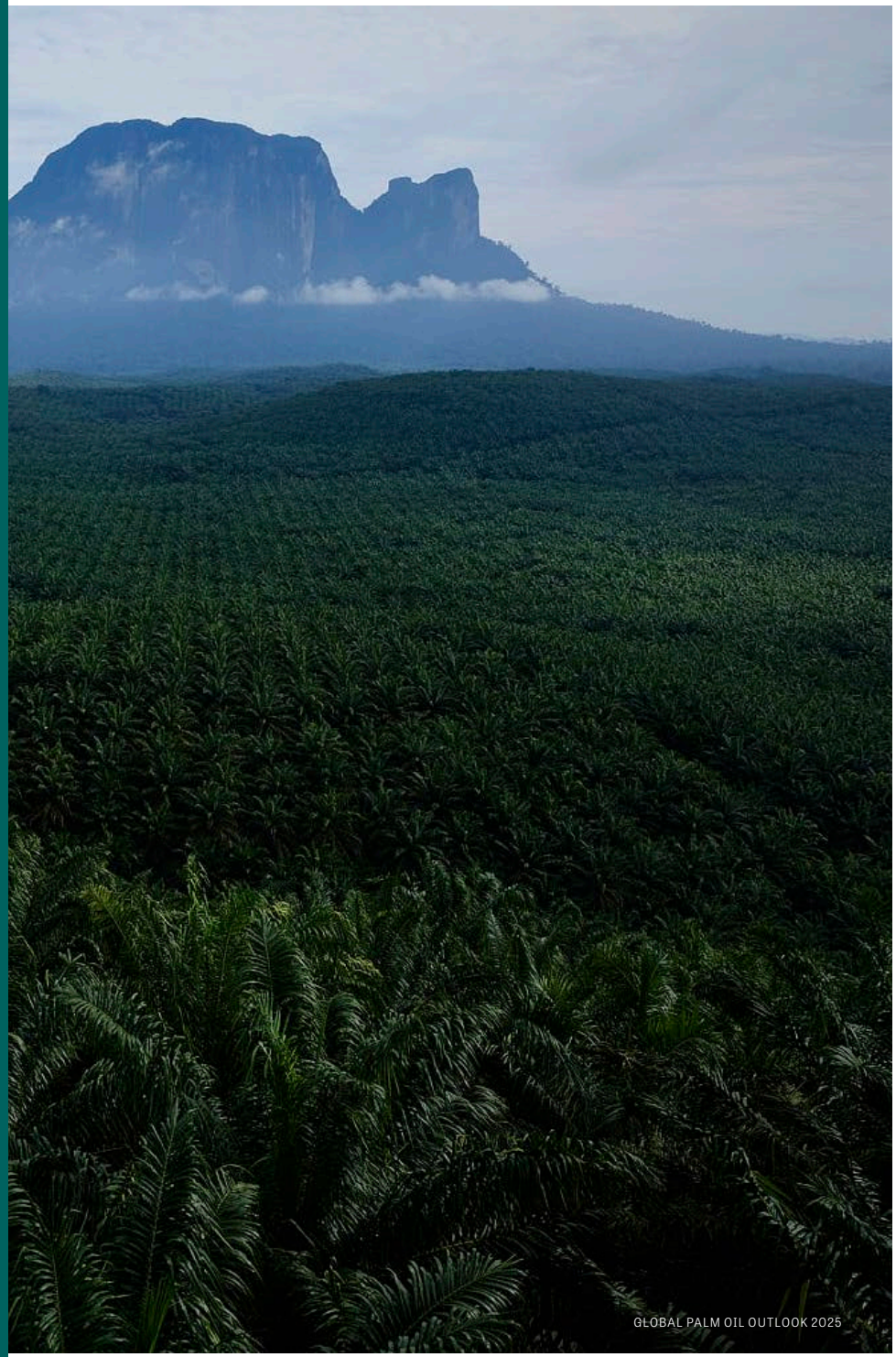


# Executive Summary

## Shifting demand, constrained supply and pathways to sustainable palm oil

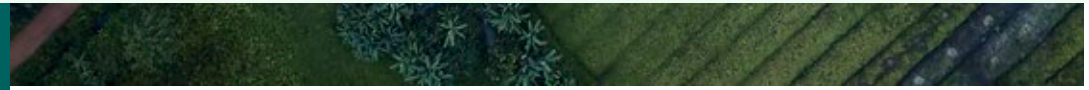
The palm oil sector has built a substantial framework for sustainability over the past two decades through certification, corporate commitments, national standards, and, more recently, mandatory due diligence regulations. These efforts have contributed to improvements in traceability, verification, and deforestation monitoring across the global supply chain. At the same time, many of the barriers that continue to limit progress remain unresolved, particularly around smallholder inclusion, traceability, legality, financing, and long-term resilience.

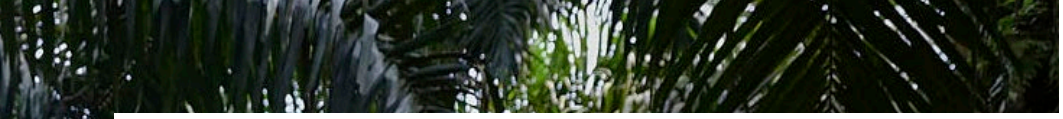
This report examines how changing market dynamics, sustainability requirements, and the conditions needed for smallholder inclusion, traceability, and resilience are reshaping the palm oil sector. It asks two questions. What is preventing the sector from achieving deforestation-free, independent smallholder-inclusive palm oil from resilient landscapes at scale? And which pathways are most likely to overcome those constraints?

### The forces shaping the future of sustainable palm oil

- **Demand is shifting away from the markets that drove sustainability progress.** Between 2019/20 and 2024/25, Indonesia's domestic palm oil consumption grew by 39%, driven primarily by biodiesel mandates, while EU consumption fell by 44% and China's by 31%. At the same time, India and China remained among the world's most important palm oil markets, accounting for 17.5% and 10.5% of global imports respectively. Yet sustainability uptake in these markets remains comparatively limited, with certified palm oil representing only 5% of consumption in India and 12% in China. The markets that shaped certification and sustainability commitments over the past two decades are contracting; the markets that remain large operate without comparable requirements, and there is little evidence that will change rapidly.

- **The sector risks splitting into separate regulated and conventional markets.** EUDR has already triggered more than 60 government-led initiatives across 25 producing countries. Meanwhile, supply chains are becoming more selective, concentrating around traceable supply and redirecting excluded volumes towards markets where price remains a stronger determinant of market access than sustainability performance. The result could be a highly regulated and traceable supply chain serving sustainability-sensitive markets alongside a much larger conventional market operating under different incentives. The 5.2 million tonnes of certified palm oil currently sold without a sustainability claim illustrates how far this divergence has already progressed.





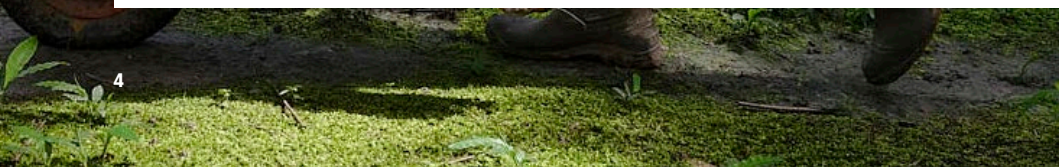
- **Independent smallholders are being passively excluded from the parts of the market with the strongest sustainability requirements, despite being critical to future supply.** Smallholders produce 35–40% of global palm oil but account for only around 8% of RSPO-certified supply. Many independent smallholders lack formal land documentation, cannot easily provide geolocation data, and sell through intermediary networks that most compliance frameworks do not accommodate. As sustainability requirements become more stringent, access to certified, traceable, and regulated markets increasingly depends on systems that many smallholders do not possess. The result is passive exclusion: smallholders are not deliberately screened out, but are unable to meet the conditions required to participate. EFI's 2026 preparedness assessment found that approximately 95% of smallholder suppliers lacked primary legal documentation. At the same time, mills sourcing 20-60% of their fresh fruit bunches from independent smallholders depend on that supply base for throughput and processing economics. Passive exclusion, therefore, creates both an inclusion challenge and a supply risk, leaving one of the sector's largest productivity opportunities untapped.

- **Corporate sustainability commitments have expanded rapidly, but the ability to credibly demonstrate DF/DCF (deforestation-free or deforestation- and conversion-free) outcomes remains much more limited.** While more than half of palm oil companies disclosing to CDP report no-deforestation or no-conversion targets, only 8.4% meet the highest threshold for robust DF/DCF status. Traceability is a significant part of why. Among 427 disclosing companies, 290 (68%) reported having a traceability system in place, but only 88 (21%) reported tracing at least 90% of sourced volumes to production unit level or sourcing area, meaning 79% cannot demonstrate the granularity of traceability that robust DF/DCF determination requires. Having a system does not mean tracing supply to individual production units, and tracing to sourcing area requires engaging in landscapes/jurisdictional initiatives and its monitoring systems in order to substantiate a DF/DCF claim.

- **Many of the barriers sit outside individual supply chains.** Land registration, legality systems, plot-level traceability, forest-zone classification, and smallholder financing all depend on public systems that companies cannot build independently. Indonesia's smallholder replanting requirement alone is estimated at approximately USD 700 million per year. Capital availability is not the main constraint; the absence of the legal and organisational foundations that allow investment to reach smallholders at scale remains the biggest challenge.

- **Landscape and jurisdictional approaches address coordination problems that supply chains cannot solve alone.** In Aceh, coordinated public-private action contributed to productivity increases of 69-104%, two- to four-fold income growth, and lower forest loss over five years of implementation. In Sabah, a jurisdictional framework has aligned forest protection, land-use planning, and sustainability objectives across a wider production area. These examples demonstrate how governments, companies, financial institutions, and local actors can organise around shared objectives, although implementation remains well below the scale required across the wider sector.

- **Long-term supply resilience depends on productivity as much as compliance.** Around 27% of Malaysia's mature plantation area contains ageing trees with declining yields, while approximately 2.6 million hectares in Indonesia are over 20 years old. Ganoderma disease causes annual losses estimated at more than USD 500 million across Indonesia and Malaysia. Improving productivity through replanting, better farm management, and climate adaptation is therefore a supply security issue as much as a sustainability one.



## How key actors can respond to shifting demand and emerging transition challenges

- **End-market buyers** need to increase demand for physically traceable and verified sustainable palm oil while creating stronger commercial incentives for smallholder-inclusive supply.
- **Traders and refiners** need to invest in bringing more independent smallholder supply into compliant supply chains through mill-level traceability, supplier engagement, and support systems.
- **Mill operators** need to strengthen supplier registration, traceability, and smallholder engagement to improve visibility and inclusion across independent supply networks and intermediary channels.
- **Producing-country governments** need to prioritise land registration, legality systems, farmer support, replanting, and traceability infrastructure that private actors cannot build independently.
- **European policymakers** need to maintain the ambition of EUDR while supporting practical compliance pathways that enable participation by smallholders and smallholder-intensive sourcing regions.
- **Financial institutions** need to focus on financing shared systems, productivity improvements, and replanting programmes that improve the long-term bankability of smallholder supply.
- **Landscape implementation partners and civil society organisations** need to support the coordination, accountability, and shared systems needed to address constraints that extend beyond individual supply chains.

## What this means for the future of sustainable palm oil

**The sector is not starting from scratch.** Governments, companies, certification bodies, financial institutions, and civil society organisations have developed many of the building blocks needed for deforestation-free, smallholder-inclusive palm oil from resilient landscapes. RSPO has established internationally recognised sustainability requirements and demonstrated that independent smallholders can participate in certified supply chains. Malaysia's MSPO has shown that government-supported certification can achieve broad smallholder coverage when backed by public investment and implementation support. EUDR has demonstrated the ability of regulation to accelerate investment in traceability, legality, and monitoring systems. Aceh and Sabah have shown how governments and companies can coordinate action beyond individual supply chains, while company-led financing programmes have demonstrated that productivity, inclusion, and compliance can be improved simultaneously.

**Many solutions have been demonstrated, but few have been scaled.** Certification uptake remains uneven despite substantial certified production. National standards have expanded coverage but do not automatically translate into market recognition. EUDR has accelerated investment in compliance systems but has also exposed how unevenly the conditions for participation are distributed across producing regions. Financing models have demonstrated what is possible but remain difficult to deploy at the scale required. The challenge is increasingly less about

proving what works and more about extending successful approaches beyond individual projects and supply chains.

**Future demand growth changes the sustainability challenge.** Much of the sustainability progress achieved over the past two decades was driven by markets where sustainability requirements influenced sourcing decisions and investment. Future demand growth is increasingly concentrated in producing-country markets, major Asian import markets, and industrial uses such as biodiesel, sustainable aviation fuel, and oleochemicals. These markets are expected to play a growing role in determining how palm oil is produced, traded, and valued. The challenge is whether sustainability, inclusion, and resilience become embedded in the markets driving future growth rather than remaining concentrated in sustainability-sensitive supply chains.

**Landscape and jurisdictional approaches provide a mechanism for connecting solutions at the scale where the remaining barriers sit.** Many of the constraints identified in this report, including land legality, smallholder inclusion, replanting, forest protection, and climate resilience, cannot be resolved by any single actor acting alone. They depend on coordination between governments, companies, financial institutions, intermediaries, producers, and local communities. Landscape and jurisdictional approaches can help connect certification systems, national standards, regulations, financing mechanisms, and producer support programmes around shared objectives within a defined geography. Their value lies in helping align these systems around the conditions needed to achieve deforestation-free, smallholder-inclusive palm oil from resilient landscapes at scale.

## Demand is shifting

**+39%**
*growth in Indonesian domestic consumption*

**-44%**
*decline in EU consumption.*

**-31%**
*decline in Chinese consumption*

## Smallholders remain central but excluded

**35-40%**
*of global production comes from independent smallholders*

**10.5%**
*of RSPO-certified plantation area is managed by smallholders*

**7 mio**
*smallholders risk exclusion from compliant markets*

## Commitments exceed demonstrated implementation

**53%**
*of companies disclosing to CDP have active no-deforestation or no-conversion target*

**8.4%**
*meet CDP's highest DF/DCF implementation standard*

**14.3%**
*of companies reporting a trading role meet CDP's highest DF/DCF implementation status*

## Barriers sit outside supply chains

**700 USD mio/year**
*required for Indonesian smallholder replanting*

**64%**
*of certified Indonesian mills do not source from independent smallholders*

**21%**
*of companies disclosed tracing at least 90% of sourced volumes to production unit level or sourcing area*

## Coordination can deliver results but remains underfunded

**3 EUR mio**
*mobilised through the Aceh programme*

**69-104%**
*productivity increase achieved in Aceh*

**40%**
*of Sabah's land area committed to forest cover*

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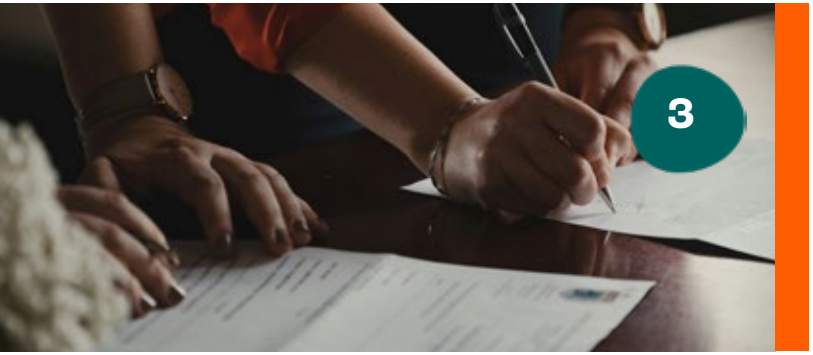







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# List of Acronyms

| | |
|---|---|
| **AFi** | Accountability Framework Initiative |
| **B20, B35, B40, B50** | Biodiesel blending mandates specifying the percentage of palm biodiesel in fuel blends |
| **CPO** | Crude Palm Oil |
| **CSPKE** | Certified Sustainable Palm Kernel Expeller |
| **CSPKO** | Certified Sustainable Palm Kernel Oil |
| **CSPO** | Certified Sustainable Palm Oil |
| **DCF** | Deforestation- and Conversion-Free |
| **e-STDB** | electronic Surat Tanda Daftar Budidaya (Indonesia's smallholder land registration system) |
| **EU** | European Union [1] |
| **EUDR** | European Union Deforestation Regulation |
| **FFB** | Fresh Fruit Bunch |
| **FPIC** | Free, Prior, and Informed Consent |
| **FX** | Foreign Exchange |
| **GHG** | Greenhouse Gas |
| **HVO** | Hydrotreated Vegetable Oil |
| **ILUC** | Indirect Land-Use Change |
| **IRF** | NDPE Implementation Reporting Framework |
| **ISPO** | Indonesian Sustainable Palm Oil |
| **LJA** | Landscape and Jurisdictional Approach |
| **Mn T** | Million Tonnes |
| **MPOB** | Malaysian Palm Oil Board |
| **MSPO** | Malaysian Sustainable Palm Oil |
| **NDPE** | No Deforestation, No Peat, No Exploitation |
| **NI-SCOPS** | National Initiative for Sustainable Climate Smart Oil Palm Smallholders |
| **NVWA** | Nederlandse Voedsel- en Warenautoriteit (Dutch Food and Consumer Product Safety Authority) |
| **PKE** | Palm Kernel Expeller |
| **PKO** | Palm Kernel Oil |
| **RED II** | Renewable Energy Directive II |
| **RSPO** | Roundtable on Sustainable Palm Oil |
| **SAF** | Sustainable Aviation Fuel |
| **SIMS** | Sawit Intelligent Management System |
| **SFDR** | Sustainable Finance Disclosure Regulation |
| **UCO** | Used Cooking Oil |
| **UK** | United Kingdom |
| **USDA** | United States Department of Agriculture |

1. Unless otherwise stated, references to the EU refer to the EU-27 member states.

1

# Framing The End-State

Markets that enable deforestation-free, smallholder-inclusive palm oil from resilient landscapes

Palm oil is a globally significant commodity. It is the most productive vegetable oil crop, accounting over a third of global vegetable oil output while occupying just 6% of global oil crop area [2]. It is integral to global food systems and consumer goods supply chains, while also supporting millions of livelihoods, including more 7 million smallholder farming families in Southeast Asia, Africa, and Latin America [3].

At the same time, unsustainable palm oil production has led to major environmental and social consequences. Conversion of forests and peatlands for cultivation has resulted in biodiversity loss, ecosystem degradation, and greenhouse gas emissions. Governance issues and uneven distribution of value along the supply chain have, in places, also resulted in land conflicts, labour rights abuses, and limited economic benefits for smallholders.

These environmental and social pressures have driven sustained efforts over the past two decades to improve the sustainability of palm oil production. The question is therefore not whether palm oil should be produced, but whether it can be produced in ways that meet rising sustainability expectations across regulators, investors, and consumer markets.

2. Palm Oil, Our World in Data, 2020
3. Palm Oil Barometer 2025, Solidaridad, 2025

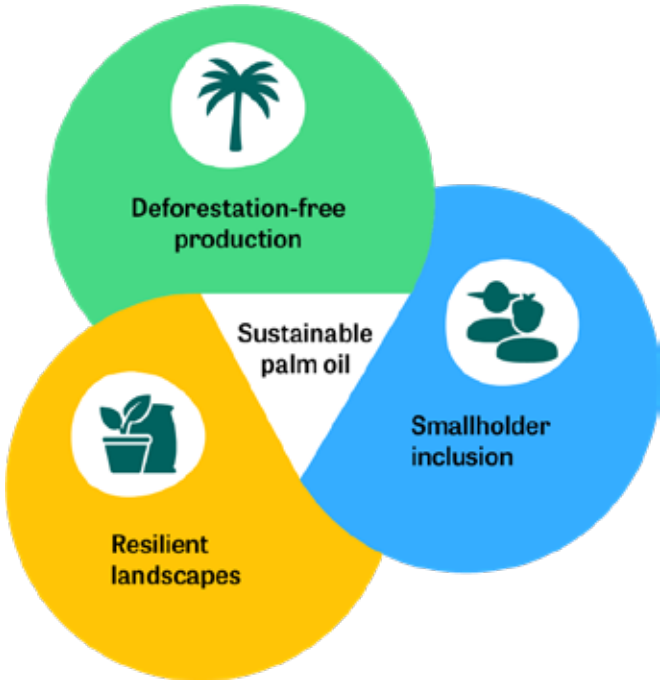
Organisations sourcing palm oil at scale are increasingly required to comply with both mandatory and voluntary sustainability frameworks. Under the European Union Deforestation Regulation (EUDR), deforestation-free traceability is a binding prerequisite for European Union (EU) market access, while similar regulation is emerging in the United Kingdom (UK) and major Asian markets. At the same time, investors are placing increasing scrutiny on the credibility and verification of corporate sustainability disclosures under frameworks such as the Sustainable Finance Disclosure Regulation (SFDR) and other climate disclosure regimes [4]. These developments are increasingly influencing procurement and sourcing strategies by extending accountability deeper into global supply chains [5].

Against this backdrop, the key challenge is not only to scale existing approaches, but to determine whether the wider market and policy environment supports a transition towards sustainable palm oil production. This report addresses that question by examining the pathways and blockages shaping the sector's trajectory towards sustainability. To do so, it first defines a clear reference point for what a sustainable palm oil sector looks like: markets that enable deforestation-free production, smallholder inclusion, and resilient landscapes. These conditions provide the basis for assessing current market dynamics, regulatory developments, and sustainability mechanisms throughout the report.

## 1.1 The three dimensions of the end-state

The end-state defined in this report is structured around three dimensions:

- Deforestation-free production
- Smallholder inclusion
- Resilient landscapes




4. Sustainability-related disclosure in the financial services sector, European Commission, 2023; CDP reporting in 2025: A strategic imperative, Nixon Peabody LLP, 2025
5. The impact of Scope 3 emissions regulations on global supply chain strategies, Tanwar & Singh, 2026

"Deforestation-free supply chains are increasingly being treated not as a sustainability aspiration, but as a condition of market access."

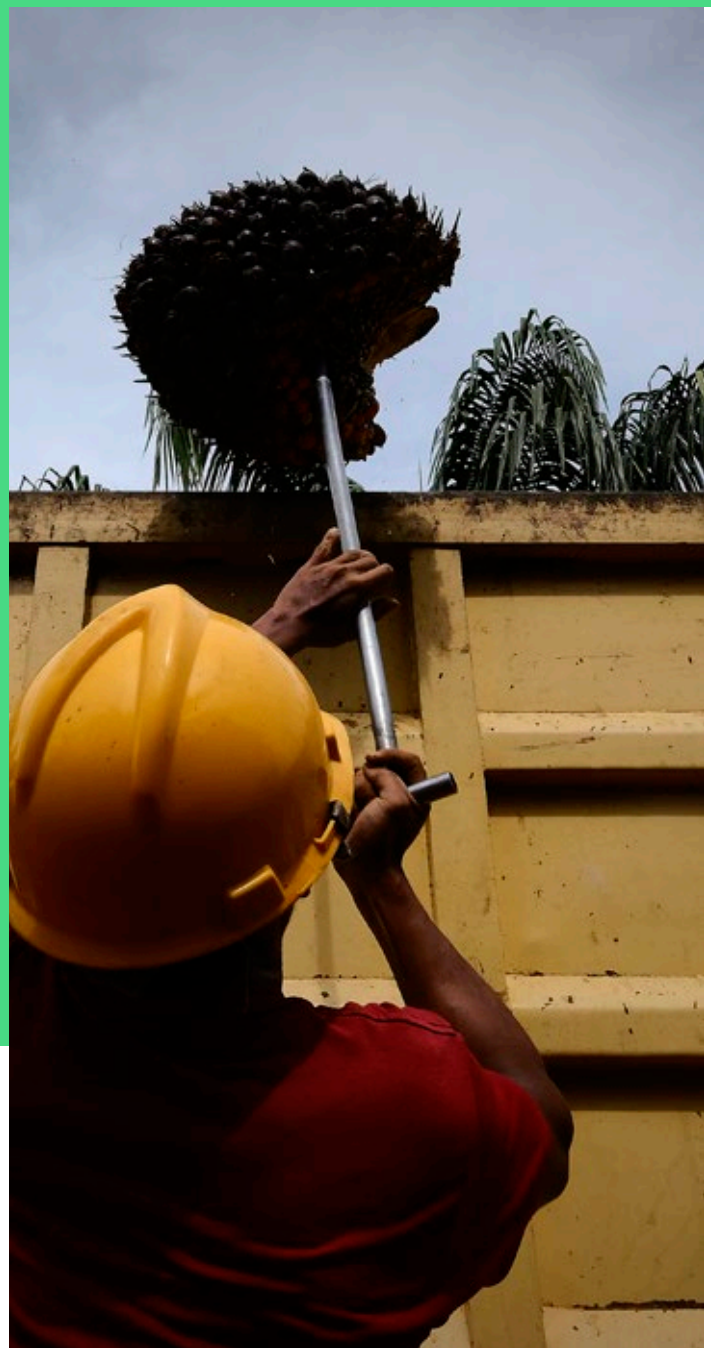
These are not independent objectives but interdependent conditions that integrate environmental, social, and economic outcomes. They must be achieved simultaneously. Evidence from the sector shows that pursuing one dimension in isolation consistently produces unintended consequences and undermines progress toward the others[6]. For example, stricter traceability requirements can exclude smallholders from supply chains compliant with those requirements; certification schemes can concentrate sustainable supply among large estates; and conservation efforts can fail where local livelihoods are not addressed.

This interdependence is structural. Smallholders manage roughly 40% of global palm oil producing land[7], meaning that deforestation-free production cannot be achieved at scale without their inclusion in compliant supply chains[8]. At the same time, inclusion alone is insufficient if production systems continue to drive deforestation and environmental degradation. Likewise, resilient landscapes depend on coordinated progress across both sustainable production and smallholder participation. The end-state therefore requires that all three dimensions be pursued together, rather than as separate objectives. The sections below define each dimension and explain why it is necessary.

## What does deforestation-free mean?

In this report, deforestation-free is defined as no gross loss of natural forest or conversion of natural ecosystems after a specified cut-off date, supported by plot-level traceability, credible monitoring, and defined remediation mechanisms for non-compliance. The definition aligns with the Accountability Framework Initiative and is operationalised through regulatory frameworks such as the EUDR, which requires traceability to individual plots and compliance with a fixed cut-off date of 31 December 2020[9].

6. The environmental impacts of palm oil in context, Meijaard et al., 2020
7. Palm Oil Barometer 2025, Solidaridad, 2025
8. "compliant supply chains" refers broadly to supply chains operating under regulatory, traceability, legality, certification, or sustainability requirements
9. Accountability Framework Initiative, 2023; EUDR, 2023



While the broader framework for palm oil sustainability is No Deforestation, No Peat, and No Exploitation (NDPE), this report uses deforestation-free production as the central environmental criterion and examines NDPE commitments as operational vehicles for delivering deforestation-free supply chains.

### Why is deforestation-free production relevant?

There is a broad global consensus that deforestation-free supply chains are the minimum requirement for sustainable commodity production[10]. This is reflected in corporate NDPE commitments, certification standards including RSPO, and increasingly binding regulation in consumer markets, notably the EUDR. Further, these frameworks demonstrate that deforestation is increasingly being treated as a condition of market access.

## What smallholder inclusion looks like in practice?

A smallholder-inclusive palm oil sector is one in which smallholders are able to meet emerging sustainability requirements, participate in the supply chains compliant with those requirements, and achieve stable livelihoods. This requires more than access to certification. It depends on enabling conditions including secure land rights, extension services, organisational support, shared infrastructure (such as traceability systems and service delivery models), and economically viable production that supports progress toward decent standards of living.

### Why is smallholder inclusion relevant?

Smallholders are central to the sector. More than seven million smallholder farming families depend on oil palm globally.[11] In Indonesia and Malaysia, which together account for over 80% of global production, smallholders account for approximately 40% of total oil palm production[6]. Outside of these major producing countries, the share of smallholder production is often significantly higher - reaching between 70 to 90% in countries such as Thailand, Colombia, and parts of West Africa. Sustainability frameworks that do not include smallholders, therefore, advance sustainability for a minority of producers and leave a substantial share of the industry outside the system. Additionally, this has direct implications supply resilience. Where smallholder farming is not economically viable, smallholders are unable to adapt to sustainability requirements, or where they are excluded from premium

**Smallholders are central to the sector. More than seven million smallholder farming families depend on oil palm globally.**

10. Palm Oil Barometer 2025, Solidaridad, 2025
11. Palm Oil Barometer 2025, Solidaridad, 2025

markets, the productive base of the sector narrows. This can reduce future supply growth and limit the availability of supply able to meet emerging sustainability and traceability requirements.

## What does landscape resilience mean?

In this report, 'resilient landscapes' refers to the capacity of social, ecological, and economic systems in palm oil-producing regions to absorb shocks (climate stress, fire, pest and disease, price volatility) while maintaining core functions and enabling adaptation over time. This is a system-level outcome, not a farm-level or supply-chain-level outcome, and depends on how land use, production systems, ecosystems, and livelihoods interact at the landscape scale[12].

### Why is landscape resilience relevant?

Many of the risks facing the palm oil sector are systemic rather than supply-chain specific. Ageing plantations, yield decline, disease pressure, and climate-related risks are landscape-scale dynamics that affect entire producing regions. The economic implications manifest over time in declining yields, increasing volatility, and supply shocks that are costly and difficult to reverse[13]. These risks are also rooted in structural constraints within production systems

– low and volatile producer incomes limit reinvestment in farm maintenance and renewal, creating a reinforcing cycle in which ageing plantations, suboptimal agronomic practices, and increasing vulnerability are symptoms of underinvestment rather than isolated technical challenges.

This creates a structural investment problem. Many of the interventions required to strengthen resilience – including replanting, disease management, water systems, and ecosystem restoration – generate benefits that are shared across actors while the costs are borne individually. Individual organisations acting rationally may under-invest in landscape-level resilience. Resolving this requires coordination at the landscape scale that no individual actor can deliver. Chapter 5 examines the landscape and jurisdictional approaches that are designed to provide this coordination, and assesses what is working in current implementations.

## 1.2 Procurement enablement: the demand-side condition for delivery

The three dimensions describe the production-side conditions required for a sustainable palm oil sector. However, these outcomes cannot be achieved at scale unless procurement practices create consistent commercial demand for them. Sustainability transitions are shaped not only by what producers can deliver, but also by what buyers are willing to source, finance, and incentivise through procurement decisions.

12. Adapted from IPCC (2022), Climate Change 2022: Impacts, Adaptation and Vulnerability; and Sayer et al. (2013), Ten principles for a landscape approach to reconciling agriculture, conservation and other competing land uses, PNAS.
13. Agronomy explains large yield gaps in smallholder oil palm fields, Monzon et al., 2023

Buyer behaviour directly affects whether sustainable production becomes commercially viable. Demand for verified deforestation-free supply, premium transmission to producers, long-term sourcing relationships, and support for smallholder-inclusive supply chains all influence whether producers can absorb the costs of compliance and transition. Similarly, landscape resilience depends partly on whether buyers support pre-competitive coordination, co-finance shared interventions, and recognise landscape or jurisdictional approaches within sourcing strategies.

Procurement enablement is therefore a critical condition for delivering the three end-state dimensions at scale. The effectiveness of the sustainability architecture examined in Chapter 3, the commercial viability of smallholder inclusion analysed in Chapter 4, and the landscape approaches assessed in Chapter 5 all depend, in part, on whether buyer-side incentives align with what producers are being asked to deliver. Where procurement practices reinforce sustainability objectives, regulation, certification, and corporate commitments are more likely to translate into durable change at producer level. Where they do not, the costs and risks of transition remain concentrated upstream, limiting participation and weakening long-term resilience. For this reason, procurement enablement is treated throughout the report as integral to the end-state framework even where it does not appear as a separate dimension.

## 1.3 How the end-state framework is used in the report

The end-state defined in this chapter serves as the evaluative reference point for the rest of the report. Subsequent chapters assess whether current market dynamics, regulatory instruments, and sustainability mechanisms are reinforcing or undermining the conditions required for markets that enable deforestation-free, smallholder-inclusive palm oil from resilient landscapes - and whether buyer-side procurement practices are aligned with what production-side actors are being asked to deliver.

Chapter 2 examines the market dynamics reshaping where palm oil is produced, traded, and consumed, and what these dynamics mean for the leverage of sustainability requirements over the next decade. Chapter 3 analyses the sustainability architecture - mandatory regulation, voluntary certification, and corporate commitments - and highlights where the architecture is delivering and where it is failing. Chapter 4 examines smallholder inclusion, specifically the passive exclusion of smallholders in

compliant supply chains. Chapter 5 presents landscape and jurisdictional approaches as the coordination mechanism through which the three dimensions can be pursued at scale. Finally, Chapter 6 sets out the actions required across actor groups to accelerate the transition to a more sustainable palm oil sector.

"Sustainability transitions are shaped not only by what producers can deliver, but also by what buyers are willing to source, finance, and incentivise through procurement decisions."

2

# Market Dynamics Shaping Sustainability Pathways

Global supply, demand, trade, and emerging pressures


The global palm oil market is shifting in many ways that are reshaping sustainability incentives across the sector. Demand growth is increasingly concentrated in producing and emerging markets where sustainability requirements are weaker, while some of the markets that historically drove certified demand and traceability are becoming relatively less influential.

At the same time, slower supply growth, rising domestic biodiesel use, and changing trade flows are reshaping competition for supply and influencing how sustainability requirements are implemented across the sector. This chapter examines how changing demand patterns, supply constraints, and trade dynamics are influencing the conditions for a transition toward deforestation-free, smallholder-inclusive production from resilient landscapes.

## 2.1 Demand-side trends.

### 2.1.1 Demand is shifting toward markets with weaker sustainability requirements

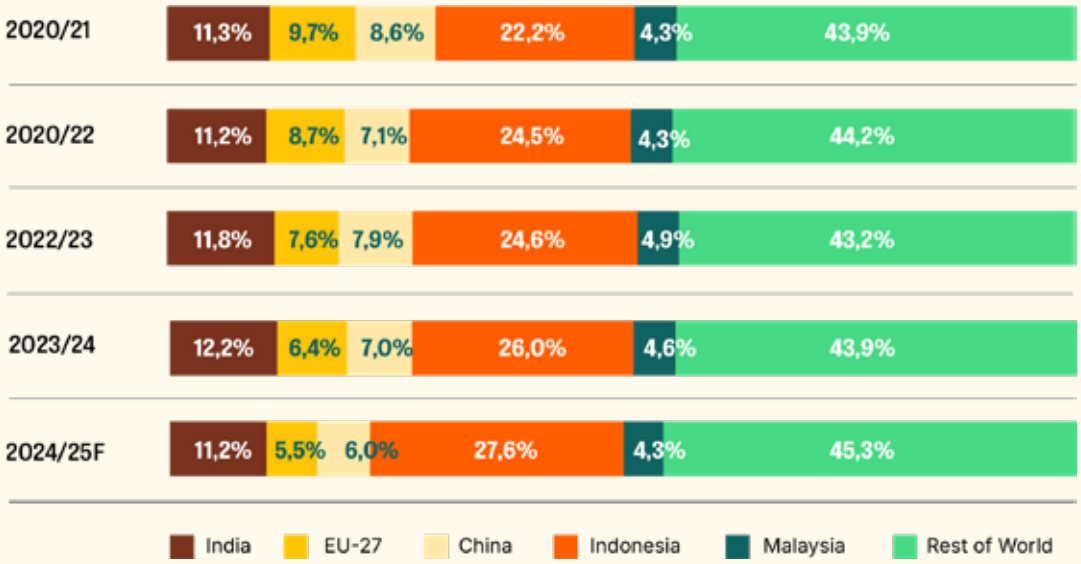
**Demand is declining in previously influential markets.** Historically, palm oil consumption patterns were shaped by demand from large importing regions such as the EU and China, which influenced supply chain practices and sustainability standards[14]. That influence is now diminishing as consumption in these markets declines. Rising domestic consumption in producing countries, particularly Indonesia, and steady growth in emerging markets are reshaping global demand dynamics.

Between 2019/20[15] and 2024/25[16], Indonesia's consumption grew by approximately 39%, making it the largest growth driver in the market. EU consumption fell by around 44% and China's by approximately 31%. India remains the second largest consumer, though its demand is price-sensitive[17]. Growth is also evident in emerging regions, particularly Latin America, with Colombia and Brazil recording increases of 36% and 51% respectively since 2020/21, albeit from a relatively small base[18].

**These shifts are reflected in changing market shares.** As depicted in figure 2.1, between 2020/21 and 2024/25, Indonesia's share of global consumption steadily increased, while China's decreased and the EU lost almost half its share. India and Malaysia's shares remained relatively stable[15].

**FIGURE 2.1**

**Palm oil market share by region, 2020/21-2024/25**

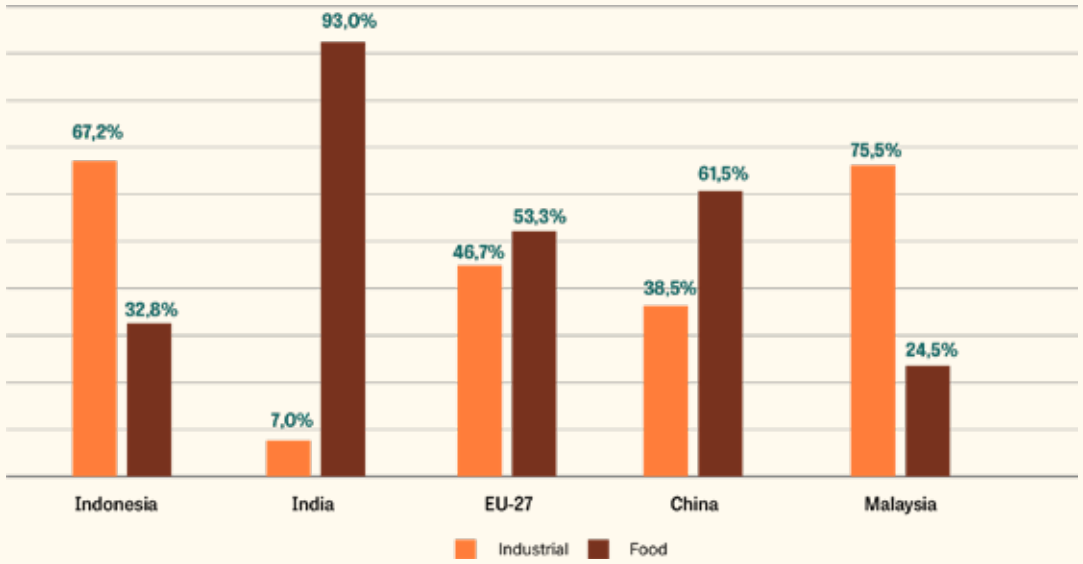



Source: Based on data from Oil World Annual 2025.

14. Sustainable Palm Oil: Europe's Business, Facts, analysis and actions to leverage impact, EPOA, IDH, RSPO, 2022
15. Year ranges presented in the format 2019/20 refer to marketing years running from October to September. Single-year references refer to calendar years unless otherwise specified.
16. Oil World data presented in the report is taken from the Oil World Annual published in May, 2025. All 2024/25 and 2025 figures are forecasted.
17. Oilseeds and Products Annual: India, USDA FAS, 2025
18. Oil World Annual, Oil World, 2025

**FIGURE 2.2**

**Share of industrial vs. food use by major market, 2024/25**




Source: Based on data from the 2025 regional Oilseeds and Products Annuals published by the United States Department of Agriculture Foreign Agricultural Service.

## 2.1.2. Drivers of demand

Three factors are driving the divergence in demand patterns: 1) **policy-driven biodiesel expansion in producing countries**; 2) **price-driven substitution** towards alternative oils in food-dominant importing markets; and 3) **changing consumer preferences** in higher-income regions. Among these, biodiesel demand growth is the dominant force shaping the global demand patterns.

In major producing countries, namely Indonesia and Malaysia, industrial applications account for the large majority of domestic palm oil consumption, as shown in Figure 2.2.[19]. In these producing countries, where demand is increasing, consumption is driven primarily by industrial uses.

In contrast, major importing regions such as India and China predominantly use palm oil for food[20]. This distinction is notable as food and industrial demand respond to different market forces. Demand in these importing markets is more sensitive to relative vegetable oil prices, consumer preferences, and demographic trends than to industrial policy mandates.

19. Oilseeds and Products Annual: Indonesia, United States Department of Agriculture (USDA) Foreign Agricultural Service (FAS), 2025; Oilseeds and Products Annual: Malaysia, USDA FAS, 2025
20. Oilseeds and Products Update: China, USDA FAS, 2025; Oilseeds and Products Annual: India, USDA FAS, 2025

## Biodiesel is driving demand in producing countries

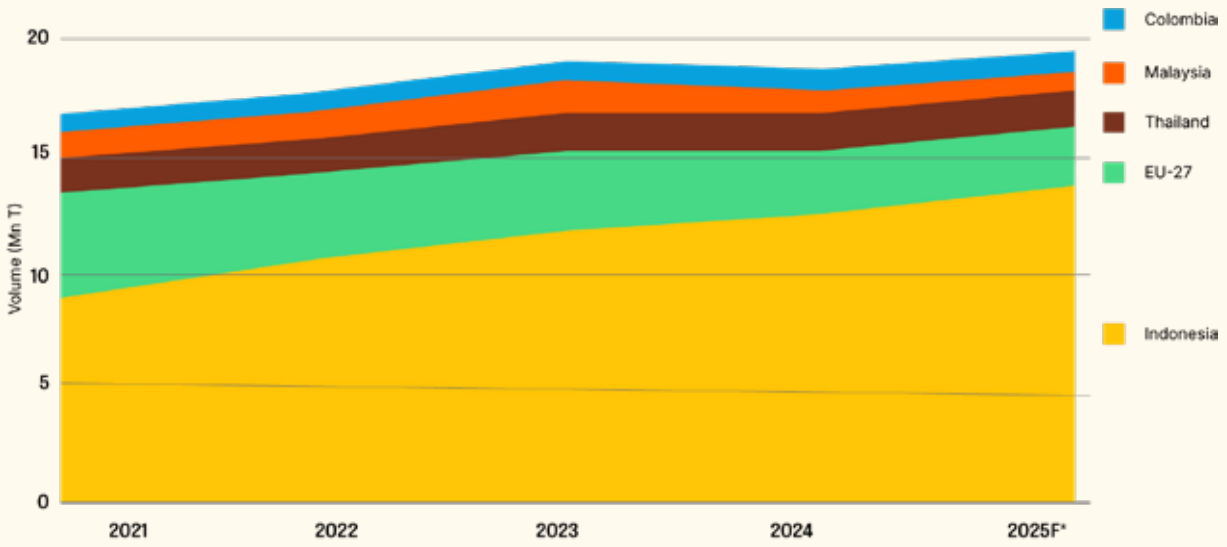
**Biodiesel expansion is the largest driver of demand growth in producing countries,** particularly Indonesia.[21] Palm oil feedstock use for biodiesel in Indonesia increased by approximately 53% between 2021 and 2025 following the expansion of domestic blending mandates[22]. By 2024/25, biodiesel accounted for approximately 59% of total domestic palm oil consumption, contributing to a broader shift from export-oriented production toward domestic consumption. Malaysia follows a similar, though more constrained, pattern. While industrial use dominates domestic consumption, delays in implementing the B20 blending mandate have limited further biodiesel demand growth[23]. This trend is also emerging in other producing countries. In Colombia, palm oil feedstock use for biodiesel grew by 16% between 2021 and 2025[24], suggesting that policy-driven industrial demand growth is not limited to Southeast Asia.

**The EU presents the opposite trend.** Palm oil use as a biofuel feedstock fell by approximately 43% between 2021 and 2025, driven by the phase-out of palm-based biofuels under RED II. Palm oil is increasingly being displaced by alternative feedstocks such as used cooking oil (UCO), as demand shifts toward lower-carbon alternatives[15].

21. Oil World Annual, Oil World, 2025; Biofuels Annual, USDA FAS, 2025
22. Oil World Annual, Oil World, 2025
23. Oilseeds and Products Annual: Malaysia, USDA FAS, 2025
24. Oil World Annual, Oil World, 2025

**FIGURE 2.3**

**Palm oil use as a biofuel feedstock in the top 5 consuming countries/regions from 2021 to 2025**




Source: Based on data from Oil World Annual 2025

Notably, while biodiesel is driving demand growth in producing countries, palm oil is simultaneously losing share within global biodiesel markets overall. Between 2021 and 2025, total vegetable oil use for biodiesel grew by approximately 25%, however palm oil's contribution only grew around 13%, reflecting increasing competitionfrom alternative feedstocks such as UCO.

BOX 2.1

# Policy context: RED II and Indonesia's biodiesel mandate [25]

The EU's Renewable Energy Directive II (RED II) classifies palm oil as a high indirect land-use change (ILUC) risk feedstock, effectively phasing out its use in EU transport biofuels from 2030 (with a managed reduction from 2024). This has been a primary driver of declining EU palm oil imports since 2019.

Indonesia's domestic blending mandate has expanded progressively - from B20 (20% palm biodiesel blend) toward B35 and beyond. The mandate creates a policy-guaranteed demand floor for domestic palm oil, insulating a large share of consumption from price competition and reducing the volume available for export.

These two policies are pulling in opposite directions, and together they are among the most consequential forces reshaping global palm oil trade flows.

25. Draft amendment to Delegated Regulation (EU) 2019/807 on high indirect land-use change-risk feedstocks, European Commission, 2026; Biofuels Annual, USDA FAS, 2025

## Price and substitution in importing markets

In food-dominant importing, price is a critical driver of demand. Palm oil prices have been elevated in recent years due to stagnant production growth and the rising biofuel demand in Indonesia and Malaysia. As palm oil became more expensive relative to other vegetable oils, such as soybean, sunflower, and rapeseed oil, consumers and food manufacturers shifted towards cheaper alternatives. This trend is evident in India, where high prices prompted buyers to move toward more soybean oil and other competitive oils.[26] In China, elevated prices contributed to weaker demand across both food and industrial applications[27]. Even in Malaysia, higher-income consumers shifted away from palm oil during periods of elevated prices - although this appears more a temporary trend rather than structural market change [28].

## Consumer preferences in mature markets

Beyond price effects, longer-term changes in consumer preferences are reinforcing demand changes in higher-income and urbanising markets. In the EU, concerns around health and environmental sustainability have driven consumers to seek alternatives such as sunflower oil [29]. In China, a slowdown in food service demand, rising health consciousness, and demographic pressures, including an ageing population, have reduced consumption growth [30]. In India, while rising incomes and urbanisation are increasing overall edible oil demand, consumers are shifting towards higher-value alternatives[31]. This limits the long-term growth potential for palm oil even as the broader market expands.

## The pattern holds across the palm complex

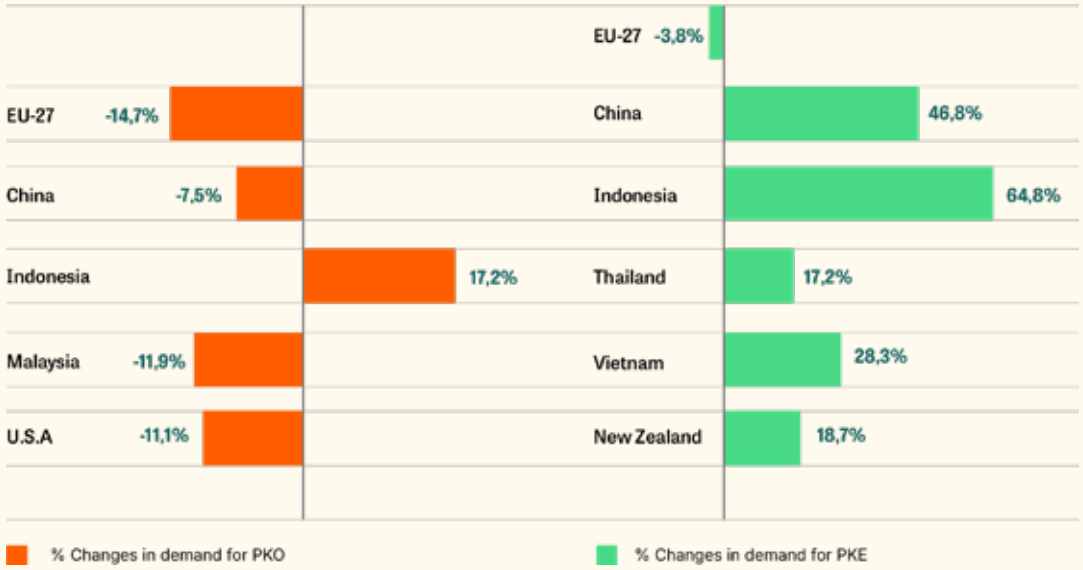
The bifurcation described above is not limited to palm oil. Demand patterns for palm kernel oil (PKO) and palm kernel expeller (PKE) exhibit the same structural divergence, suggesting a market-wide shift rather than a product-specific phenomenon. PKO demand has declined since 2020 across several major markets: Malaysia (-12%), the EU (-15%), and the USA (-11%). Meanwhile, demand has grown in Indonesia (+17%) and in emerging markets such as Brazil (+23%)[29]

"Sustainability transitions are shaped not only by what producers can deliver, but also by what buyers are willing to source, finance, and incentivise through procurement decisions."

26. Oilseeds and Products Annual: India, USDA FAS, 2025
27. Oilseeds and Products Update: China, USDA FAS, 2025
28. Oilseeds and Products Annual: Malaysia, USDA 2025
29. Oilseeds and Products Annual: European Union, USDA, 2025
30. Oilseeds and Products Annual: China, USDA, 2025; Global market report: Palm oil prices and sustainability, Voora et al., 2023
31. Oil World Annual, Oil World, 2025

**FIGURE 2.4**

**Change in PKO and PKE demand across regions, 2019/20 - 2024/25**




Source: Source: Figure created by New Foresight based on data from Oil World Annual 2025

PKE tells a similar story. While the EU and New Zealand remain the largest consumers globally, accounting for 15% and 21% of consumption, respectively, growth is shifting towards China and Southeast Asia (Indonesia, Thailand, and Vietnam), reflecting expanding feed demand across the region [32].

32. Oil World Annual, Oil World, 2025
33. Malaysian Palm Oil Council (MPOC). Malaysian Palm Oil Industry Performance, 2024
34. Oil World Annual, Oil World, 2025; The 2023 Indonesian Oil Palm Statistics, BPS Statistics Indonesia, 2023

### Drivers reflect durable changes rather than short-term fluctuations

These drivers point to a demand landscape that is increasingly bifurcated and, in several key markets, structurally contracting. The forces behind this shift are not short-term fluctuations but instead reflect durable changes in how and where palm oil is consumed globally. Importantly, these demand patterns cannot be understood in isolation from supply-side constraints, which are shaping prices, availability, and market behaviour.

## 2.2 Supply-side trends

### 2.2.1. Slowing supply growth

**Global palm oil supply growth has slowed significantly**. Between 2019 and 2024, global output rose by only 1.9 MT (0.5% increase per year) compared to a 17 MT increase in the prior period (5.3% average annual increase)[29]. This reflects two reinforcing constraints: slower plantation expansion and declining yields.

**Expansion of mature plantation areas has slowed considerably**. Global mature oil palm area expanded by only 0.3 million hectares in 2024, compared with annual increases of 0.8–1.1 million hectares between 2011 and 2016[29]. In Malaysia, mature plantation area has declined annually since 2021 and is expected to continue contracting[33]. In Indonesia, immature plantation area remains below levels seen a decade earlier, indicating a weaker pipeline for future supply growth.[34]

The slowdown reflects both land constraints and tighter restrictions on plantation development in Indonesia and Malaysia. Although some new development is expected, particularly to support domestic biodiesel mandates, expansion is likely to remain well below historical levels[35] .

**Declining yields are a second key constraint, driven primarily by ageing plantations and insufficient replanting**. In Indonesia alone, around 2.6 million hectares of mature area (18%) is older than 20 years - the point at which yields begin to decline materially; in Malaysia, approximately 27% of mature plantation area was estimated to contain ageing trees with declining productivity at the end of 2024. An estimated 4 million hectares of oil palm in Malaysia require replanting. However, high costs, income losses during the immature period, labour constraints, and limited access to finance continue to slow replanting activity, contributing to the decline in mature productive area observed since 2021.[36]

Additional pressures are compounding the yield challenge. Ganoderma fungal disease is increasingly prevalent across Southeast Asian plantations and is estimated to cause annual economic losses exceeding USD 500 million in Indonesia and Malaysia[37]. Climate-related risks, including rising temperatures and water stress, also threaten long-term yield stability, with some projections suggesting Malaysian yields could decline by 10–41% under future climate scenarios [38].

**"Between 2019 and 2024, global palm oil output increased by only 1.9 million tonnes, compared with 17 million tonnes in the preceding five-year period."**

35. Oilseeds and Products Annual: Indonesia, USDA FAS, 2025
36. Malaysian Palm Oil Council (MPOC). 2024. Malaysian Palm Oil Industry Performance 2024 and Outlook 2025.
37. Addressing Ganoderma Disease in Oil Palm Plantations: A Review of Effective Management Strategies and Implementation Challenges, Judijanto, 2026
38. Impacts of climate change on oil palm production in Malaysia, Sarkar et al., 2022

BOX 2.2

# The smallholder yield gap as a supply opportunity

One of the largest untapped opportunities in global palm oil supply lies in improving yields on existing smallholder plantations rather than expanding cultivated area. Research across 977 Indonesian smallholder fields found average yields at only around 40% of attainable levels under local conditions [11] Much of this gap is linked to farm management practices - including fertilisation, pruning, weed control, and harvest timing - rather than land quality. Studies applying Better Management Practices have achieved yield increases of around 40% alongside higher profitability[39]. Improving smallholder productivity could therefore increase supply significantly without additional land conversion, making yield improvement one of the most important long-term supply resilience opportunities for the sector [40].

However, improving management practices alone will not close all yield gaps. In many producing regions, a significant share of smallholder palms are ageing, poorly planted, or established with low-quality planting material. [41] Replanting with improved seedlings is widely recognised as one of the most effective interventions for restoring productivity in ageing plantations, particularly when combined with access to finance, quality inputs, extension support, and improved farm management [42].

Improving smallholder productivity could therefore increase supply significantly without additional land conversion, making it one of the most important long-term opportunities for supply resilience, farmer incomes, and deforestation prevention. Realising this opportunity, however, depends on overcoming the financing, replanting, and governance constraints to be discussed in Chapter 4, which currently limit the scale at which productivity improvements can be achieved. [43]

39. Improving yield and profit in smallholder oil palm fields through better agronomy, Sugianto et al., 2025
40. Yield gaps in oil palm: A quantitative review of contributing factors. European Journal of Agronomy, 83, pp.57–77, Woittiez et al., 2017
41. The Oil Palm (5th ed.), Corley and Tinker, 2016
42. Yield gaps in oil palm: A quantitative review of contributing factors. European Journal of Agronomy, 83, pp.57–77, Woittiez et al., 2017
43. Review of smallholder palm oil sustainability reveals limited positive impacts and identifies key implementation and knowledge gaps, Ogahara et al., 2022

## 2.3. Trade flows

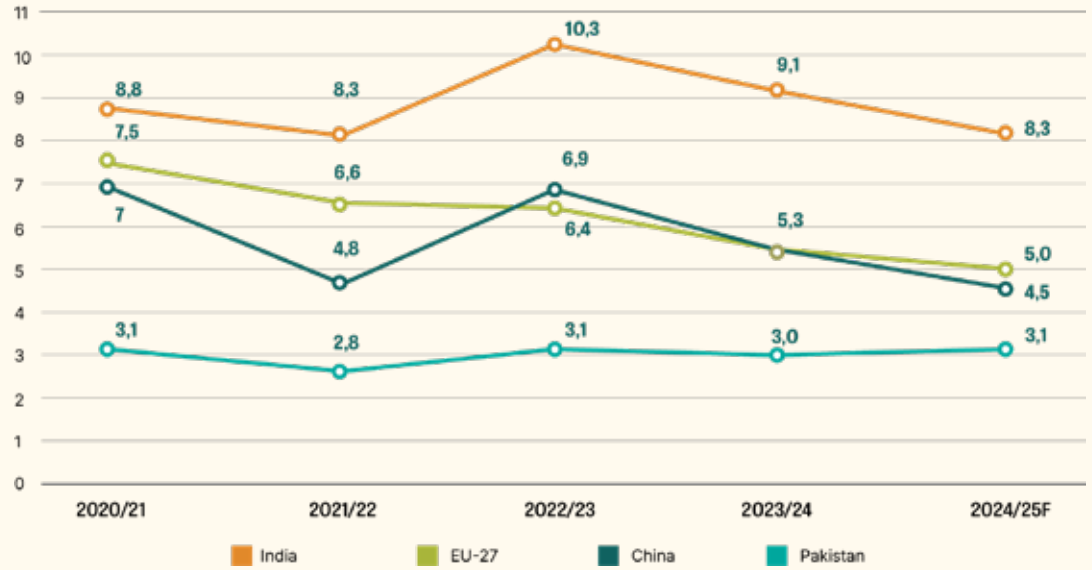
The share of globally traded palm oil exposed to stringent sustainability requirements is narrowing as producing countries absorb more supply domestically and growth increasingly shifts toward markets with less developed sustainability demand. The demand and supply dynamics described above have resulted in a global market with slower trade growth, tighter export availability, and increasing regional divergence in demand.

Although Indonesia and Malaysia remain heavily export-oriented, accounting for approximately 86% of global palm oil exports[44], slower production growth alongside rising domestic absorption in producing countries is reducing the volume available for export. This is evident in the 7% decline in global exports between 2020/21 and 2024/25, driven primarily by reduced exports from Indonesia (-15%).[37]

On the import side, trade volumes have decreased across several major markets. EU imports fell by 40% between 2020/21 and 2024/25, reflecting the continued phase-out of palm-based biofuels and stricter sustainability requirements.[45] Imports into China declined by approximately 29% over the same period, while India's imports are projected to fall to a 15-year low as buyers increasingly substitute toward alternative oils during periods of elevated prices .[46]

**FIGURE 2.5**

**Palm oil imports by leading importers**




Source: Figure created by New Foresight based on data from Oil World Annual 2025

44. Oil World Annual, Oil World, 2025
45. Oil World, 2025; Oilseeds and Products Annual: European Union, USDA FAS, 2025
46. Oilseeds and Products Update: China, USDA FAS, 2025; Oilseeds and Products Annual: India, USDA FAS, 2025

## 2.4 What is reshaping the market over the next five to ten years

The next five to ten years will likely be shaped by a combination of existing and emerging market forces. This section highlights three forces expected to influence the conditions under which sustainability requirements operate over the coming decade.[47]

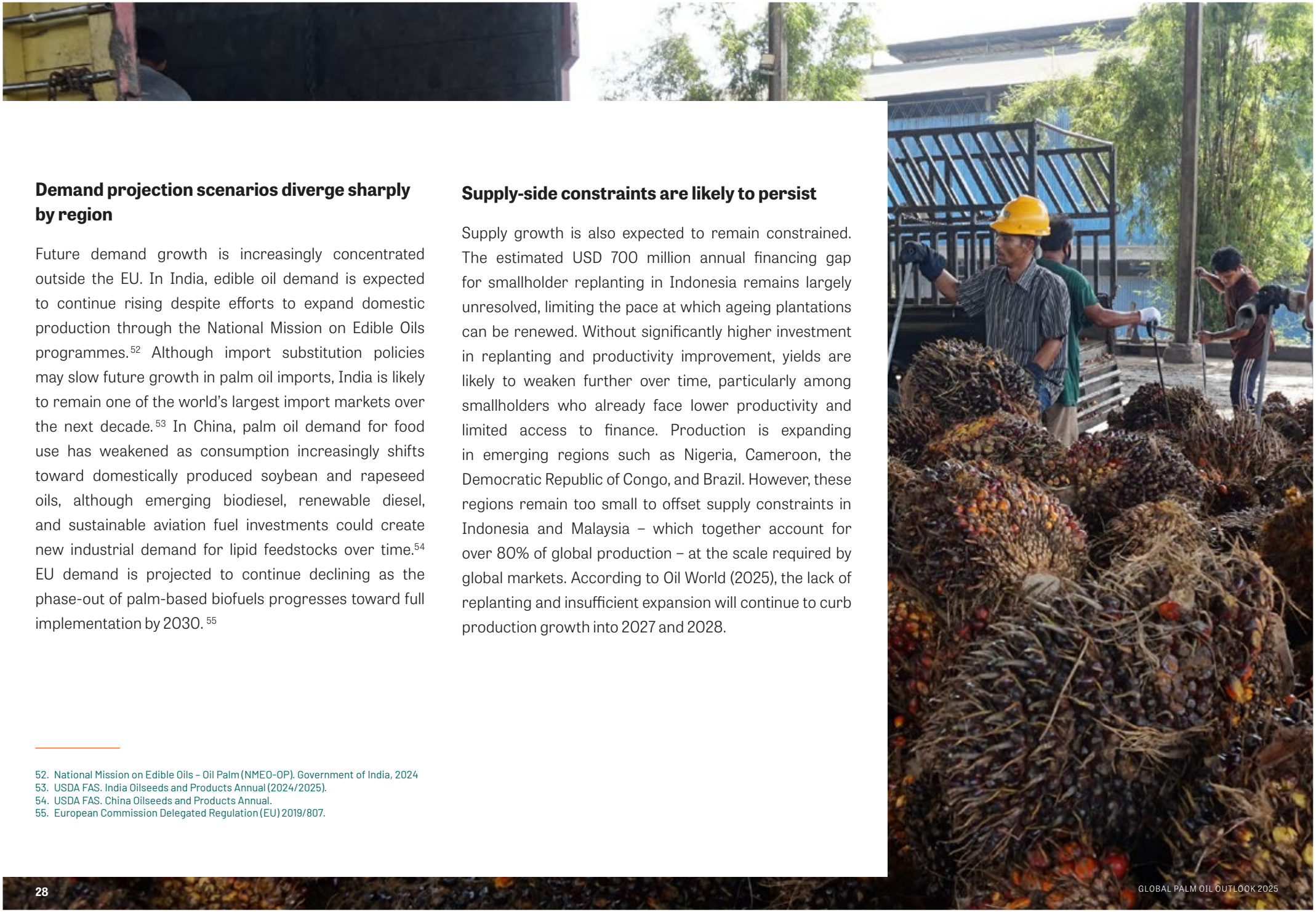
### Biofuel and emerging fuel demand will continue to absorb supply

There is likely to be continued growth in policy-driven industrial demand, reducing the share of globally traded palm oil available to export markets. Indonesia's biodiesel mandates are expected to absorb an increasing share of domestic palm oil production through 2030. The B40 mandate was implemented in 2024 and the B50 mandate has been announced for 2026. Combined, these could absorb an additional 8 to 12 MT of palm oil annually by 2030 [48]. While Malaysia's B20 implementation has stalled, renewed policy interest is plausible if Indonesian mandates push regional prices upward. At the same time, China is expanding its biodiesel, renewable diesel (HVO), and sustainable aviation fuel (SAF) processing capacity, with multiple facilities under construction or in development, signalling growing demand for waste oils and biofuel feedstocks beyond Southeast Asia. [49]

Emerging fuel sectors may further tighten global demand for vegetable oil and lipid feedstocks. While the EU continues phasing out palm-based biodiesel under RED II, expanding Sustainable Aviation Fuel (SAF) mandates are expected to increase competition for alternative lipid feedstocks such UCO and waste oils.[50] Although this is unlikely to restore direct demand for crude palm oil in Europe, it may still influence global vegetable oil markets through substitution effects across the wider oils and fats complex. [51]

"Policy-driven biofuel demand is expected to absorb a growing share of global palm oil supply over the next decade."

47. The analysis presented is directional rather than predictive, drawing on current policy trajectories, industry projections, and observable market trends.
48. Oilseeds and Products Annual: Indonesia, USDA FAS, 2025; Oil World Annual, Oil World, 2025
49 USDA Foreign Agricultural Service (2025). China Biofuels Annual.
50. European Commission (2019). Commission Delegated Regulation (EU) 2019/807 (high-ILUC-risk feedstocks and phase-out pathway for palm oil). ReFuelEU Aviation Regulation (EU) 2023/2405. Renewables reports discussing growth in SAF demand and feedstock competition, IEA (2024/2025).
51. Oil World Annual, 2025



## Demand projection scenarios diverge sharply by region

Future demand growth is increasingly concentrated outside the EU. In India, edible oil demand is expected to continue rising despite efforts to expand domestic production through the National Mission on Edible Oils programmes.[52] Although import substitution policies may slow future growth in palm oil imports, India is likely to remain one of the world's largest import markets over the next decade.[53] In China, palm oil demand for food use has weakened as consumption increasingly shifts toward domestically produced soybean and rapeseed oils, although emerging biodiesel, renewable diesel, and sustainable aviation fuel investments could create new industrial demand for lipid feedstocks over time.[54] EU demand is projected to continue declining as the phase-out of palm-based biofuels progresses toward full implementation by 2030.[55]

## Supply-side constraints are likely to persist

Supply growth is also expected to remain constrained. The estimated USD 700 million annual financing gap for smallholder replanting in Indonesia remains largely unresolved, limiting the pace at which ageing plantations can be renewed. Without significantly higher investment in replanting and productivity improvement, yields are likely to weaken further over time, particularly among smallholders who already face lower productivity and limited access to finance. Production is expanding in emerging regions such as Nigeria, Cameroon, the Democratic Republic of Congo, and Brazil. However, these regions remain too small to offset supply constraints in Indonesia and Malaysia – which together account for over 80% of global production – at the scale required by global markets. According to Oil World (2025), the lack of replanting and insufficient expansion will continue to curb production growth into 2027 and 2028.

52. National Mission on Edible Oils – Oil Palm (NMEO-OP). Government of India, 2024
53. USDA FAS. India Oilseeds and Products Annual (2024/2025).
54. USDA FAS. China Oilseeds and Products Annual.
55. European Commission Delegated Regulation (EU) 2019/807.

## 2.5 Implications for the transition

The sustainability transition can no longer rely on the buyer base that shaped the certified palm oil market over the past two decades. The EU is likely to account for a smaller share of global demand and trade, while demand in other markets such as Indonesia, India, and China become increasingly important. Sustainability requirements in these markets are emerging more slowly than in the EU, where regulation and corporate commitments have historically driven certified demand. As the buyer base shifts, so too does the commercial signal supporting certification, traceability, and smallholder inclusion. Whether the markets absorbing the next decade's demand growth adopt comparable sustainability expectations will be a defining factor shaping the future influence of sustainability standards and regulatory mechanisms across the global palm oil sector. The chapters that follow assess whether existing standards, regulatory approaches, procurement practices, and landscape initiatives are capable of sustaining the transition under changing market conditions.

3

# Sustainability Requirements

How standards, regulations, and tools are reshaping the sector

The palm oil sector has undergone a shift in how sustainability is governed over the past two decades. Voluntary certification and corporate commitments have given way to more formalised requirements and mandatory regulation built around traceability, disclosure, and verification.

These systems have improved transparency and established deforestation-free sourcing as a market expectation in many supply chains. However, despite increasingly stringent requirements, verification remains uneven, uptake remains concentrated in a limited number of markets, and current governance frameworks are proving difficult to scale across fragmented and smallholder-intensive supply chains.

## 3.1 The evolving governance landscape: voluntary certification to binding regulation

Across the palm oil sector, sustainability requirements are enforced through a combination of mandatory regulation, voluntary certification, and corporate commitments. The reach and rigour of verification varies significantly across all three. Table 3.1 sets out the key instruments under each type, how compliance is verified, and the scope.

**Voluntary certification** led by RSPO established the sector's first common standards and remains the dominant instrument in EU-facing and North American supply chains, as well as by companies that apply it across their international supply chains irrespective of where the supply is sold. RSPO introduced independent third-party auditing and recognised supply chain models, enabling downstream buyers to source palm oil under a recognised sustainability standard and make verified sustainability claims.[57] For biofuel supply chains, the International Sustainability and Carbon Certification (ISCC) system, established in 2010 to certify biomass and bioenergy supply chains under the EU's Renewable Energy Directive, fulfils a similar role.

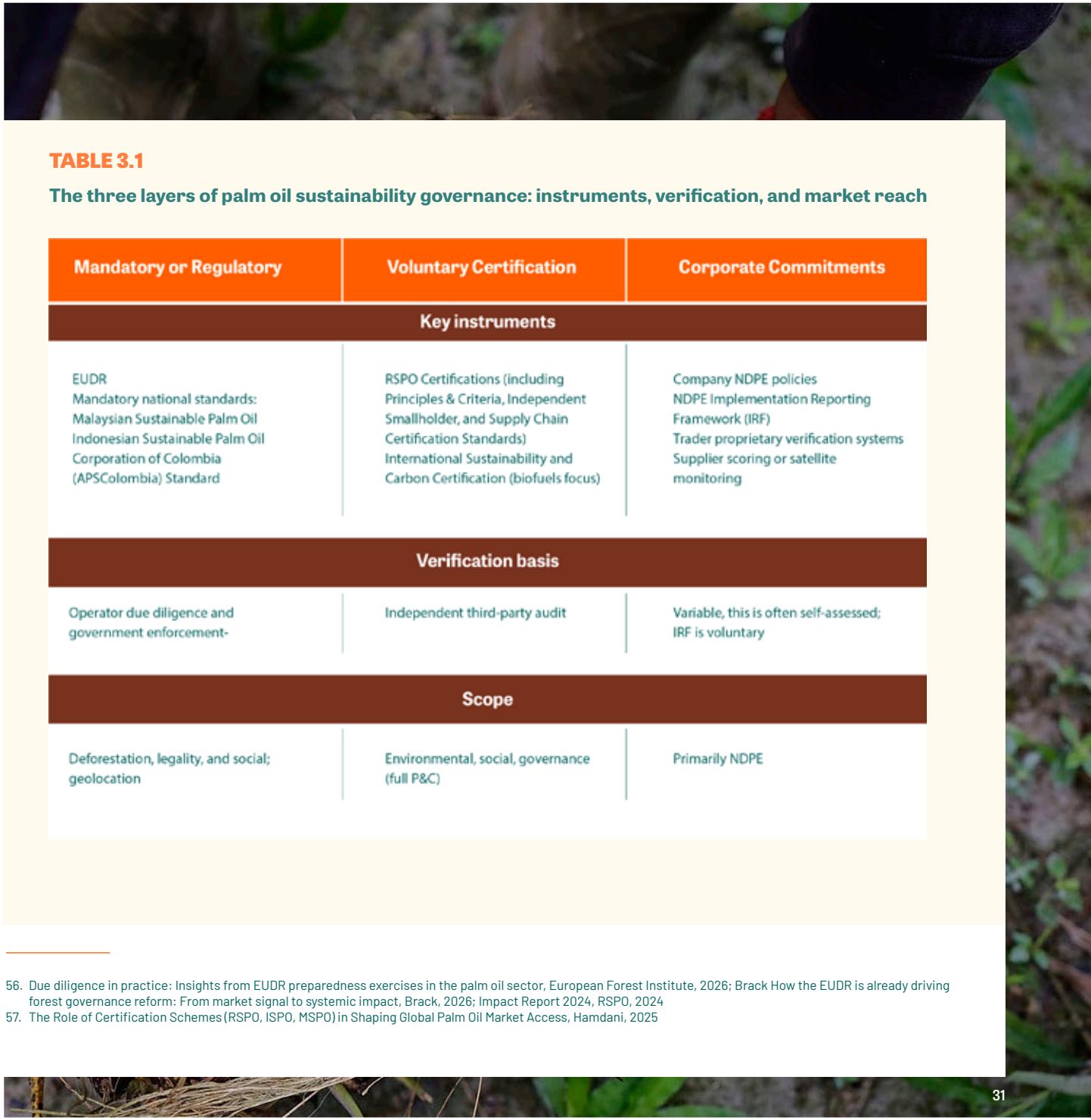


**TABLE 3.1**

**The three layers of palm oil sustainability governance: instruments, verification, and market reach**

| Mandatory or Regulatory | Voluntary Certification | Corporate Commitments |
|---|---|---|
| **Key instruments** | | |
| EUDR<br>Mandatory national standards:<br>Malaysian Sustainable Palm Oil<br>Indonesian Sustainable Palm Oil<br>Corporation of Colombia (APSColombia) Standard | RSPO Certifications (including Principles & Criteria, Independent Smallholder, and Supply Chain Certification Standards)<br>International Sustainability and Carbon Certification (biofuels focus) | Company NDPE policies<br>NDPE Implementation Reporting Framework (IRF)<br>Trader proprietary verification systems<br>Supplier scoring or satellite monitoring |
| **Verification basis** | | |
| Operator due diligence and government enforcement- | Independent third-party audit | Variable, this is often self-assessed; IRF is voluntary |
| **Scope** | | |
| Deforestation, legality, and social; geolocation | Environmental, social, governance (full P&C) | Primarily NDPE |

56. Due diligence in practice: Insights from EUDR preparedness exercises in the palm oil sector, European Forest Institute, 2026; Brack How the EUDR is already driving forest governance reform: From market signal to systemic impact, Brack, 2026; Impact Report 2024, RSPO, 2024
57. The Role of Certification Schemes (RSPO, ISPO, MSPO) in Shaping Global Palm Oil Market Access, Hamdani, 2025


**Corporate No Deforestation, No Peat, and No Exploitation (NDPE) commitments** extended sustainability requirements into supply chains not covered by certification. Most large traders, refiners, manufacturers, and retailers have adopted NDPE policies, increasing pressure on suppliers across a wider share of globally traded volumes.[58] CDP, a global non-profit organisation that runs the leading environmental disclosure system of thousands of companies, capital markets, cities, states and regions have reinforced this shift. Sustainability performance is now assessed through supplier verification, traceability coverage, and public reporting - not just certification status. The NDPE Implementation Reporting Framework (IRF), a voluntary industry initiative to standardise how NDPE progress is reported, carries no independent audit requirement, making self-reported progress the norm across much of the market.

**Mandatory regulation** marked a shift from voluntary market incentives toward legally enforceable sustainability requirements. The EU has been a key driver of this transition through the introduction of the EUDR. Unlike earlier certification schemes, compliance is tied directly to market access and supported by formal due diligence obligations, geolocation requirements, and the risk of financial penalties for non-compliance.

"Certification is no longer the sole benchmark of sustainability; transparency and accountability have become equally critical."

**Producing country governments have also introduced mandatory sustainability requirements.** Certification under Malaysia's Malaysian Sustainable Palm Oil (MSPO) standard became mandatory in 2020 and is linked to Malaysian Palm Oil Board (MPOB) licensing requirements, with government support used to subsidise certification costs for producers and smallholders. Indonesia's Indonesian Sustainable Palm Oil (ISPO) standard similarly established mandatory national requirements, although implementation and enforcement remain uneven. Certification under ISPO became mandatory for all palm oil producers as of November 2025. Colombia's APSColombia system provides a different model. Developed jointly by Fedepalma and IDH in 2019, the standard combines third-party certification and sector-wide monitoring with alignment to international market requirements, including a recent annex designed to support EUDR readiness.

58. NDPE Implementation Reporting Framework, NDPE IRF, 2023
59. ISPO certification for smallholders: process and challenges, KAMI, 2025

BOX 3.1

# Policy context: European Union Deforestation Regulation [60]

The EUDR requires that palm oil and several other commodities placed on the EU market or exported from the EU are deforestation-free, legally produced, and traceable to the plot of land where production occurred. For palm oil, "deforestation-free" means the product cannot be linked to land deforested after 31 December 2020. Operators placing relevant products on the EU market are required to submit a due diligence statement demonstrating compliance before market entry.

The regulation entered into effect in June 2023. Following a two-year delay, the main compliance obligations will apply from 30 December 2026 for large and medium companies, with a later deadline for micro and small enterprises. In May 2026, the European Commission published a simplification package aimed at reducing administrative burden and duplication in due diligence requirements across supply chains. The revisions promote greater use of shared information systems and grouped due diligence processes and were estimated by the Commission to reduce annual compliance costs by approximately 75%, from EUR 8.1 billion to EUR 2 billion.

60. Draft amendment to Delegated Regulation (EU) 2019/807 on high indirect land-use change-risk feedstocks, European Commission, 2026

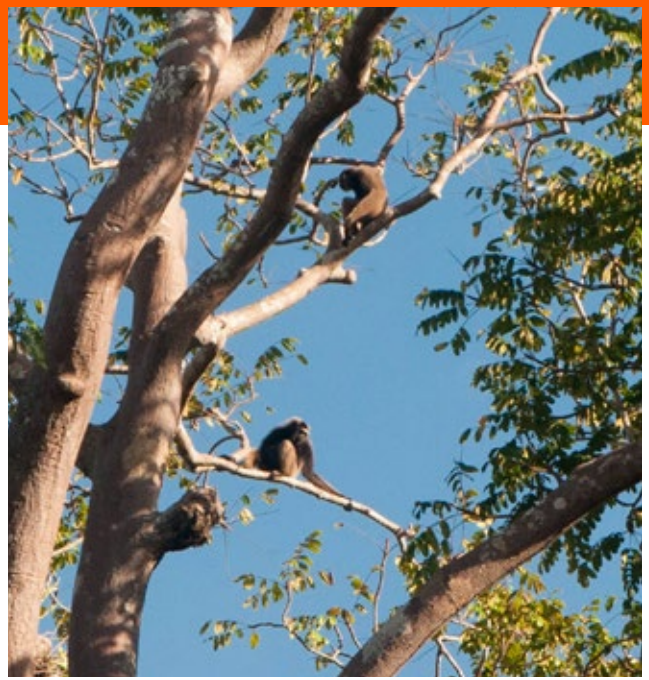
## 3.2 What sustainability governance has delivered

A major achievement of sustainability governance over the past two decades is arguably that **deforestation-free sourcing has become an expectation in many palm oil supply chains,** particularly those supplying Europe and North America. Certification, NDPE commitments, and disclosure requirements introduced common expectations around deforestation, peatland protection, labour practices, and traceability in a sector that previously lacked shared sustainability standards.

Certification also introduced systems for independent auditing, supply chain verification, and public reporting. RSPO established common rules for certification and chain-of-custody models, while NDPE commitments extended sustainability requirements beyond certified supply chains into a much larger share of globally traded volumes. Over time, satellite monitoring, supplier disclosure, grievance mechanisms, and traceability reporting have become standard practice across parts of the sector.

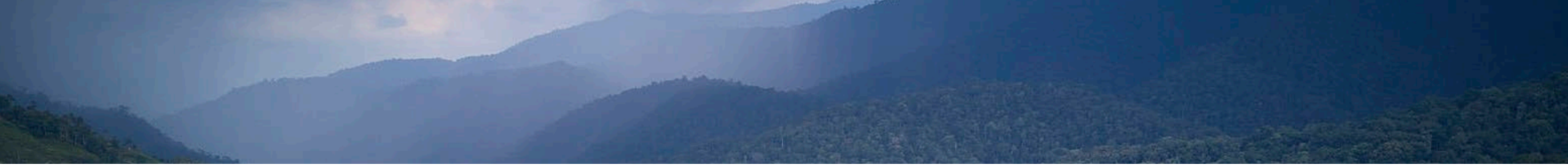
**National standards also expanded the reach of sustainability requirements beyond export-oriented supply chains.** Malaysia's mandatory MSPO had certified approximately 90% of plantations and 85% of independent smallholders by early 2026, extending sustainability requirements across most of Malaysia's production at a scale voluntary certification has been unable to achieve. [61] For example, as of 2024, less than 1% of Malaysian smallholders were RSPO-certified. [62]

More recently, it appears that **EUDR preparation has accelerated investment in traceability and compliance infrastructure.** Governments are developing land registries, geolocation systems, and legality frameworks. As Brack (2026) documents, EUDR has already driven over 60 government-led initiatives across 25 producing countries before the regulation has come fully into effect. At the same time, companies are mapping suppliers, collecting plot-level geolocation data, and building monitoring tools in response to the prospect of losing EU market access. [63]



"Deforestation-free sourcing has evolved from a niche commitment into a market expectation across many palm oil supply chains."

61. MSPO certification rate for oil palm estates reaches 90% - Noraini, Bernama, 2026
62. Palm Oil Barometer 2025, Solidaridad, 2025
63. Due diligence in practice: Insights from EUDR preparedness exercises in the palm oil sector, European Forest Institute (EFI), 2026



**These requirements have contributed to measurable operational improvements within certified supply chains.** Certified producers are required to implement environmental management practices, including biodiversity protection, waste management, peatland restrictions, and monitoring of High Conservation Value areas. Processing companies have increasingly adopted traceability systems linking sourcing to certified mills and plantations, alongside greater use of satellite monitoring and geolocation tools. These requirements have led to more systematic monitoring of environmental impacts, improved traceability, and increased adoption of good agricultural practices.[64]

**However, these requirements have not consistently translated into environmental and social outcomes.** While some evidence shows that RSPO-certified concessions show lower rates of deforestation in RSPO-certified concessions than in comparable non-certified areas,[65] evidence of broader environmental and social outcomes remains mixed. Certification has improved transparency, traceability, and the formalisation of sustainability requirements, but its impacts on deforestation, labour conditions, smallholder inclusion, and land conflict resolution have been uneven across different contexts.[66] In many cases, sustainability frameworks place greater emphasis on demonstrating compliance with procedural requirements than on transforming the structural conditions that drive environmental and social risks. This gap between formal compliance and observable outcomes has contributed to growing scrutiny of certification credibility and concerns that they increasingly serve as mechanisms for evidencing compliance and securing market access rather than driving sector-wide transformation.[67] [68]

"Sustainability systems have strengthened monitoring, traceability, and reporting, but evidence of broader impacts remains mixed."

## 3.3 Where certification and sustainability requirements have fallen short

Although efforts to govern sustainability have led to meaningful progress, there remain several notable shortcomings. This section examines where commitments have outpaced verified outcomes, where certified supply is produced but not bought, and the challenges limiting traceability.

64. The Role of Certification Schemes (RSPO, ISPO, MSPO) in Shaping Global Palm Oil Market Access, Hamdani, 2025
65. Impact Update 2023, RSPO, 2023
66. Evaluating the effectiveness of palm oil certification in delivering multiple sustainability objectives. Environmental Research Letters, 13(6)., Morgans et al., 2018
    Oil Palm and Biodiversity: A Situation Analysis by the IUCN Oil Palm Task Force. Gland, Switzerland: IUCN, Meijaard et al., 2018
67. Harnessing relational values for global value chain sustainability: Reframing the Roundtable on Sustainable Palm Oil's offset mechanism to support smallholders. Journal of Environmental Management, Rahman, S. & Lee, P.O., 2024
68. Enhancing farmers' land productivity through sustainable palm oil certification: Strategies for promoting environmental and economic benefits in agricultural practices, Judijanto, L, 2025

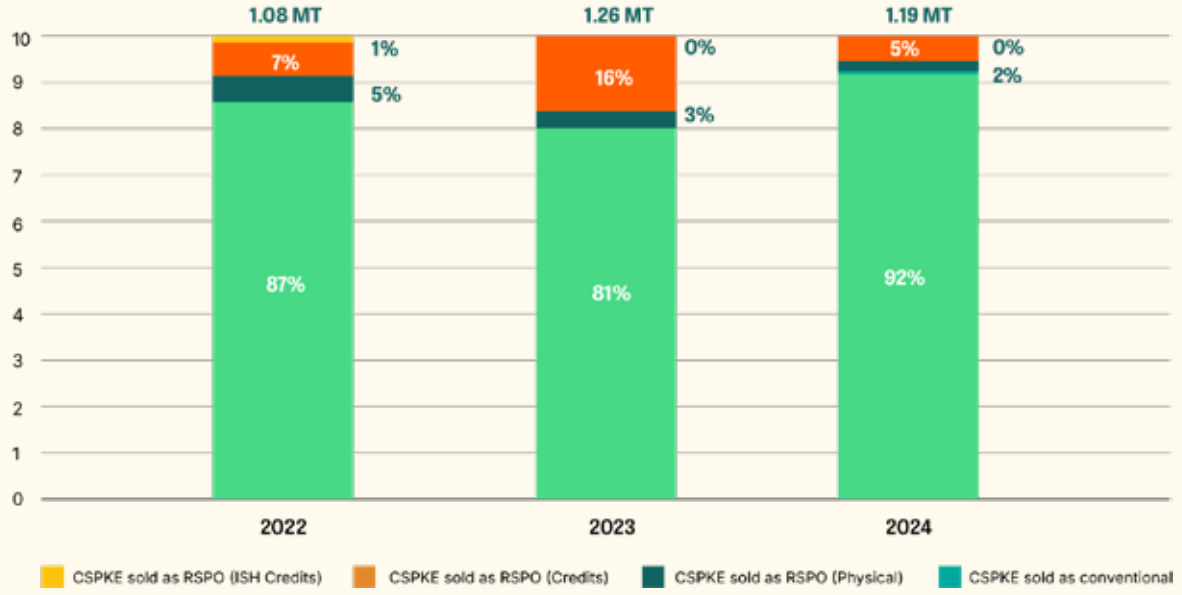
**Supply of CSPO consistently exceeds the demand for it.** In 2024, RSPO-certified mills produced approximately 16.2 MT of CSPO but only 10.96 MT were sold as certified, meaning 5.2 MT (32%) were sold as conventional without a sustainability premium.[69] Consequently, this weakens the commercial incentive for investing in sustainable production and certification. There may be several reasons for this shortfall, including unwillingness of buyers to pay premiums and the difficulty of maintaining segregated supply chains at scale across many markets.

**The gap between certified supply and demand is most acute in the CPKE market.** Certified sustainable PKE (CSPKE) uptake was just 8% in 2024, compared with 89% for CSPKO, meaning most CPKE entered the market without a sustainability signal. [70]

This reflects market structure as well as the design of certification systems. PKE is primarily used in animal feed markets, where buyers have historically faced limited commercial pressure to source certified supply or pay sustainability premiums. As a result, there has been little incentive to build segregated and traceable CSPKE supply chains at scale. However, this becomes a significant compliance challenge when PKE enter the EU market, where EUDR applies regardless of end use and requires the same plot-level traceability and legality verification as any other palm oil product.

**FIGURE 3.1**

**The share of CSPKE supply sold as CSPKE, 2022-2024**




Source: RSPO dashboard data

**Methodology note.** RSPO's CSPKE uptake figure is derived rather than directly measured. Sales-side data is accurate and aggregated from member sales reports and aligned with trade data and book-and-claim records. Production-side data is calculated using a 45/55% CSPKO/CSPKE conversion ratio applied to CSPK volumes, assuming all CSPK is processed without downgrading or stock conversion (RSPO, 2026). The figure is consistent across years and conservative.

69. According to the latest available data from RSPO ACOP Analysis Dashboard, accessed 2025
70. Calculations by NewForesight using 2024 data from RSPO ACOP Analysis Dashboard

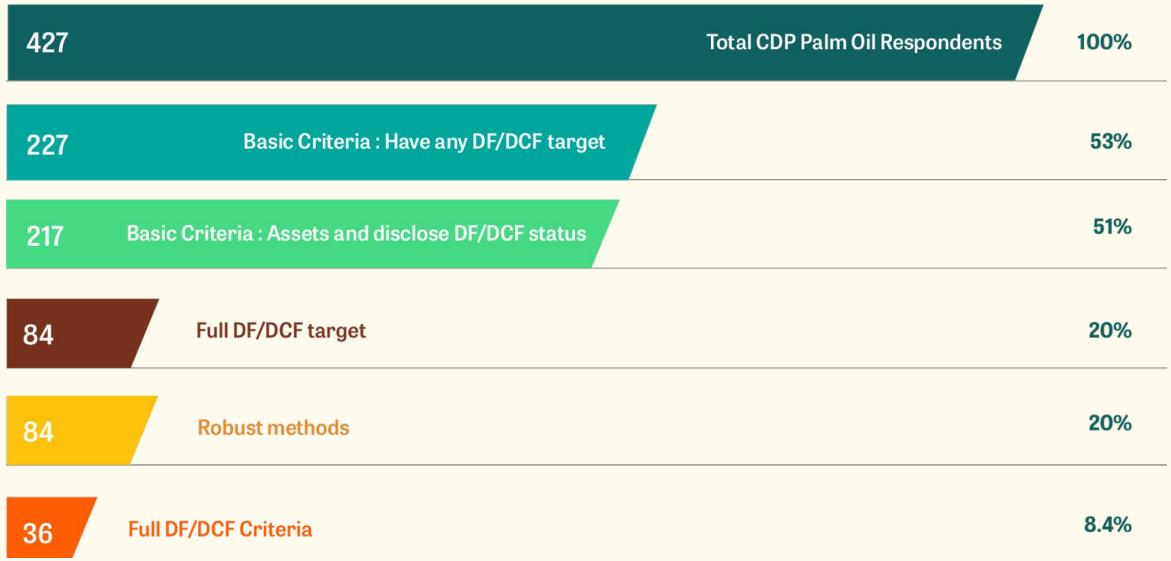
The 8% uptake rate therefore reflects upstream traceability challenges, particularly in fragmented, smallholder-heavy supply chains. Maintaining segregation at the crushing stage is difficult because certified and uncertified kernels are commonly mixed before processing, while the traceability infrastructure needed to maintain segregation does not yet exist at scale.[71] The May 2026 draft delegated act on EUDR product scope, which proposes adding additional oleochemical derivatives of palm oil to Annex I, suggests that compliance exposure for companies sourcing palm kernel derivatives is likely to expand further. [72]

**Uptake remains concentrated in markets that are becoming a smaller share of global demand.** Retailer uptake[73] of CSPO reached roughly 90% in both Europe and North America in 2024, however uptake in China was 12% and in India 5% with both markets imposing minimal sustainability requirements on imports. [74]

**Most palm oil companies have traceability systems in place, but few can trace supply to the level that deforestation-free (DF) or deforestation- and conversion-free (DCF) sourcing requires.** Among 427 palm oil companies disclosing to CDP in 2025, 290 (68%) reported having a traceability system to determine the origin of sourced volumes, but having a system does not mean tracing supply to individual production units. Only

**FIGURE 3.2**

**From commitments to credible DF/DCF performance**




Source: Based on 2025 CDP data

88 companies (21%) reported tracing at least 90% of sourced volumes to production unit level or sourcing area, meaning 79% cannot demonstrate high-granularity traceability to the level DF/DCF determination requires These disclosures suggest that many companies cannot identify the broader volume from sourcing regions to which palm oil originates, but substantially fewer can trace supply back to individual production units - a distinction that matters

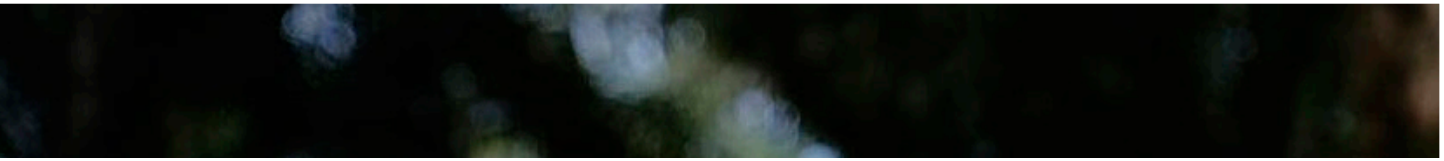
71. Industry interviews conducted by NewForesight, 2026
72. Report to the European Council and Parliament on the Simplification Review of the EUDR, European Commission, 2026
73. Retailer uptake refers to the portion of a retailers' sourced palm oil that is certified sustainable.
74. Calculations by NewForesight using 2024 data from RSPO ACOP Analysis Dashboard

and creates opportunities for engaging and supporting monitoring systems for robust DF/DCF determination, due diligence under EUDR, and meaningful producer & smallholder engagement.

DF/DCF claims require an associated monitoring system at the level where deforestation actually occurs. Knowing that the supply originates from a broad sourcing area does not demonstrate that no deforestation took place within it. Substantiating a DF/DCF claim requires additional evidence beyond traceability: monitoring approaches capable of identifying deforestation and conversion, methods for assessing performance at the right geographic level, engagement in landscapes/jurisdictional approaches, and assurance that reported outcomes are consistent with the methods used. Traceability to the sourcing area is a starting point; any additional efforts need to be taken to achieve the ultimate end point of having DF/DCF territories

**The gap between having a target and credibly demonstrating delivery is one of the largest maturity gaps in the CDP dataset.** Among the 427 palm oil companies disclosing to CDP in 2025, 227 (53%) reported active no-deforestation or no-conversion target; from those, only 84 (20%) could demonstrate that its organization wide with a cutoff date of at least 2020 and target date of 2025 (or earlier). On implementation, 217 companies (51%) assess their DF/DCF status and disclosed sourcing volumes accordingly. Of these, 84 are using Robust Methods , but only 36 companies (8.4%) reported DF/DCF robust methods of ≥90% of sourced volumes. In this regard, palm oil shows a modest outperformance on meeting CDP's full criterion for DF/DCF status at 8.4% versus the global all commodities average of 7.4%.

Overall, this requires not only that companies can disclose more than 90% volumes as DF/DCF but also the corresponding usage of robust methods, including third-party certification providing full DCF assurance, monitoring systems at the production unit or sourcing area level, and verification. Importantly, 84 companies reported using at least one robust DF/DCF determination method, suggesting that method adoption is progressing more quickly than implementation at scale. The challenge is therefore not simply the absence of robust approaches, but the difficulty of applying them consistently across the majority of sourced volumes.



The contrast between the two figures is important.[75] While 88 companies reported tracing at least 90% of sourced volumes to the production unit level, just 36 companies met CDP's highest threshold for DF/DCF status. This suggests that traceability remains an important constraint, but that traceability alone is not sufficient to substantiate sustainability claims. The figures capture different stages of supply-chain assurance: traceability provides visibility into the origin of supply, while robust DF/DCF determination assesses whether those volumes can be credibly demonstrated to be deforestation- and conversion-free using sufficiently rigorous methods. Together, the results highlight that **both traceability and robust DF/DCF determination remain significant barriers to demonstrating sustainable sourcing at scale.**

**Derivative supply chains face a compounding traceability problem, and the cost is falling on suppliers.** Palm kernel supply chains are significantly harder to make traceable than CPO supply chains because material from multiple sources mixes at several processing stages, with traceability becoming progressively harder at each step.[76] Several companies have responded by establishing dedicated EUDR mills that only accept FFB from suppliers with verified geolocation and legality documentation, redirecting others toward non-EU markets.[77] EU-facing supply is consolidating around mills with captive estates or large organised supplier networks, while independent smallholders are being left out. This consolidation and the consequences are examined in Chapter 4.

**The biggest barriers to plot-level traceability are incomplete land records, limited legal documentation among smallholders, and restrictions on access to government data.** Many smallholders do not have formal documents proving land ownership or land-use rights, making it difficult for companies to verify legality requirements under EUDR. The European Forest Institute's (EFI) preparedness exercise conducted by The EU Competent Authority of Spain in early 2026 found that approximately 95% of smallholder suppliers lacked primary legal documentation, and only 17% of the supply base was covered by nationally recognised legality systems. In some cases, farms also overlapped with land officially classified as forest zones, not because farmers had recently cleared forest, but because government zoning changed overtime. In Indonesia, these challenges are compounded by access restrictions to geospatial data which requires engagement between Indonesia and the EU to resolve. These constraints demonstrate that compliance and traceability increasingly depend on government land administration, legal reform, and coordination between governments. These are barriers that companies cannot resolve independently.

75. Neither indicator should be interpreted as demonstrating EUDR compliance. Production unit-level traceability is an important prerequisite for EUDR compliance, while robust DCF verification provides stronger evidence regarding deforestation-free sourcing. EUDR compliance requires additional geolocation, legality, due diligence, and risk-assessment requirements beyond either indicator alone.
76. Due diligence in practice: Insights from EUDR preparedness exercises in the palm oil sector, EFI, 2026; Why verified sourcing matters in the cosmetics industry, RSPO, 2026
77. Industry interviews conducted by NewForesight, 2026

BOX 3.2

## RSPO's Supply Chain Certification review is strengthening traceability and verification systems. [66]

RSPO is currently reviewing its Supply Chain Certification Standard (SCC Standard), reflecting how voluntary certification schemes are adapting to growing demands for stronger traceability, verification, and regulatory credibility under EUDR and other regulated markets.

Several elements of the draft strengthen the extent to which RSPO certified supply chains are physically traceable and auditable. The standard places RSPO's digital traceability platform, prisma, at the centre of compliance, with transaction registration built into each stage of the supply chain to create a single auditable record of certified volumes as they move through the chain. The draft also strengthens controls at mill level, where certified material first enters the supply chain.

The revised standard maintains smallholders within the core RSPO certification framework, using adapted requirements and implementation pathways rather than creating a separate certification system. Proposed group certification pathways would allow smaller downstream actors sourcing limited volumes to participate without needing fully segregated sourcing systems. This reflects RSPO's effort to strengthen certification requirements while maintaining market access for certified producers and smallholder groups that continue to rely on mixed-supply chains and mass balance systems.

Together, the draft points toward stronger verification, shared digital traceability, and the continued integration of smallholders within the main certification and traceability framework. The standard is still under consultation, but it signals toward more auditable and traceable supply-chain governance capable of supporting due diligence requirements.

## 3.4 Standards narrow the compliance gap but do not close it

**Certification and national standards are increasingly adapting to support compliance under EUDR.** Verification across both voluntary certifications and national standards increasingly depends on traceability, geolocation, and documented due diligence, which are important under EUDR. Together, these standars can help narrow the compliance gaps identified in Section 3.3.

**RSPO's Supply Chain Certification Standard (SCC Standard) demonstrates how voluntary certification schemes can support due diligence requirements.** The SCC Standard and the ongoing review of the standard reflect a shift toward stronger traceability, verification, and auditable chain-of-custody systems. Through implementing these requirements within the standard, the standard helps to ensure physically traceable and auditable supply chains, which is increasingly required under EUDR and other regulated markets.[78]

**National standards and government-backed infrastructure address governance and traceability gaps that individual certification systems cannot resolve independently.** Many of the traceability barriers identified in Section 3.3 sit at the government and landscape level rather than the supply chain level. Malaysia's mandatory MSPO demonstrates how certification can scale when governments mandate, fund, and enforce it, with approximately 90% of plantations and 85% of independent smallholders certified by early 2026.[79]

Government-backed platforms such as Malaysia's GeoSAWIT platform and Indonesia's National Sustainable Commodity Dashboard similarly demonstrate how national geolocation, legality, and monitoring infrastructure may help strengthen traceability and due diligence at scale. Similarly, Colombia provides an example of national standards can support compliance readiness, through the implementation of sector-wide monitoring infrastructure that provides landscape-level visibility of deforestation risk and efforts to align with international due diligence requirements. Together, these examples show that EUDR readiness increasingly depends not only on private certification systems, but also on shared governance infrastructure operating at national and landscape level.

Despite the compliance support they provide, **stronger standards and traceability infrastructure alone cannot address the underlying structural barriers that contribute to the exclusion of many independent smallholders from EUDR-compliant supply chains.** National standards and voluntary certfication leave residual traceability gaps in independent smallholder supply, and they do not remove the operator's own due diligence obligation under EUDR. Closing those gaps requires shared systems operating at the landscape level, which Section 3.5 examines.

78. RSPO Supply Chain Certification Standard Review, RSPO, 2026
79. MSPO certification rate for oil palm estates reaches 90% - Noraini, Bernama, 2026

BOX 3.3

# Colombia: A support mechanism for EUDR Compliance and what it demonstrates [80]

Three features shape Colombia's position in relation to EUDR compliance and illustrate how national standards can potentially serve as a support mechanism for EUDR compliance.

Near-deforestation-free production baseline: Approximately 99% of Colombian palm oil is produced on land converted before 2020, predominantly from cattle pasture and abandoned agricultural land rather than forest. This reflects how oil palm expansion was structured - often as part of alternative livelihood programmes for communities previously cultivating illicit crops. This gives Colombian supply a comparatively low deforestation-risk profile under EUDR.

Sector-wide monitoring infrastructure: The 50km-radius monitoring system covers approximately 18 million hectares and provides landscape-level visibility of deforestation risk that no individual company's traceability system can replicate. This is the governance infrastructure layer that EUDR increasingly depends on, but that most private verification do not provide.

EUDR-aligned national standard: APSColombia's recent EUDR annex and multi-temporal deforestation assessment demonstrate how national standards can increasingly align with international due diligence requirements, allowing national certification to play a substantial role in supporting compliance.

Approximately 30% of Colombian production is currently certified under RSPO or APSColombia; only about 50% of that certified production receives a market premium, illustrating that stronger compliance infrastructure does not automatically translate into stronger market demand.

80. Source: IDH, 2026

## 3.5 Scaling deforestation-free supply requires shared systems and broader market demand

**No individual company can resolve the structural constraints that affect the ability of many independent smallholders to participate in EUDR-compliant supply chains.** Incomplete land registries, misclassified forest zones, weak legal frameworks for smallholder land rights, geospatial data restrictions, and the absence of national traceability systems are public governance problems that require government investment and cross-border coordination.[81]

The European Commission's May 2026 simplification package committed to establishing producing-country legislation repositories by December 2026, reflecting ongoing gaps in the accessibility and clarity of legal information needed for compliance. Whether those repositories deliver what operators need depends on producer-country governments following through.[82] Shared systems are emerging as the practical response: GeoSAWIT in Malaysia, Indonesia's National Sustainable Commodity Dashboard, and APSColombia's sector-wide monitoring system each reflect the logic of building compliance infrastructure at the scale where the problem sits rather than having each company build its own system across the same sourcing regions.[83]

**Sustainability progress depends on markets that have not yet committed to it**. The compliance progress built over the past two decades was driven primarily by European buyers and regulation. If major consuming markets adopt sustainability requirements comparable to those the EU has established, the commercial case for certified production and smallholder inclusion strengthens across the whole sector. The risk of not doing so is a two-tier market: a traceable, certified supply chain serving Europe, and a conventional, largely unmonitored market serving the rest of the world where future demand growth is concentrated. Early signals suggest some of the largest consuming markets are beginning to move in this direction.

81. Due diligence in practice: Insights from EUDR preparedness exercises in the palm oil sector, EFI, 2026
82. Report to the European Council and Parliament on the Simplification Review of the EUDR, European Commission, 2026
83. GeoSAWIT and DMTF pilot sites from IDH (2026); Indonesia designs agricultural commodities digital tracker in sustainability push, Reuters, 2026

China, which accounts for approximately 10.5% of global palm oil imports [84], has engaged in discussions around the EUDR's potential impact on international commodity trade and supply chain requirements. [85] India, the world's largest palm oil importer at approximately 17.5% of global imports[86], has historically placed no sustainability conditions on palm oil purchases, but several Indian consumer goods companies have begun engaging with RSPO membership. [87] However, these remain early signals rather than structural shifts. The 5.2 MT of certified palm oil currently sold into conventional markets without a sustainability premium represents both the scale of the current demand shortfall and the scale of the opportunity if those changes occur.

**Resolving the compliance gaps that fall on independent smallholders requires action at the landscape level, not just the supply chain level.** Independent smallholders bear the heaviest consequences of the governance gaps documented in this chapter. Land documentation, forest zone classification, geospatial data, and traceability infrastructure are exactly the barrier's shared systems are designed to address, but they have not been resolved at the required scale in any major producing country. A functioning land registry cannot be replaced by a company's traceability system, and a nationally recognised legality framework cannot be replaced by a certification scheme. As supply chains tighten around integrated estates and traceable plantation supply, independent smallholders are being left out by compliance requirements that depend on infrastructure they cannot provide on their own, and that governments have not yet built. The pathway toward deforestation-free, smallholder-inclusive supply from resilient landscapes requires resolving these gaps at the level where they actually exist: the landscape and jurisdiction, not the individual supply chain.

84. USDA (2026); Oil World Annual, Oil World, 2025
85. How the EUDR is already driving forest governance reform: From market signal to systemic impact, Brack, 2026
86. Oil World Annual 2025; authors' calculations.
87. RSPO Membership Directory

4

# Inclusion Under Pressure

Independent smallholders' passive exclusion, market incentives, and structural constraints

Smallholders, particularly independent smallholders, are increasingly at risk of exclusion from the traceable, certified, and compliance-driven supply chains. As chapter 3 demonstrated, sustainability requirements are becoming increasingly stringent around traceability, legality and verified sourcing.

This chapter illustrates that these sustainability requirements not only shape how palm oil is produced, but they also increasingly influence who can participate in compliant supply chains. As mills, traders, and buyers face increasing pressure to minimise risk and demonstrate compliance, smallholders face increasing challenges to inclusion.

## 4.1. Independent smallholders are central to global palm oil production but remain underrepresented in certified and traceable supply chains

### Independent smallholders play an essential role in global palm oil production.

Globally, an estimated seven million smallholders account for approximately 35-40% of palm oil production[90], of which the vast majority are independent smallholders (see Box 4.1). While this largely reflects Indonesia and Malaysia, outside these dominant producing countries, the share of smallholder production is significantly higher. In countries such as Thailand, Colombia, and Nigeria, smallholders account for between 70 to 90% of production and/or producers.[91] However, smallholders, particularly independent smallholders, remain significantly underrepresented in certified and traceable supply chains (Figure 4.1). As of 2025, smallholders produced roughly 8% of RSPO certified sustainable palm oil[92], markedly disproportionate to their share of global output. Even more remarkable is that although the number of RSPO-certified independent smallholders has grown significantly, they still account for only a small share of total certified supply - approximately 2.5%.[93]

88. Company Action in Collective Efforts for Sustainable Land Use at Scale, Tropical Forest Alliance, 2023
89. Corporate farming model for sustainable supply chain crude palm oil of independent smallholder farmers, Witjaksono et al., 2024
90. Palm Oil Barometer 2025, Solidaridad, 2025
91. Oil Palm Development in Thailand: Trends and Progress of Sustainability Efforts in Palm Oil Production and Procurement. Roundtable on Sustainable Palm Oil, RSPO (2023); Smallholder farmers account for over 80% of Nigeria's palm oil production. (Government statement/press release), Federal Ministry of Agriculture and Food Security, Nigeria, 2024; Fedepalma (n.d.). Colombia. Federación Nacional de Cultivadores de Palma de Aceite (Fedepalma).
92. Calculations by NewForesight based on RSPO dashboard data.
93. Roundtable on Sustainable Palm Oil (RSPO). (2024). RSPO impact report 2024. RSPO.



BOX 4.1

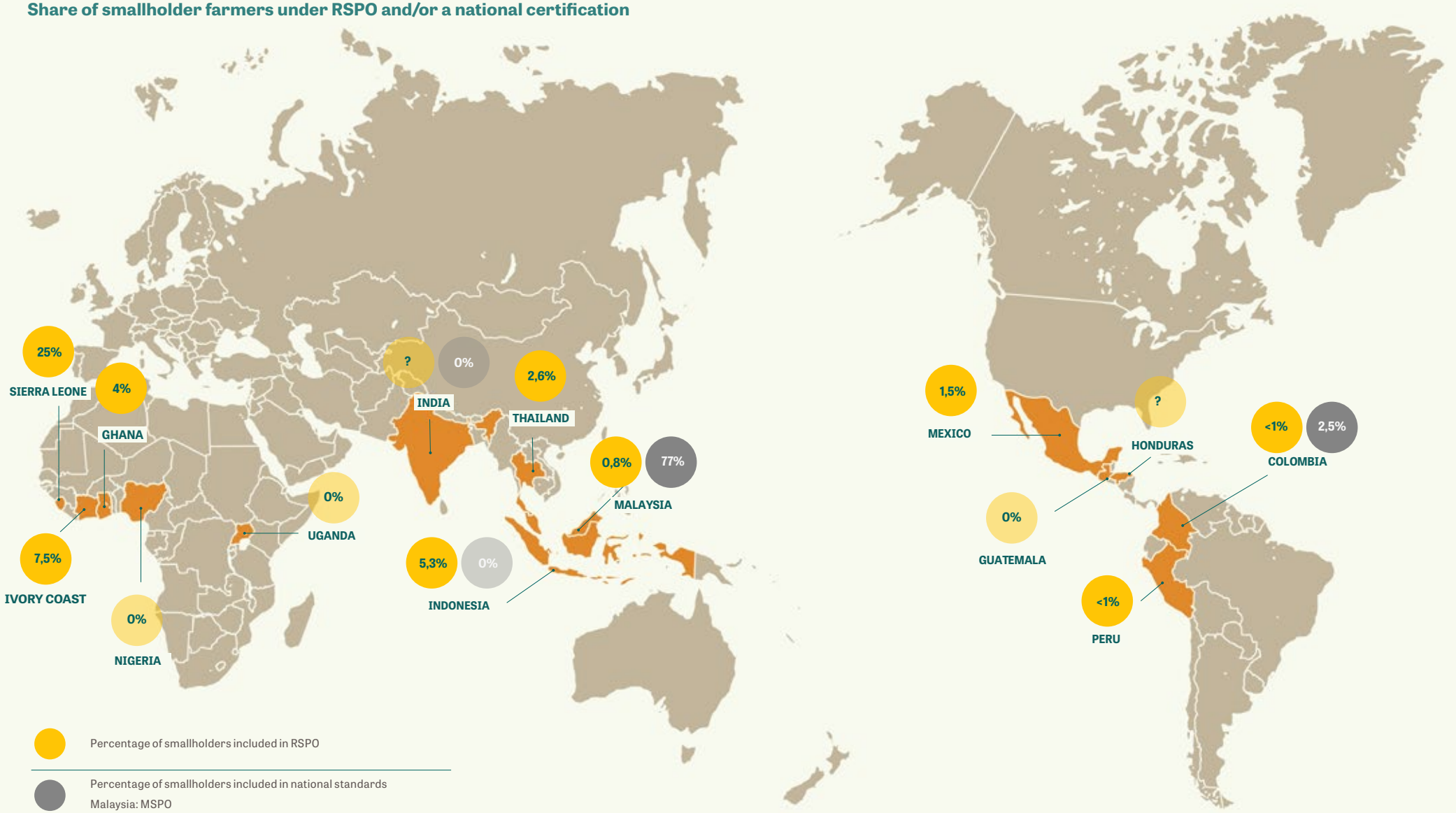
## Independent versus scheme smallholders

Two types of smallholders operate in palm oil supply chains. **Scheme smallholders**, also called plasma smallholders, are formally linked to plantation companies or mills, typically receiving technical support, extension services, and guaranteed FFB offtake. Their land is generally traceable through the nucleus structure, resulting in lower barriers to certification. [88]

**Independent smallholders** operate outside these arrangements, selling FFB through traders, agents, or directly to mills, often without guaranteed market access, technical support, or formal land documentation.[79] They account for approximately 87% of smallholders in Malaysia and manage around 80% of Indonesia's smallholder oil palm area. [89] As a result, they face substantially greater barriers to participating in certified and deforestation-free supply chains and are the primary focus of this chapter.

## FIGURE 4.1

### Share of smallholder farmers under RSPO and/or a national certification




Source: Solidaridad (2025), Palm Oil Barometer 2025 - Procurement for Prosperity

Rather than reflecting smallholders' unwillingness to comply, this discrepancy appears to point primarily to structural and operational barriers for inclusion within compliance-driven supply chains.

**Malaysia demonstrates that smallholder certification can scale when governments address structural and operational barriers for inclusion.** The percentage of Malaysian independent smallholders certified under MSPO has increased rapidly from 24% in 2020 to 85% in 2026.[94] In Indonesia, by contrast, fewer than 1% of smallholders are certified under ISPO.[95] While both schemes have been mandatory since 2020, the Malaysian government immediately implemented the scheme with MPOB-led clustering of smallholders and extension and training support, high subsidy support and more efficient farmer registration.[96] Instead, the Indonesian government gave a grace period until 2029 and was further slowed down by complex land legality and documentation issues, high costs, and low rates of farmer organisation.[97]

## 4.2. Passive exclusion: How traceability and sourcing systems reinforce independent smallholder marginalisation

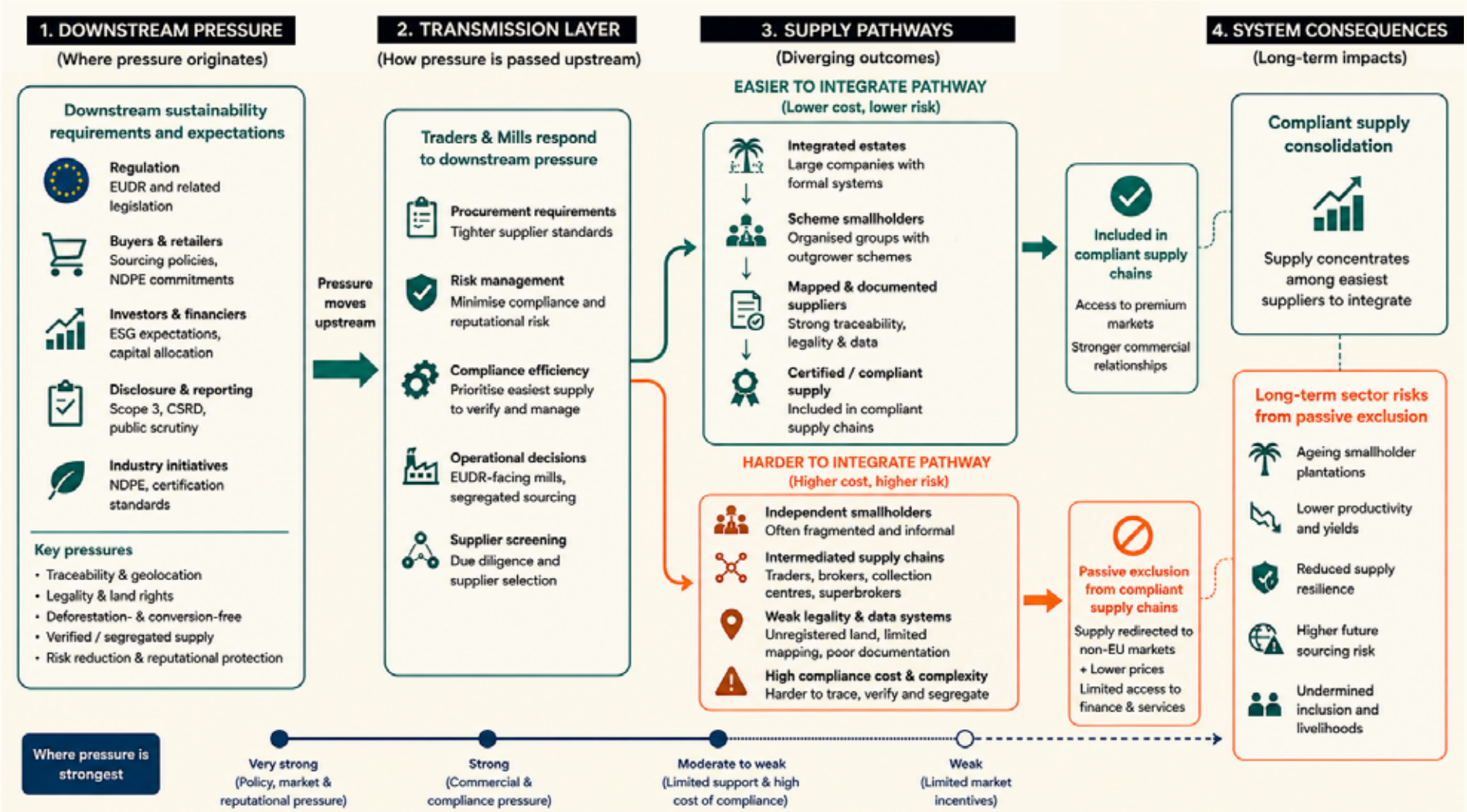
**EU-facing[98] and traceable sourcing models increasingly favour supply that is easier to verify and lower risk to source.** Independent smallholders face a combination of legal, operational, and structural barriers that make participation in compliant supply chains significantly more challenging and costly than for larger integrated suppliers. As a result, independent smallholders are passively excluded from compliant supply chains (Figure 4.2).

**Independent smallholders face legality and operational issues that make compliance difficult.** As discussed in Chapter 3, many independent smallholders lack formal land titles or legally recognised documentation. Additionally, independent smallholders often face a range of operational barriers such as needing to provide farm records, geolocation data and meeting audit requirements which they cannot meet without additional training, high-quality inputs, and protective gear.

94. MSPO Certification Progress for Independent Smallholders in Malaysia", 2021; Available at the Star, 9 February 2026
95. EFI (European Forest Institute). (2024). Smallholder EUDR Preparedness and Inclusion Assessment (Indonesia case studies)
96. Rahman, S., & Lee, P. O. (2024). Prosperity or predicament? Decoding certification challenges in Malaysia's palm oil industry. ISEAS – Yusof Ishak Institute.
97. Palm Oil Barometer 2025, Solidaridad, 2025
98. EU-facing supply chains include both EU and non-EU companies supplying palm oil or palm-derived products to the EU market

**FIGURE 4.2**

**How sustainability pressure moves through the palm oil supply chain and can lead to passive exclusion**




Source: Developed by NewForesight

Even where their production practices may comply with sustainability requirements, these smallholders are often unable to demonstrate compliance as required by certification schemes or regulations such as the EUDR. Where compliance depends on traceability, legality verification, geolocation data, and legal documentation, larger plantation groups and integrated estates are better positioned to provide this information because they already operate within formal management and reporting structures. Hence, these producers are substantially easier and cheaper to integrate into traceable and EU-facing sourcing models.[99]

"For many smallholders, the challenge is not compliance itself, but the ability to demonstrate it."

**The complexity of smallholder supply chains creates a major structural barrier to inclusion.** Independent smallholders commonly sell FFB through traders, brokers, and collection centres that aggregate supply from multiple farms before delivery to mills. For many independent smallholders, these intermediary networks are also the main route through which they access markets, transport, and informal credit. [100] However, compliance with sustainability requirements often requires direct and verifiable supplier-to-mill relationships. [101] This supply chain fragmentation makes it considerably more difficult to trace supply back to individual farms or maintain segregated supply. Thus, potentially compliant FFB is often excluded from traceable and certified supply chains due to the lack of adequate traceability infrastructure. [102]

**Additionally, industry interviews suggest the emergence of dedicated EUDR-facing mills.** Several companies described establishing dedicated 'EUDR mills' that only source from suppliers with verified geolocation and legality documentation, while redirecting other supply toward non-EU markets. As a results, independent smallholders whose supply is not traceable or who are unable to provide legal documentation face significantly greater structural barriers to participation in EU-facing supply chains.[103]

**CDP disclosures reinforce this pattern**. While 69% of palm oil companies report engaging suppliers on deforestation, only 37% report engaging smallholders. A similar gap exists for support measures: A third of companies provide support or incentives to suppliers, compared with just 15% providing support or incentives to smallholders. These figures suggest that sustainability efforts remain concentrated among direct suppliers, while engagement and support for independent smallholders are considerably less common. The results point to a broader implementation challenge: companies appear substantially more effective at managing relationships with suppliers than at extending equivalent support, incentives, and compliance systems to independent smallholders, despite the critical role smallholders play in many Palm oil supply chains. Only 0.9% of palm oil companies meet CDP's full value chain engagement criterion, which requires robust supplier requirements including FPIC protocols, structured non-compliance responses, technical support or financial incentives, and engagement covering more than half of tier-1 suppliers. Taken together, the results suggest that smallholders are the main pressure point in the value chain agenda. The data points to a sector where companies are more likely to engage upstream commercial suppliers than to build inclusive, well-supported approaches for smallholders.

99. Certification, good agricultural practice and smallholder heterogeneity: Differentiated pathways for resolving compliance gaps in the Indonesian oil palm sector, Schoneveld et al., 2019; The agrarian, structural and cultural constraints of smallholders' readiness for sustainability standards implementation: the case of Indonesian sustainable palm oil in East Kalimantan, Dharmawan et al; Palm Oil Barometer 2025, Solidaridad, 2025
100. Do wealthy farmers implement better agricultural practices? An assessment of implementation of good agricultural practices among different types of independent oil palm smallholders in Riau, Indonesia. Agricultural Systems, 170, 63–76, Jelsma, I., Woittiez, L. S., Ollivier, J., & Dharmawan, A. H., 2019
101. Daemeter Consulting. (2015). Improving the livelihoods of independent oil palm smallholders in Indonesia: The role of supply chain relationships. Daemeter.
102. Closing the traceability gap: How Thailand is working with collection centres to certify smallholders, Krichanan, 2026
103. Industry interviews, 2026; Due diligence in practice: insights from EUDR preparedness exercises in the palm oil sector, EFI, 2026

As Chapter 2 demonstrated, future demand growth is increasingly concentrated in domestic markets within producing countries, major Asian import markets such as India and China, and industrial uses including biodiesel, SAF, and oleochemicals. As EUDR-facing supply chains increasingly favour traceable and legally verified sources, excluded smallholder supply is likely to be redirected toward these future growth markets where price remains a stronger determinant of market access than sustainability performance. While these markets will continue to provide commercial outlets and growing biodiesel demand may support overall palm oil prices, [104] they generally place less value on certification, traceability, and other sustainability attributes. As a result, excluded smallholders may remain commercially connected to the market, but with fewer opportunities to benefit from the investments, support systems, and incentives increasingly associated with sustainable supply chains.

## 4.3 The commercial case for inclusion can exist where incentives and implementation are aligned

**Passive exclusion exposes mills and buyers to significant supply risk while leaving one of palm oil's largest productivity opportunities untapped.** Independent smallholders in Indonesia average around 14 tonnes of FFB per hectare per year against attainable yields of approximately 29 tonnes, with much of the gap linked to underinvestment in replanting and agronomic support (e.g. high-quality inputs and training) rather than land quality.[105] This underinvestment is substantial: around 175,000 hectares of smallholder plantations require replanting annually in Indonesia alone, at a cost of roughly USD 700 million per year - funding that is not currently being met.[106] Without replanting, ageing smallholder palms progressively depress yields, eroding farmer income and reducing future FFB supply to mills.[107] For mills sourcing 20-60% of their FFB from independent smallholders, [108] these productivity gaps translate directly into supply risk: lower smallholder yields reduce available throughput, leave milling capacity underutilised, and increase processing costs per tonne of CPO.

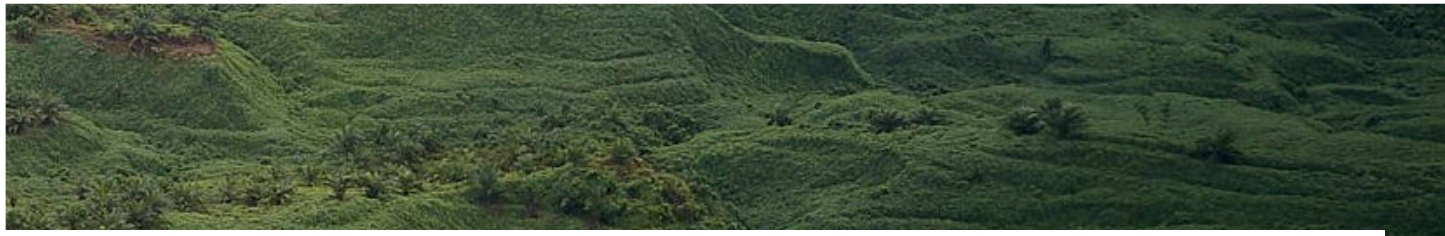
**TABLE 4.1**

**Value Chain CDP insights**

| KPI comparison | % - number |
|---|---|
| Value chain engagement (Basic criteria) | 22,7% (97) |
| Value chain engagement (Full criteria) | 0,9% (4) |
| Engages suppliers on deforestation | 69,6% (297) |
| Engages smallholders on deforestation | 37,0% (158) |
| Support or incentives to suppliers | 30,9% (132) |
| Support or incentives to smallholders | 15,7% (67) |

At the same time, improving yields on existing smallholder plantations represents one of the sector's largest untapped opportunities (Box 2.2). Unlike area expansion, productivity gains can increase supply while supporting both sustainability and commercial objectives.

104. Oil World, 2024
105. Fostering a climate-smart intensification for oil palm, Monzon et al., 2021
106. Current practices and innovations in smallholder palm oil finance in Indonesia and Malaysia: Long-term financing solutions to promote sustainable supply chains Bronkhorst et al., 2017
107. Indonesia's new replanting subsidy is insufficient to empower smallholder farmers to replant aging oil palms, Zhao et al., 2026
108. World Resources Institute (WRI). (2024). Driving Sustainable Smallholder Inclusion in Palm Oil Supply Chains.



This is relevant not only for EUDR-compliant supply chains, but also for domestic, major Asian import markets, and industrial markets where future demand growth is expected to concentrate. Although replanting requires upfront investment and can create temporary income gaps, particularly when combined with training and high-quality inputs, it can generate substantially higher mature-palm yields, strengthen smallholder incomes, and secure future mill supply.

**Traders and mills occupy a central mediating position between downstream compliance requirements and upstream production realities**. Several traders described EUDR as a stronger driver of downstream engagement than earlier NDPE commitments alone, though they also indicate that progress remains concentrated among the largest market participants. [109] Despite these standards being pushed by downstream partners, CDP disclosure data from 427 palm oil companies shows that only 8 (14.3%) of companies reporting a trading role were able to robustly verify more than 90% of sourced palm oil volumes as DF/DCF. [110] Because traders and mills often serve as the primary interface between downstream buyers and independent smallholders, these results suggest that traceability and verification challenges at this level may remain an important constraint to scaling smallholder inclusion within verified supply chains.

At the same time, this central position in the supply chain gives traders and mills an important enabling role: **they can use their proximity to mills, intermediaries and smallholders to translate downstream standards into concrete upstream needs,** such as farmer training, plot mapping, input support, dealer-level traceability, certification assistance and replanting finance. At the same time, they can clarify to downstream buyers what investment and purchasing commitments are required, and what returns these may generate through more secure supply, stronger verification and reduced compliance risk. The commercial case for inclusion therefore depends less on trader power alone than on whether traders and mills use their intermediary position to align downstream requirements with the practical support and incentives needed to keep independent smallholders in compliant supply chains. [111]

**Commercial incentives for smallholder inclusion differ significantly across mill sourcing models.** Mills dependent on independent smallholder FFB have a direct commercial interest in retaining and supporting that supply base; losing it reduces throughput and increases processing costs. Mills operating primarily from captive estate supply face weaker incentives to invest in smallholder integration. Table 4.2 summarises the differences in sourcing incentives. Interviews with industry suggest that mills with mixed supply bases are a more promising entry point for inclusion programmes than top-down buyer requirements because they combine commercial

109. Industry interviews, 2026
110. Companies were classified using the reported commodity value chain stage. Of 56 companies reporting a trading role, 8 met the report's Full DF/DCF criteria, including the ability to robustly verify more than 90% of sourced palm oil volumes as deforestation- and conversion-free (DF/DCF), equivalent to 14.3%. Companies may report multiple value chain roles.
111. Regulating sustainable palm oil supply: The role of private governance and public regulation. CIFOR.Pacheco, et al., 2020; The Tropical Oil Crop Revolution: Food, Feed, Fuel, and Forests. Oxford University Press, Byerlee, D., Falcon, W. P., & Naylor, R. (2017)

incentive with operational proximity to suppliers. However, interviewees also highlighted that competitive sourcing environments can undermine those incentives: brokers and intermediaries may redirect FFB toward mills with fewer sourcing conditions, meaning mills that invest in smallholder compliance risk losing supply to those with less stringent requirements. [112]

**Intermediaries are a structural part of how FFB moves from smallholders to mills.** Independent smallholders commonly sell through brokers, agents, collection centres, and superbrokers who aggregate supply before delivery to mills. [115] These actors influence pricing at the farm gate, determine where supply is routed, and often have longer-standing relationships with smallholders than mills themselves do [116]. Compliance frameworks built around direct supplier-to-mill relationships do not reflect how the upstream supply chain works in practice.

In Malaysia in 2021, in an effort to close the traceability gap between smallholder and mill, MPOB registered 3,460 intermediaries and **started digitizing FFB transactions at the intermediary level**. [117] Under MPOB's Sawit Intelligent Management System (SIMS) fruit dealers are now required to track their FFB transaction. The system may not yet fully account for informal actors, and dealer-mediated FFB may still be hard to trace to the plot of land.[118] Nonetheless, these efforts, together with emerging traceability initiatives in Thailand that register dealers and link them to mapped smallholder suppliers, suggest that intermediary actors do not need to be removed from supply chains to achieve traceability. [119] Dealers and collection agents can instead be registered, mapped, trained, and incorporated into certification and traceability systems, allowing smallholders to remain connected to compliant supply chains while preserving existing market structures.

**TABLE 4.2**

**How sourcing models shape incentives for smallholder inclusion [113]**

| | Mill-centred sourcing (mixed supply) | Estate-direct sourcing (own supply) |
|---|---|---|
| FFB source | Own estate and independent smallholders | Primarily captive estate |
| Smallholder share | Typically 20–60% of mill intake in Indonesia | Less than 10% or excluded entirely |
| Commercial incentive | Direct incentive to retain and support smallholder supply base | No commercial dependency on smallholder supply |
| Traceability | Independent smallholders often not mapped within catchment | Own estate typically fully traceable; smallholder supply outside scope |
| Inclusion potential [114] | Higher if mill or buyer co-invests in compliance support | Compliance achievable without smallholder engagement |

112. Industry interviews conducted by NewForesight, 2026
113. Uneven participation of independent and contract smallholders in certified palm oil mill markets in Indonesia, Ekaputri et al., 2025; Certification, good agricultural practice and smallholder heterogeneity: Differentiated pathways for resolving compliance gaps in the Indonesian oil palm sector, Schoneveld et al. (2019); Due diligence in practice: insights from EUDR preparedness exercises in the palm oil sector, EFI, 2026; Industry interviews conducted by NewForesight, 2026.
114. Inclusion potential row reflects analytical inference from sourced data cited above.
115. Unpacking Indonesia's independent oil palm smallholders: An actor-disaggregated approach to identifying environmental and social performance challenges. Land Use Policy, 69, 281–297, Jelsma, I., Schoneveld, G. C., Zoomers, A., & van Westen, A. C. M., 2017.
116. Improving the livelihoods of independent oil palm smallholders in Indonesia: The role of supply chain relationships, Daemeter Consulting, 2015
117. Digital monitoring and reporting system of oil palm fresh fruit bunch transactions: A case study among sustainable oil palm grower cooperative in peninsular malaysia, Kannan et al., 2023
118. Joint gap assessment of the EUDR information needs and information availability from the Malaysian Sustainable Palm Oil (MSPO) certification, MSPO, EFI & KAMI, 2024
119. Closing the traceability gap: How Thailand is working with collection centres to certify smallholders, Krichanan, 2026

**Demand-side signals provide little correction to these dynamics across much of the global market.** Uptake of certified palm oil remains low in China at 12% and India at 5%, with both markets imposing minimal sustainability requirements on palm oil imports.[120] As Chapter 2 showed, the markets where demand is growing are also the markets with the weakest sustainability signals. This creates a challenge for mechanisms designed to reward certified production, because the pool of buyers willing to pay for sustainability claims is not expanding at the same pace as supply.

"Independent smallholder inclusion is most effective when commercial incentives, traceability systems, and institutional support develop together."

RSPO's independent smallholder credit mechanism was **designed to extend certification benefits to independent smallholders whose production is not physically linked to certified supply chains.** The mechanism has generated important benefits, creating an additional income stream for certified smallholders where physically traceable markets are limited. In 2023, 261,792 ISH credits worth USD 7.0 million were sold, benefiting 85 certified ISH groups.[121] However, because credits can be purchased without physically integrating certified smallholders into sourcing systems, they do not on their own create incentives for the more complex investments required to build traceable and smallholder-inclusive supply chains. [122] **The supply of available credits has grown faster than demand, indicating that market demand has not kept pace with the growth in certified smallholder production**.[123] This limits the mechanism's ability to provide a consistent and scalable economic incentive for certification.

Independent smallholder inclusion goes hand in hand with one of the biggest opportunities in the market: improving smallholder productivity. Across the examples discussed in this chapter, inclusion appears most feasible where commercial incentives, traceability systems, and institutional support develop together rather than separately.

120. RSPO(2024) ACOP Dashboard 2024 data
121. RSPO. (2023). RSPO Shared Responsibility and Smallholder Credit Market Data.
122. The State of Sustainability Initiatives Review. IISD, Potts, J., Lynch, M., Wilkings, A., Huppé, G., Cunningham, M., & Voora, V., 2014
123. Palm Oil Barometer 2025: Procurement for Prosperity. Solidaridad, 2025

## 4.4 The financing gap is not a capital shortage problem; it is a problem of bankability

**Even where mills have the commercial incentive to invest in their independent smallholder supply base, the capital required to do so does not reach smallholders**. In 2017, independent smallholder replanting requirements in Indonesia alone were estimated at approximately USD 700 million per year, before accounting for the additional

costs of mapping, certification, farmer training, and other capacity-building support.[124] Although the estimate is now dated, it remains one of the few published assessments of the scale of investment required and illustrates that financing needs are likely to be measured in the hundreds of millions of dollars annually. While existing initiatives have supported thousands of smallholders and generated valuable implementation experience, they remain small relative to estimated investment needs. For example, RSPO's Smallholder Support Fund has provided approximately USD 5 million across 107 projects and 48,990 farmers globally since 2013. [125]

From a lender's perspective, smallholder investments combine high transaction costs, limited data, elevated risk, and the absence of collateral. [126] Smallholders are geographically dispersed, frequently informal, and typically lack legally recognised land titles. [127] Replanting requires several years without FFB income, a financing structure most commercial lenders are not built to support on smallholder terms. [128]

In many producing countries, currency volatility creates an additional barrier. Smallholders, cooperatives, and local enterprises typically generate revenues in local currencies while financing is often denominated in USD or EUR, increasing perceived risk for both borrowers and lenders. [129]

Many of the **governance gaps that complicate plot-level traceability also make smallholder lending more difficult.** The land documentation, legality frameworks, and geospatial infrastructure Chapter 3 documented as missing from the supply chain are the same foundations lenders require before capital can flow, which individual lenders cannot establish independently.

Sustainability-linked finance offers a partial model. The Musim Mas EUR 150 million revolving credit facility, coordinated by Rabobank and co-financed with HSBC, links loan pricing to independent smallholder RSPO certification, smallholder training, and maintaining a deforestation-free supply chain.[130] Evidence from public disclosures and stakeholder interviews also suggests the facility's impact lies in fostering internal alignment. Structuring sustainability-linked loans typically requires extensive coordination between sustainability, finance, and senior management functions, resulting in more clearly defined targets and stronger integration of sustainability considerations into core business decisions. However, sustainability-linked loans require detailed KPI negotiation, robust sustainability data, and confidence in delivery capability. Their application is currently most feasible for companies with sufficiently developed governance systems, sustainability data, and delivery capacity, making them easier to implement for larger or more established companies than for smallholders, cooperatives, or less formalised supply-chain actors.

**Making independent smallholder finance bankable at scale requires many of the same conditions needed to close the traceability and inclusion gaps.** Land registries, legality frameworks, shared traceability infrastructure, and long-term market commitments are not within the control of any single actor. They require coordinated investment and action across governments, development finance institutions, traders, mills, and buyers.

The Malaysian certification and intermediary registration cases, together with the Musim Mas facility, demonstrate that inclusion becomes more feasible when these enabling conditions are in place. The challenge is therefore not simply mobilising capital, but building the systems that allow capital to flow. How those systems can be developed through coordinated approaches is the focus of Chapter 5.

124. Current practices and innovations in smallholder palm oil finance in Indonesia and Malaysia: Long-term finance to increase productivity. Tropenbos International, Bronkhorst, E., Cavallo, E., van Dorth tot Medler, M., Klinghammer, S., Smit, H. H., & Gijsenbergh, A., 2017
125. RSPO, 2023
126. Industry interviews conducted by NewForesight, 2026
127. Current practices and innovations in smallholder palm oil finance in Indonesia and Malaysia: Long-term financing solutions to promote sustainable supply chains, Bronkhorst et al., 2017; Smallholder finance in the oil palm sector: Analyzing the gaps between existing credit schemes and smallholder realities, Sahara et al., 2017
128. Industry interviews conducted by NewForesight, 2026
129. Local Currency Solutions for Emerging Markets. International Finance Corporation (IFC), 2019.
130. Musim Mas Signs Its First Sustainability-Linked Loan with Rabobank and HSBC Bank. PR Newswire, Musim Mas, 2024.

5

# Beyond Supply Chains

## Landscape and Jurisdictional Approaches


The previous chapters demonstrated that many of the sector's most pressing challenges - the traceability gap, smallholder exclusion, financing constraints, and legality issues - are, at their core, coordination problems that no individual actor can resolve alone. Addressing them requires shared systems, collective investment, and coordination between companies, governments, financial institutions, and producers. Landscape and jurisdictional approaches (LJAs) are increasingly emerging as one of the main mechanisms through which this coordination is organised.

As sustainability governance expands beyond certification and individual supply-chain interventions, LJAs are increasingly being used to build shared traceability systems, support smallholder inclusion, strengthen public-private coordination, and align sustainability objectives across entire sourcing regions. However, most initiatives remain structurally under-scaled relative to the size of the transition challenge. Implementation maturity, financing, government alignment, and market participation remain highly uneven across producing regions.

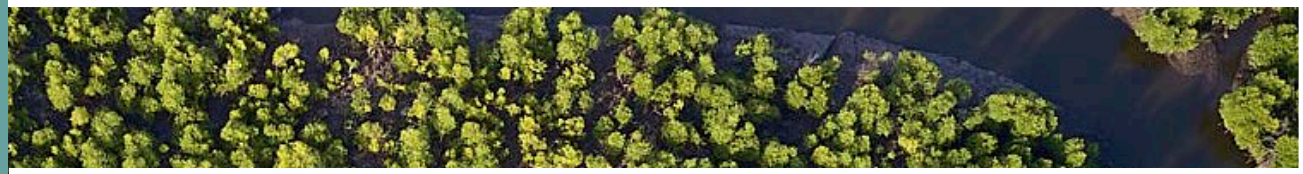
This chapter examines what LJAs are designed to address, what evidence exists regarding their effectiveness, and what constraints continue to limit their ability to scale.

BOX 5.1

## Definition of landscape and jurisdictional approaches [131]

**Landscape approaches** involve long-term collaboration between stakeholders operating within a defined geographic area, such as a watershed, sourcing region, or production landscape. These approaches aim to balance environmental protection, production, and livelihoods through coordinated action across multiple actors.

**The jurisdictional approach** is a specific type of landscape approach that operates within administrative boundaries such as districts, provinces, or states, with active involvement from government authorities. This approach emphasises the central role of government in land-use planning, regulation, and enforcement. In practice, many initiatives combine elements of both approaches.



## 5.1 The biggest sustainability risks operate across whole landscapes, not within single supply chains

**Many of the sustainability challenges documented in Chapters 3 and 4 cannot be resolved through supplier-by-supplier approaches because they do not operate at the supplier level.** Smallholders across a sourcing region share landscapes, waterways, and forest boundaries regardless of which mill they sell to. Traceability systems built within one mill's catchment overlap with those of neighbouring mills buying from the same farmers. Leakage occurs between production areas when sustainability requirements apply to some supply chains but not others operating in the same landscape. Production risks such as fire, climate impacts, ageing plantations, and land-use conflict cross jurisdictions rather than following supplier relationships. And the governance functions required to address these risks like land-use planning, licensing, forest protection, and enforcement, are controlled by public authorities and not companies.[132]

**The result is that individual supply-chain interventions often address symptoms more effectively than underlying structural causes**. A mill can map its own suppliers without resolving the land documentation gaps that prevent its neighbours' suppliers from being mapped. A company can fund smallholder training within its supply base without addressing the replanting financing gap across the broader landscape. A buyer can require deforestation-free sourcing from its direct suppliers without reducing forest loss in the areas between supply chains where monitoring does not reach. These are not implementation failures. Rather, they are structural features of supply chain interventions applied to problems operating at a larger scale.[133]

131. Palm oil Sharing Responsibility and Success: Companies Collaborate to Support Palm Oil Landscapes, TFA, Proforest and CDP, 2023
132. Palm oil Sharing Responsibility and Success: Companies Collaborate to Support Palm Oil Landscapes, TFA, Proforest & CDP, 2023
133. Jurisdictional approaches in Indonesia:Progress, challenges, and lessons, Daemeter, 2023; Company Action in Collective Efforts for Sustainable Land Use at Scale, TFA, 2023

**LJAs attempt to address coordination gaps by organising shared systems at the scale where production risks and governance challenges actually operate.** They are not alternative certification systems. Instead, they are shared coordination infrastructure – building the systems, platforms, and governance frameworks that individual supply chain interventions cannot build alone. Three functions, outlined below, distinguish them from conventional supply-chain approaches.

"Many sustainability challenges operate at landscape scale and cannot be solved through individual supply-chain interventions alone."

**Shared traceability and compliance systems reduce duplication and make verification manageable across complex sourcing regions.** A central constraint for companies sourcing from smallholder-intensive regions is the absence of shared systems for traceability, monitoring, and verification. Farmer registries, geospatial mapping, and satellite-based monitoring built at the jurisdictional scale create a common evidence base across producers, reducing duplication, improving data consistency, and enabling more efficient verification across fragmented supply systems. [134] The EUDR simplification measures reflect the same recognition that scalable compliance in smallholder-intensive sectors will depend partly on shared systems, including collective traceability infrastructure and support mechanisms for smaller operators. [135]

**Smallholder inclusion cannot be financed at scale through individual company programmes alone.** The structural barriers to smallholder inclusion described in Chapter 4 operate across entire sourcing regions. The same land documentation gaps, certification costs, and extension support challenges are often shared by thousands of farms within the same landscape. LJAs attempt to address these barriers through shared jurisdictional systems that support smallholder registration, certification, traceability, and extension services across multiple actors and programmes.111 The EUDR simplification review reinforces this by strengthening the role of cooperatives and producer groups in helping smallholders manage compliance collectively.

134. Inclusion of Indonesian smallholders in European Union supply chains under the EU Deforestation Regulation: Challenges and potential mitigation measures, KAMI & EFI, 2025
135. Draft amendment to Delegated Regulation (EU) 2019/807 on high indirect land-use change-risk feedstocks, European Commission, 2026

**Public-private coordination resolves governance challenges that private action cannot reach**. Many of the sustainability challenges companies face in producing regions are determined by decisions made by public authorities: which land can be cultivated, which must be protected, how licensing works, and how enforcement operates. Companies can contribute through engagement and co-investment, but these functions ultimately depend on public authority. LJAs coordinate action across companies, governments, producers, and financial institutions within shared sourcing regions, creating the institutional frameworks through which public and private action can be aligned.

As these coordination challenges have become more visible, landscape and jurisdictional approaches have gained increasing attention as a mechanism for coordinating sustainability efforts across changing market and governance contexts. The next section examines how participation in these approaches has evolved and what the available disclosure data suggests about their implementation.

## 5.2 Landscape engagement is growing faster than implementation maturity

**Landscape and jurisdictional engagement is growing rapidly in the palm oil sector, although many initiatives are still at very different stages of implementation**. The number of companies reporting engagement [136] in landscape and jurisdictional initiatives through the CDP Forests Questionnaire increased from 27 in 2020 to 388 in 2025, with a further 25% of reporting companies indicating plans to engage within the next two years. [137] More specifically, 37 companies reported engagement 55 palm oil initiatives in 2025, up from 19 qualifying initiatives in 2022. [138] While this still represents a relatively small share of overall supply-chain actors, the participation of major buyers and traders suggests that broader uptake may be emerging within parts of the sector.

136. CDP defines engagement as participation, collaboration, funding, or technical support for landscape and jurisdictional initiatives. This does not necessarily imply full operational implementation.
137. Company Action in Collective Efforts for Sustainable Land Use at Scale, TFA, 2023; 2025 figures based on calculations by NewForesight using 2025 CDP data.
138. Palm oil Sharing Responsibility and Success: Companies Collaborate to Support Palm Oil Landscapes, TFA, Proforest & CDP, 2023; 2025 figures based on calculations by NewForesight using 2025 CDP data.

**Growth in disclosure does not always indicate depth of engagement: interest is expanding rapidly, but implementation maturity is not keeping pace.** CDP assesses company disclosures against criteria for qualifying landscape and jurisdictional initiatives, including scale, multi-stakeholder governance, collective goals, and transparent monitoring systems. While more than 350 companies reported landscape engagement in 2025, less than 40% engaged in initiatives meeting the Landscape Practitioner Network Core Criteria for LJA. [139] Full criteria require initiatives with multiple goals, multiple partner types, a disclosed area coverage, and collective monitoring using a shared external framework. Most current initiatives focus on a single objective, lack government or community co-governance, and cannot disclose the area they cover, they are too small, too vague on geography, or lack real governance and monitoring, and more than a quarter did not disclose financial investment at all.

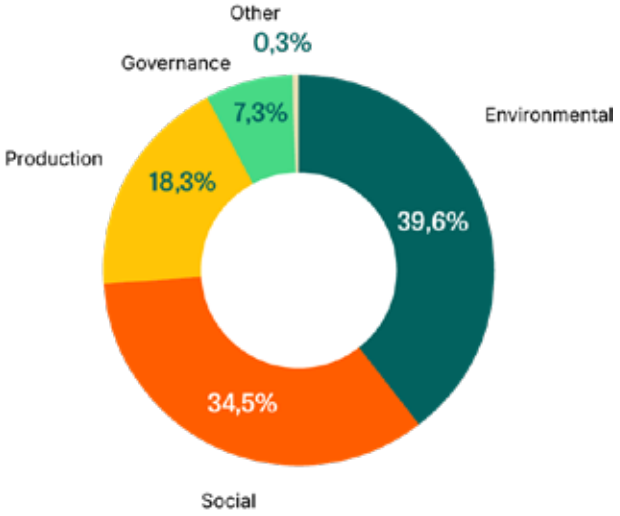
True commitment to landscape approaches requires long-term engagement and stable financial support. While current funding levels are adequate, there is a clear need for more sustained financing for ongoing landscape initiatives, as well as increased investment in initiatives that are still seeking private sector participation.

Among companies disclosing to CDP, most engagement remains primarily financial rather than operational. Although the majority contribute full or partial funding, landscape participation can also involve other roles: including partnership responsibilities, implementation support, and coordination within multi stakeholder arrangements. Across palm oil landscape initiatives, the largest share of partners consists of local communities and NGOs, together representing 40% of all participating stakeholders.

**Landscape initiatives are increasingly focused on addressing shared implementation challenges linked to traceability, monitoring, and smallholder support.** The most commonly reported activities include smallholder capacity building (51%), traceability collaboration (47%), and deforestation monitoring (42%). [140] These activities directly respond to several of the coordination failures identified in Chapters 3 and 4, particularly the fragmentation of traceability systems, the high cost of supplier-by-supplier smallholder support, and the absence of shared monitoring infrastructure across sourcing regions. Because these challenges operate beyond the boundaries of individual farms, mills, and supply chains, they are difficult to address through certification and company-level interventions alone, reinforcing the complementary role of landscape approaches in supporting sustainability outcomes at scale.

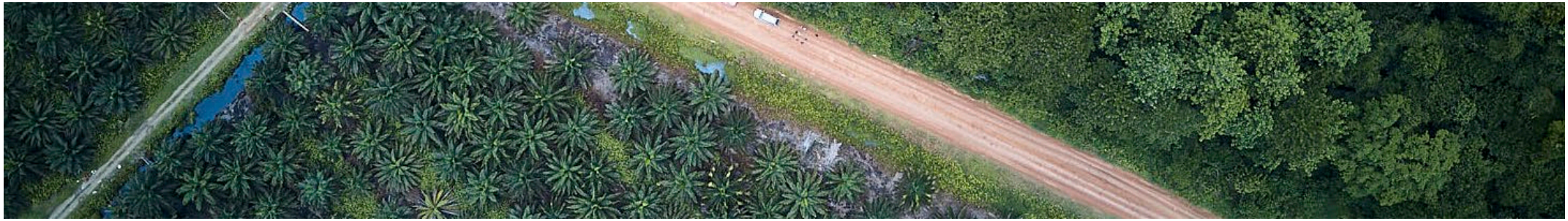
**FIGURE 5.1**

**Palm oil companies disclosed thematic goals supported by landscape Initiatives**




**Supporting deforestation-free production and sourcing was the most commonly cited objective,** reported across 82% of initiatives, followed by smallholder and community benefit (64%), biodiversity and ecosystem protection (62%), and the adoption of sustainable production practices (56%). However, pre-competitive collaboration was reported in only 22% of initiatives, suggesting that this form of collaboration is not yet widespread across landscape initiatives.[120]

139. Calculations by NewForesight using 2025 CDP data.
140. This is based on companies engaging in all landscape initiatives, including palm oil



**The drivers of engagement suggest that companies are increasingly engaging in LJAs as part of broader sourcing and supply chain strategies, alongside compliance objectives.** Among companies engaged in palm oil initiatives, the strongest drivers include deforestation and conversion risk at 83.8%, ecosystem protection at 78.4%, and smallholder market access at 56.8%. Only 16.2% identified regulation as a primary driver. [120] This suggests that EUDR may be accelerating engagement, but companies are primarily investing in LJAs because they address sourcing, risk management, and supply security challenges at landscape scale.

**Engagement concentrates in regions where coordination already exists, potentially reinforcing disparities in support and investment across sourcing regions.** Companies are more likely to engage in sourcing regions where functioning multi-stakeholder initiatives, implementation partners, and coordination platforms already exist. The presence of organisations such as IDH, Earthworm, Solidaridad, and Proforest, and collective platforms including the Forest Positive Coalition and Rimba Collective, reduces transaction costs and provides structured entry points for engagement. [141] Local government commitment is also an important enabling factor, particularly in Indonesia and Malaysia where land-use governance is highly decentralised and subnational governments play a central role in land-use planning, licensing, and enforcement. [142]

This concentration is visible in the geography of reported initiatives. Indonesia and Malaysia account for 46 of the 55 palm-specific landscape and jurisdictional initiatives reported through CDP in 2025 (84%), with Indonesia alone representing more than half of all initiatives. By contrast, only four initiatives were reported in Latin America and one in Africa. In practice, landscapes with established coordination mechanisms continue attracting corporate participation and finance, while equally high-risk regions without existing networks struggle to mobilise sustained engagement.

Engagement also remains concentrated among companies headquartered in Europe, North America, and Japan, which together account for approximately 70% of companies reporting landscape engagement through CDP. [143] Yet future demand growth is expected to be driven primarily by India, China, and broader South-East Asian markets. **The buyer base currently financing and participating in landscape initiatives is therefore not the same buyer base expected to drive future market growth.** How this shift in demand influences future participation in landscape approaches remains an open question.

141. Jurisdictional approaches in Indonesia: Progress, challenges, and lessons, Daemeter, 2023
142. Palm oil Sharing Responsibility and Success: Companies Collaborate to Support Palm Oil Landscapes, TFA, Proforest & CDP, 2023
143. Calculations by NewForesight using 2025 CDP data.

BOX 5.2

## Overview of the IDH's landscape programme in Aceh province [145]

**Geography:** Initial focus on three districts - Aceh Tamiang, Aceh Singkil, and Subulussalam.

**Duration:** The program has been active since 2017, following a phased approach of partnership building, implementation, and scaling between 2020-2024.

**Governance/Implementers:** Convened and co-funded by IDH. Implemented in partnership with district and provincial governments and supported by local NGOs and technical partners. Key institutional platforms include the Centre of Excellence (PUPL) and multi-stakeholder forums.

**Key private sector actors:** Unilever, PepsiCo, Musim Mas, and Apical

**Programme Overview:** The IDH Landscape Programme combines public-private coalitions, jurisdictional PPI Compacts, and market finance for deforestation-free land use, focusing on embedding sustainability into provincial policy including the Green Growth Plan and Sustainable Palm Oil Roadmap, establishing multi-stakeholder coordination mechanisms, developing monitoring and traceability systems, and supporting smallholder inclusion through land registration via e-STDB, training, and cooperative development.

## 5.3 Aceh and Sabah demonstrate what coordinated approaches can deliver and where the limits of current implementation sit

**Programme-level evidence increasingly suggests that LJAs can contribute to measurable improvements in productivity, livelihoods, traceability, and forest protection**. Evidence of landscape-scale impact remains limited, partly due to the complexity and relatively recent implementation of many initiatives, as well as the difficulty of attributing outcomes where multiple factors interact.[144] The two cases below illustrate different models for building the coordination LJAs require and the distinct challenges each faces.

### Aceh, Indonesia: measurable outcomes from a private-sector co-led model

The IDH landscape programme in Aceh provides one of the clearest available examples of **measurable outcomes from a coordinated landscape approach.** Operating across multiple districts since 2017, the programme combines public-private collaboration, shared system-building, and smallholder support within a single jurisdictional framework.

According to an impact assessment commissioned by IDH in 2025,[146] between baseline year 2019 and 2024: **smallholder productivity increased by 69 to 104%** across participating districts; **smallholder income from palm oil increased by two to four times; annual forest loss was reduced by approximately 2,645 hectares per year; and more than 4,000 smallholders received training with thousands registered and progressing toward certification.** These outcomes reflect the integration of multiple interventions: farmer training, land registration, cooperative development, and deforestation monitoring. These outcomes would likely have been difficult to achieve through supplier-level engagement alone.

144. Jurisdictional approaches in Indonesia: Progress, challenges, and lessons, Daemeter, 2023; Company Action in Collective Efforts for Sustainable Land Use at Scale, TFA, 2023
145. Source: IDH (2026); Impact assessment of the IDH's landscape program in Aceh province, DTS, 2025; Interviews, 2026
146. Impact assessment of the IDH's landscape program in Aceh province, DTS, 2025

The programme also illustrates what co-financing at landscape scale can achieve. Approximately **EUR 3 million in blended finance was mobilised, with around 70% contributed by private sector partners including major buyers and traders.** This co-financing model allowed companies to pool resources and support system-level interventions that no single company could fund independently.

Although EUR 3 million represents a meaningful demonstration of the **co-financing model, it remains small relative to the level of investment required to scale this approach across Indonesia's wider smallholder base. The evidence base** is also still relatively short-term: five years of implementation data is insufficient to attribute landscape-scale forest outcomes with confidence, particularly given the multiple factors influencing deforestation rates simultaneously. [147]

Still, the Aceh case provides strong emerging evidence of the potential of coordinated implementation, rather than conclusive evidence of sustained landscape-scale impact at full scale.

### Sabah, Malaysia: a government-led coordination model

Where Aceh demonstrates measurable farm and landscape outcomes, the Sabah case illustrates a different form of progress: the establishment of governance systems that enable jurisdictional sustainability at scale. Unlike Aceh, where implementation is strongly driven by private sector co-financing, Sabah's progress is anchored in government-led coordination.

147. Jurisdictional approaches in Indonesia: Progress, challenges, and lessons, Daemeter, 2023d; Company Action in Collective Efforts for Sustainable Land Use at Scale, TFA, 2023
148. National Initiative for Sustainable Climate Smart Oil Palm Smallholders (NI-SCOPS): Endpoint Study, Sheng Tey & Darham, 2024; Interviews conducted by NewForesight 2026; IDH, 2026



BOX 5.3

## Overview of the NI-SCOPS Programme [148]

**Geography**: Pilot districts including Lahad Datu and Beluran

**Duration**: Active since 2018. Phase 1 ran from 2018–2023 and Phase 2 is ongoing.

**Governance/Implementators:** Convened by IDH and Solidaridad and implemented in partnership with the Government of Malaysia and Sabah state authorities, including agencies such as the Malaysian Palm Oil Board (MPOB). Delivery is structured through multi-stakeholder platforms, steering committees, and technical working groups.

**Programme Overview:** NI-SCOPS supports smallholder transition to sustainable and climate-smart palm oil production within a jurisdictional framework aligned with MSPO and Sabah's ambition to achieve 100% sustainable palm oil production. The programme combines farmer-level support with landscape-level coordination, including training in Good Agricultural Practices and climate-smart agriculture, support for smallholder certification and formalisation, multi-stakeholder coordination platforms, and the development of geospatial monitoring and traceability systems. The aim is to help smallholders meet evolving market and compliance requirements while improving resilience and productivity.

**Sabah's most distinctive contribution to date is the coordination architecture being established across actors that no individual company could have delivered alone.** Through the Conservation Area Network, Sabah has committed approximately 40% of total state land to forest cover, with all protected areas and forest areas identified across the entire jurisdiction. Neighbouring plantations with no contractual relationship operate under a common spatial framework that defines which areas can be cultivated, which must be protected, and how compliance is verified across the whole jurisdiction. The cost of individual High Conservation Value assessments, the duplication of compliance documentation, and the coordination required across smallholders to maintain forest cover are absorbed at the jurisdictional level rather than distributed across individual mill catchments. For companies sourcing from Sabah, these systems have the potential to reduce the per-supplier burden of due diligence. For smallholders, compliance systems that they cannot afford individually are provided as a shared system.[149]

The Sabah initiative remains in implementation. While the initiative originally targeted 100% sustainability and jurisdictional certification by 2025, implementation timelines have extended due to state-level coordination challenges, including the finalisation of key agreements. As a result, the case illustrates the feasibility of the coordination model and the systems being established, but not yet the full sustainability outcomes it is intended to deliver.[128]

At the farm level, NI-SCOPS has engaged thousands of smallholders through training and support focused on improving practices, productivity, and certification readiness. These interventions have contributed to improvements in farm management practices including fertiliser application, harvesting techniques, and record-keeping. Climate-related outcomes have been reported, with improvements in climate resilience and reductions in greenhouse gas emissions linked to changes in farm practices, though these outcomes are primarily measured at intervention level and have not yet been fully translated into landscape-scale impact.[128]

**Together, Aceh and Sabah illustrate two different approaches to the same coordination challenge.** Aceh highlights the role of private-sector co-financing and implementation support, while Sabah demonstrates the importance of government leadership and institutional alignment. Rather than providing a single model for replication, they show that successful LJAs depend on adapting common coordination principles to local political, institutional, and market conditions.

## 5.4 Scaling LJAs requires financing, governance, and market alignment

The evidence presented in this chapter suggests that landscape and jurisdictional approaches can help improve productivity, livelihoods, traceability, and forest protection. Participation is growing, with 32.8% of palm oil companies now engaging in at least one initiative, but most remain early-stage. Of the 10.1% meeting CDP's Full criteria, the majority are still operating at project scale, far below the financing and governance commitment that sector-wide transition requires. The challenge is therefore less about demonstrating that coordinated approaches work and more about what it would take to move from working pilots to sustained implementation at scale.

**Financing is the most immediate constraint.** While programmes such as Aceh demonstrate that blended public-private co-financing is possible, the scale of investment remains far below what sector-wide transformation requires. As Chapter 4 documented, published estimates suggest that independent smallholder replanting requirements in Indonesia alone may amount to hundreds of millions of dollars annually, before accounting for the additional costs of certification, mapping, training, and institutional support.

149. National Initiative for Sustainable Climate Smart Oil Palm Smallholders (NI-SCOPS): Endpoint Study, Sheng Tey & Darham, 2024; Interviews conducted by NewForesight 2026; IDH, 2026

Current financing mechanisms have demonstrated what can be achieved through targeted partnerships, but remain small relative to the scale of investment required for transition across major producing regions.

**Government support is essential for these approaches to succeed, but political support varies across regions**. Embedding sustainability into land-use planning, licensing, enforcement, and smallholder support requires coordination across multiple agencies and levels of government. Progress is therefore shaped by political cycles, administrative capacity, and shifting policy priorities. Convening organisations can help maintain momentum and align stakeholders over long implementation periods, but durable outcomes ultimately depend on sustainability objectives becoming embedded within public institutions and governance systems.[150]

**Measuring outcomes at landscape scale remains a challenge.** While programme-level results are increasingly available, consistent measurement across jurisdictions remains limited due to methodological differences, evolving monitoring systems, and the time required for landscape-level outcomes to materialise. Attribution is particularly difficult because changes in deforestation, livelihoods, or production practices are often influenced by multiple interventions and external factors operating simultaneously. As a result, early evidence is often strongest for intermediate outcomes such as multi-stakeholder coordination, policy alignment, and government engagement, which create the enabling conditions for longer-term impact.131 Several frameworks are being developed to improve the measurement and communication of landscape-level outcomes, including LandScale, SourceUp, Sustainable Jurisdiction Indicators, and the Landscape Reporting Framework developed by Proforest and ISEAL. [151]

**Market recognition of jurisdictional systems remains partial.** While landscape and jurisdictional approaches can help create the conditions for deforestation-free, traceable, and smallholder-inclusive production, market access and regulatory compliance continue to be assessed primarily at the level of individual operators and supply chains. Participation in a jurisdictional programme therefore, does not replace company-level due diligence obligations under frameworks such as the EUDR, although recent developments suggest growing alignment between jurisdictional systems and compliance processes.

This reflects a broader transition challenge. Certification and supply-chain approaches are already embedded within market and regulatory systems, whereas jurisdictional approaches are still evolving as a governance mechanism. Whether landscape and jurisdictional systems become more formally recognised within sourcing decisions, risk assessment processes, and regulatory frameworks will be an important factor shaping their future scale and influence.

150. Jurisdictional approaches in Indonesia: Progress, challenges, and lessons, Daemeter, 2023; Private sector action in Sabah, Malaysia: Lessons learnt from jurisdictional engagement, TFA, 2021
151. Landscape Reporting Framework, Proforest, 2022; Jurisdictional approaches in Indonesia: Progress, challenges, and lessons, Daemeter, 2023; Palm oil Sharing Responsibility and Success: Companies Collaborate to Support Palm Oil Landscapes, TFA, Proforest & CDP, 2023

## 5.5 From coordination pilots to sector-wide transition

The evidence presented in this chapter suggests that landscape and jurisdictional approaches are becoming increasingly important where sustainability challenges extend beyond the boundaries of individual supply chains. Rather than replacing certification, they provide a complementary mechanism for addressing shared challenges such as smallholder inclusion, traceability, and land-use governance at scale. The experiences of Aceh and Sabah demonstrate both the potential of these approaches and the conditions required for their success. How those conditions can be strengthened to support broader sector-wide transition is explored through the recommendations in Chapter 6.

BOX 5.4

### Emerging landscape models increasingly combine livelihoods, restoration, and governance [152]

In Seruyan District, Indonesia, the Gawi Bapakat programme developed by Kaleka and partners **combines sustainable village development, regenerative agriculture, restoration, farmer organisation, and landscape governance within a jurisdictional implementation model.** Importantly, the programme's first impact assessment was designed explicitly as an evidence-based evaluation framework rather than only a programme progress report. The assessment uses a Theory of Change model, matched treatment and control villages, household-level regression analysis, and spatial analysis of deforestation and fire incidence to evaluate programme outcomes across environmental, economic, and social dimensions.

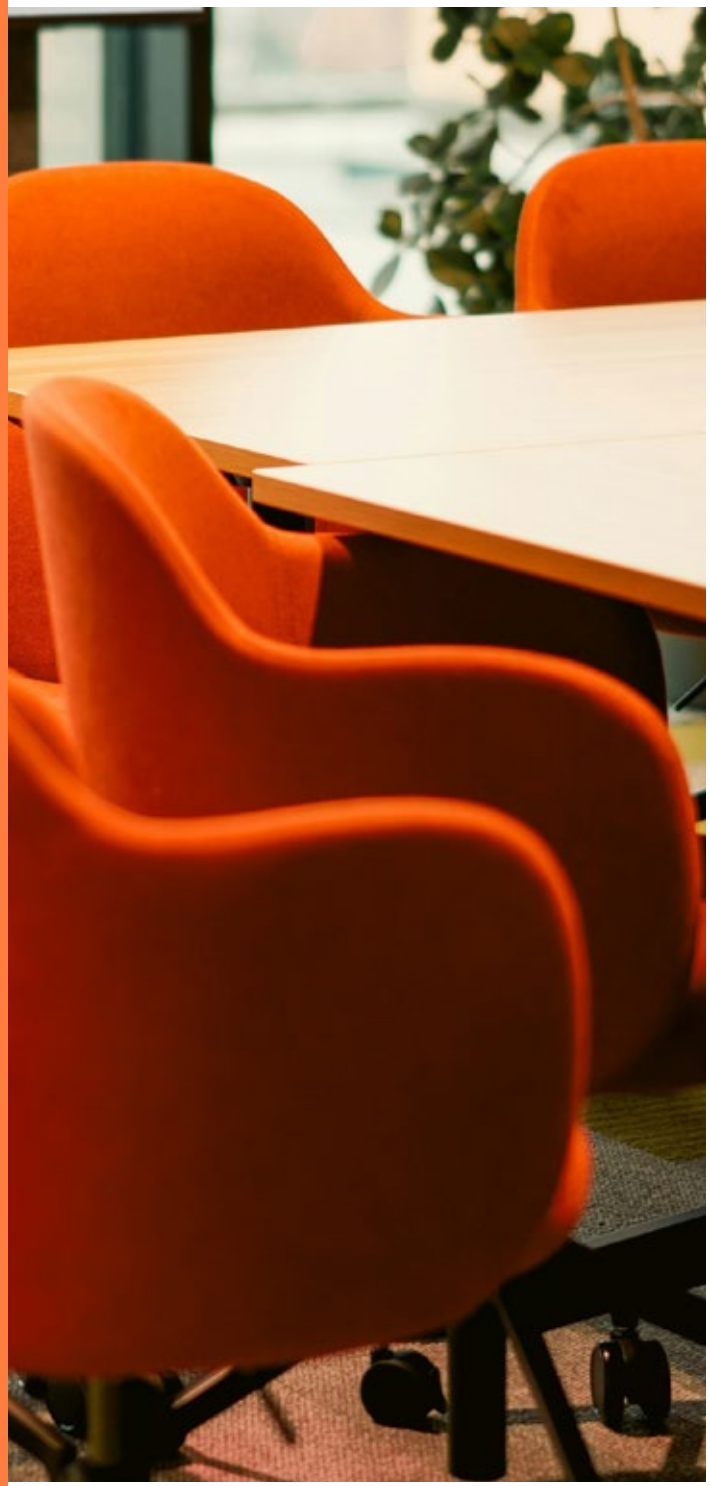
The study covered 17 villages, including eight intervention villages and nine control villages, with **665 respondents across treatment and comparison groups**. Early results suggest measurable differences between intervention and control areas. **Treated villages recorded approximately five additional tonnes of oil palm productivity on average** relative to control farms, alongside statistically significant **increases in farm worker productivity and household consumption**. The intervention group also showed **significantly higher understanding of sustainable farming practices and stronger awareness of farmer-group collaboration**, while knowledge related to ISPO and RSPO certification processes recorded some of the largest observed gains across the assessment indicators. On the environmental side, **treated villages showed lower median deforestation levels and lower fire incidence compared to control villages,** with outcomes also becoming more consistent across villages after intervention

152. Industry interviews, 2026; Technical Paper: First Assessment of Gawi Bapakat's Impact, Kaleka, 2026

6

# Synthesis and Recommendations

Markets supporting deforestation-free, smallholder-inclusive palm oil from resilient landscapes



The preceding chapters point to a consistent pattern. Market dynamics are moving away from the conditions under which many existing sustainability frameworks were originally designed to operate. Certification, traceability, and compliance systems have established important foundations for sustainable supply, but future demand growth is increasingly concentrated in domestic, major Asian import markets, and industrial markets rather than the premium export markets that historically drove sustainability uptake. At the same time, producing-country governments are playing a larger role in shaping sustainability outcomes through national policy, regulation, and sector governance. The challenge is therefore less about creating new sustainability frameworks and more about adapting existing ones to a changing market and governance landscape, while strengthening coordination between the actors needed to keep smallholders included and sustainability outcomes moving at scale.

This chapter focuses on what now needs to happen across the sector to respond to these challenges. The findings presented throughout this report point to five broad conclusions about where leverage for change now sits across the sector. The recommendations that follow are organised around these conclusions.

1. Addressing passive exclusion requires structural change, not only farmer-level interventions.
2. Coordination problems cannot be fixed one company at a time.
3. Smallholder inclusion is about supply chain resilience as much as it is about social equity.
4. Gaps in land registration, legal systems, and mapping remain major barriers to sustainable and traceable supply.
5. Sustainability requires stronger incentives in the markets, driving future demand growth.

## The Eight-Actor Recommendation Grid

Coordinated for sustainable. traceable. and inclusive supply chains


Buyers have one of the strongest remaining market levers: increasing demand for physically traceable supply.

**1 End-market buyers**
Brands and retailers
Strengthen demand for physically traceable supply

The financing gap is not mainly about a lack of capital. It stems from missing land, traceability, and market systems that lenders need before they can finance smallholders at scale.

**8 Financial actors**
Support long-term transition investment

Greater mill-level transparency and clearer smallholder inclusion requirements within procurement systems could improve market visibility around where inclusion is actually occurring

**2 Traders and refiners**
Keep smallholders included in sustainable and traceable supply chains

**7 Landscape implementation partners, NGOs, and civil society organisations**
Support inclusive landscape implementation and accountability

The long-term credibility of landscape and jurisdictional initiatives depends not only on demonstrating successful pilots, but on whether they can be embedded within durable governance systems operating at scale.

**3 Mill operators**
Strengthen traceability and visibility into independent smallholder supply

For mills sourcing from mixed supply bases, mapping and registering independent smallholder suppliers is becoming necessary for both compliance and reliable throughput management.

**6 Landscape authorities**
Enable place-based coordination and implementation

Enable place-based coordination and implementation

**4 Producing country governments**
Build the foundations sustainable supply depends on

Public investment in governance and farmer support systems increasingly appears to be one of the most effective intervention available to producing countries.

**5 EU regulators and member states**
Maintain EUDR ambition while supporting inclusive implementation

EUDR's long-term success depends not only on enforcement, but on whether compliance pathways remain credible and inclusive enough to shape broader market behaviour.

## 6.1 Where incentives align and where they still do not

Three areas of convergence emerge clearly across the report.

**First, the long-term viability of the smallholder production base is now a shared interest across much of the sector.** Mills dependent on mixed supply bases need stable, independent smallholder throughput. Traders and buyers increasingly depend on traceability systems that require supplier formalisation. Producing-country governments are also developing stronger incentives to support productivity, legality, traceability, and sustainable supply as domestic biodiesel demand, domestic and emerging demand markets, export competitiveness, and long-term supply stability become more important in national sector strategies. EU regulators similarly have an interest in compliance systems that do not structurally exclude a significant share of global production.

One of the clearest shifts identified in this report is that **sustainability requirements are increasingly shaped not only by premium export markets and international buyer commitments, but also by producing-country policy priorities and domestic market dynamics**. As future demand growth concentrates in domestic, major Asian import markets, and industrial markets, sustainability incentives are also becoming more closely tied to producing-country policy priorities and long-term sector management. This creates growing overlap between commercial, regulatory, and national policy incentives across the sector, while also expanding the range of actors that influence sustainability outcomes.

**Second, there is broad convergence around the importance of shared governance and coordination systems.** Public investment in legal documentation, mapping, registries, traceability, extension support, and geospatial systems benefits nearly every actor discussed in this report. These systems underpin financing, compliance, productivity improvement, and smallholder inclusion simultaneously. There is growing alignment around the importance of these shared systems, even where implementation remains uneven.

**Third, landscape and jurisdictional approaches are increasingly emerging as one of the main mechanisms through which these shared interests can be coordinated**. As shown in Chapter 5, evidence remains uneven, and implementation maturity varies considerably between regions, but these approaches are increasingly being used to coordinate actions that would be difficult for individual actors to deliver independently.

Three areas of misalignment remain unresolved.

**The first is the weak commercial signal reaching producers.** Many independent smallholders continue to face rising compliance expectations without consistently receiving higher returns, stable market access, or long-term financial incentives in return. Sustainability systems have often generated value downstream more effectively than they have transmitted value upstream. Until this gap narrows, the business case for sustained compliance at producer level will remain fragile.

**The second is the unresolved tension between credit systems and physically traceable inclusion.** ISH credits can play a complementary role, particularly where certified smallholders have limited access to physically traceable certified markets. In these contexts, credits can provide an additional income stream and help maintain the economic value of certification. While they reward certification, they do not on their own create the commercial incentives for mills, traders, and refiners to invest in supplier integration, traceability infrastructure, and long-term smallholder inclusion.

**The third is the growing risk of a two-tier global market**. EUDR has already generated substantial governance reform across producing countries. However, much of future demand growth is expected to come from markets where sustainability requirements remain weaker or less consistent. Whether sustainability governance converges across consuming markets or fragments into separate regulated and conventional supply markets may ultimately determine the long-term commercial future of sustainable palm oil. Avoiding this outcome will require sustainability objectives to be increasingly linked to productivity, supply security, and industrial development priorities in the markets expected to drive future demand growth.

The recommendations below focus on where different actors currently have the most influence to address these remaining gaps.

"The long-term viability of the smallholder production base is becoming a shared interest across governments, companies, and regulators."

## 6.2 End-market buyers (brands and retailers) strengthen demand for physically traceable supply

**Buyers have one of the strongest remaining market levers: increasing demand for physically traceable supply**. Retailer CSPO uptake remained around 88% between 2020 and 2024, while consumer goods manufacturer uptake fell from 52% to 39.5%.[153] Increasing demand for physically traceable certified supply is one of the strongest market levers available to buyers. Physically traceable sourcing creates direct commercial incentives for mills, traders, and refiners to invest in supplier integration, traceability infrastructure, and long-term smallholder inclusion. This becomes increasingly important as demand growth shifts toward markets where sustainability requirements are often weaker or less consistent. In that context, demand from retailers, brands, refiners, food manufacturers, and industrial users remains one of the few direct market signals supporting traceable and inclusive supply chains.

RSPO's Annual Communications of Progress already collects and publishes company-level data on physical supply chain models and credit use. Building on that foundation, buyers could strengthen accountability by setting clearer targets to increase the physical share of certified sourcing and publishing the methodology used to verify progress. Most downstream buyers do not purchase directly from mills and cannot guarantee the transmission of farm-gate premiums themselves. However, they can require direct suppliers and traders to demonstrate how sustainability premiums or incentives are passed through to producers, supported by independent verification and audit rather than policy commitments alone.

153. RSPO ACOP Dashboard, 2024

## 6.3 Traders and refiners play a critical role in keeping smallholders included in sustainable and traceable supply chains

**Greater mill-level transparency and clearer smallholder inclusion requirements within procurement systems could improve market visibility around where inclusion is actually occurring.** Traders recorded lower robust deforestation- and conversion-free verification rates than downstream manufacturers and retailers, reflecting their position at the point where supply from many mills and sourcing regions is aggregated. Roughly one certified mill exists for every eight downstream RSPO certificate holders in the supply chain.[154] This concentration means a relatively small number of large traders and refiners strongly influence both the conditions under which independent smallholders remain included in sustainable and traceable supply chains and whether sustainability requirements extend beyond a limited number of regulated markets.

Greater mill-level transparency around smallholder sourcing shares and compliance progress, rather than reporting only group-level aggregates, would make it easier for buyers to identify which mills are actively investing in smallholder integration. Incorporating clearer expectations for smallholder inclusion into NDPE implementation could also help reduce the risk that compliance systems unintentionally concentrate sourcing on already formalised producers.

For large integrated traders with mill-level traceability systems, this is increasingly achievable. For mid-tier operators, a phased approach linked to the development of jurisdictional traceability systems is likely to be more realistic. For integrated operators with refining and crushing capacity, physically segregated CSPKE supply through certified crushing can help address the structural separation challenges discussed in Chapter 3, as the necessary vertical coordination largely exists at this level.

Investing in mixed-supply mills that depend heavily on independent smallholder throughput is not only a sustainability intervention, but also a form of long-term supply risk management. Maintaining smallholder participation across both regulated and conventional markets will be important to avoiding further fragmentation of global supply chains.

## 6.4 Mill operators strengthen traceability and visibility into independent smallholder supply

**For mills sourcing from mixed supply bases, mapping and registering independent smallholder suppliers is becoming necessary for both compliance and reliable throughput management.** Mills with mixed supply bases often depend on independent smallholder FFB for 20-60% of intake,[155] meaning the loss of that supply can directly affect throughput economics. Mapping and registering independent smallholder suppliers is therefore increasingly both a traceability requirement and an operational necessity for maintaining stable supply. Several programmes have also shown that this can be integrated into existing mill management operations.

154. RSPO Annual Communication of Progress (ACOP) Dashboard, 2024. NewForesight calculation.
155. Due diligence in practice: insights from EUDR preparedness exercises in the palm oil sector, EFI (2026)

Participating in shared jurisdictional geospatial and traceability systems, rather than building company-specific infrastructure, reduces duplication and improves visibility into indirect independent smallholder supply. Where shared systems already exist, mills should use them. Where they do not yet exist, co-investing in shared development is likely to be more effective than building parallel systems that fragment data and increase costs across the landscape.

Adopting transparent premium pass-through pricing at the mill gate also remains commercially rational and underused. Premiums absorbed at mill level are one of the main points where value is lost between downstream buyer commitments and producer income. For many independent smallholders, the business case for participation depends less on certification itself and more on whether compliance is linked to tangible economic benefits, stable market access, productivity support, or long-term supplier relationships. Mills that transparently pass incentives through to suppliers are therefore more likely to retain independent smallholder supply over time.

## 6.5 Producing-country governments build the foundations sustainable supply depends on

**Public investment in governance and farmer support systems increasingly appears to be one of the most effective intervention available to producing countries.** EFI's preparedness exercise found that approximately 95% of smallholder suppliers lacked primary legal documentation, while around 18% of supply areas overlapped with officially reclassified forest zones. Malaysia's government-supported MSPO has certified approximately 85% of independent smallholders, while Indonesia's ISPO has certified fewer than 1%. [156] The difference reflects levels of public investment and implementation support more than differences in farmer willingness.

Investing in legal documentation, plot registries, mapping systems, extension support, and forest-zone correction addresses structural barriers that private actors cannot resolve alone. These fondations are increasingly important not only for sustainability and market access, but also for unlocking finance, improving productivity, supporting replanting, strengthening energy security, and maintaining long-term supply resilience. As domestic, major Asian import markets, and national refining industries absorb larger shares of palm oil demand, governments have growing economic incentives to support sustainable and traceable production beyond export-market requirements alone.

National standards can also help bridge the gap between sustainability standards and regulatory compliance. However, broader scheme coverage alone does not ensure EUDR readiness. Implementation also depends on how well standards are linked to licensing systems, farmer support, financing, and verification. Malaysia currently provides the clearest large-scale example of how these elements can work together in practice. Where political conditions allow, embedding sustainability commitments into provincial and national law remains one of the most durable ways to reduce political turnover risk.

156. Due diligence in practice: insights from EUDR preparedness exercises in the palm oil sector, EFI (2026)

## 6.6 EU regulators and member states maintain EUDR ambition while supporting inclusive implementation

**EUDR's long-term success depends not only on enforcement, but on whether compliance pathways remain credible and inclusive enough to shape broader market behaviour.** Even before enforcement begins, EUDR has already catalysed more than 60 government-led initiatives across 25 producing countries, driving governance reform at a scale that voluntary standards alone struggled to achieve. Recent simplification measures reduced compliance costs while maintaining the regulation's core requirements. The next challenge is supporting implementation in smallholder-intensive sourcing regions where governance capacity remain uneven.

The European Commission can support this by recognising jurisdictional monitoring frameworks, group certification structures, and documented registries as supporting mechanisms for operator due diligence without weakening the deforestation-free requirement. Publishing transparent risk-classification criteria on a predictable review cycle would also strengthen incentives for producing countries to invest in compliance infrastructure. Some barriers will also require sustained government-to-government engagement on data sharing and regulatory coordination.

Finally, the estimated 5.2 million tonnes of certified palm oil currently sold without a sustainability claim highlights the risk of market fragmentation.[157] EUDR's long-term success will depend partly on whether it encourages broader convergence across markets rather than reinforcing separate regulated and conventional supply markets.

EUDR's long-term success depends not only on enforcement, but on whether compliance pathways remain credible and inclusive enough to shape broader market behaviour.

157. RSPO ACOP Dashboard, 2024

## 6.7 Landscape implementation partners, NGOs, and civil society organisations strengthen long-term coordination systems

**The long-term credibility of landscape and jurisdictional initiatives depends not only on demonstrating successful pilots, but on whether they can be embedded within durable governance systems operating at scale.** The Aceh and Sabah programmes demonstrate the potential of multi-stakeholder coordination and co-financing models, but most landscape initiatives remain far below the scale required for sector-wide transition. The challenge is therefore less about launching new pilots and more about integrating successful approaches into long-term governance systems.

The role of landscape implementation partners, NGOs, and civil society organisations is unlikely to be perpetual project delivery. Their longer-term role is to help governments, companies, financial actors, and local communities build shared systems and coordinate action.

In practice, this means prioritising five functions:

- Supporting shared traceability, geospatial, and smallholder registration systems, including visibility into supply organised through intermediaries,
- Strengthening extension services, farmer training, certification readiness, and smallholder participation in compliance and market systems,
- Convening multi-stakeholder processes that align governments, companies, producers, and communities around common sustainability objectives,
- Strengthening accountability through independent monitoring, public reporting, and transparent governance, and
- Helping transition successful pilots into long-term institutional arrangements integrated into government and sector governance systems.

As market conditions shift, these coordination functions will become increasingly important for connecting productivity improvement, legality systems, traceability, smallholder inclusion, and forest protection within commercially and politically viable governance systems. Over time, many of these functions are likely to become embedded within provincial governance systems, commodity platforms, and public-private coordination mechanisms rather than remaining standalone donor-funded programmes.

Maintaining credibility with buyers, governments, and regulators also depends on governance quality. Independent review, public reporting, and transparent governance structures can help reduce capture risk and strengthen confidence in jurisdictional systems whose long-term value still depends partly on external recognition.

As market conditions shift, these coordination functions will become increasingly important for connecting productivity improvement, legality systems, traceability, smallholder inclusion, and forest protection within commercially and politically viable governance systems

## 6.8 Financial actors support long-term transition investment

**The financing gap is not mainly about a lack of capital. It stems from missing land, traceability, and market systems that lenders need before they can finance smallholders at scale.** As Chapter 4 showed, sustainability-linked lending can work at the organisational level for companies with the governance systems to support it. However, it is not yet a model for resolving the sector's broader smallholder financing gap, which depends on enabling conditions that individual lenders cannot create on their own.

**Development finance institutions can play an important role in reducing risks that commercial lenders remain reluctant to absorb, particularly for long-term investments such as smallholder replanting, productivity improvement, mill upgrading, traceability implementation, and jurisdictional transition programmes**. Guarantees, concessional finance, first-loss structures, and foreign exchange (FX) risk mitigation mechanisms can help unlock investment where governance foundations already exist but commercial participation remains constrained.

Development finance institutions can also help address FX risk, which remains a significant barrier to long-term investment in many producing countries.

Expanding local-currency financing and FX risk mitigation mechanisms could reduce perceived risk and improve access to finance for producers, mills, and other actors investing in sustainable production systems.[158]

Commercial lenders could expand sustainability-linked financing beyond the largest companies to include mid-tier producers and mill operators, particularly where development finance participation helps reduce commercial risk. Incorporating indicators related to smallholder inclusion, replanting, traceability, and productivity improvement into financing structures could further strengthen incentives for more resilient and inclusive supply chains.

Ultimately, finance is most effective when it supports transition that is already institutionally possible. Where land rights remain unclear, traceability systems are incomplete, or producer organisations are weak, governance and implementation interventions remain prerequisites for large-scale investment. Financial instruments can accelerate transition, but they cannot substitute for the foundations on which transition depends.

158. Currency Risk in Impact Investing. The Currency Exchange Fund (TCX), 2023.

## 6.9 The enabling conditions for transition

The recommendations above describe where leverage currently sits across the sector. None of these directions is entirely new. What this report adds is clearer evidence for why previous efforts have struggled to produce transition at scale, and where the remaining structural barriers continue to sit.

**First, public investment in smallholder governance and support systems needs to match the scale of the inclusion challenge.** Land documentation, plot-level registries, mapping systems, extension support, and replanting programmes are foundations that private compliance efforts cannot replace. As Chapter 4 showed, improving productivity through replanting and better farm management is increasingly important not only for farmer livelihoods and supply resilience, but also for reducing future expansion pressure into forest areas.

**Second, the financing challenge is not primarily the availability of capital, but accessibility.** Capital often cannot reach smallholders because the legal, traceability, and market systems lenders require remain incomplete. Financial instruments can help scale investment, but only where these foundations are already in place.

**Third, long-term transition will depend on whether sustainability governance extends beyond traditional premium export markets.** As future growth markets and producing-country governments play a larger role in shaping palm oil demand and supply, the extent to which incentives for productivity, legality, traceability, and sustainable supply become embedded across the wider market may ultimately determine whether sustainability governance converges or fragments.

**The sector is not starting from scratch**. Functioning examples of many of the components needed for transition already exist: RSPO's certification and independent smallholder systems at international level, Malaysia's MSPO at national scale, Aceh and Sabah's jurisdictional approach at provincial scale, Colombia's APSColombia at sector scale, and company-led financing models such

as Musim Mas. The challenge is less about designing new approaches than adapting, connecting, and scaling existing systems in a changing market and governance landscape.

**The shift in demand and governance also changes which actors need to be involved.** Sustainability in palm oil should no longer rely primarily on certification systems, international NGOs, and buyers serving markets with strong sustainability requirements. Achieving traceable and smallholder-inclusive supply at scale will require stronger involvement from producing-country governments, financial institutions, intermediaries, domestic industry platforms, and the actors shaping future demand growth.

**A market that enables deforestation-free, smallholder-inclusive, and resilient palm oil is not a market without palm oil.** It is a market in which traceability, verification, resilience, and inclusion become part of how supply systems function by default rather than conditions attached only to premium export markets. Many of the systems, incentives, and governance models required for transition are already visible. The remaining question is whether the actors with the leverage to shape the sector can coordinate quickly enough to scale them before market fragmentation becomes harder to reverse.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