

# Understanding the First Mile report - executive summary

**The ‘first mile’ – the journey from the production farm to the first aggregation or processing point – is a critical yet often overlooked segment of agricultural supply chains.** This report aims to shed light on the actors operating in this space and the dynamics that shape it, drawing on examples from cocoa, coffee, rubber and palm oil across diverse regions.

**The growing demand for traceable materials to meet corporate due diligence obligations has highlighted the opacity of the first mile.** It can involve multiple intermediaries, with informal transactions, limited documentation and fragmented networks. Not knowing who has handled materials between the farm where they are produced and first processing point raises the risk of substitution, mixing, and illegal material entering supply chains. In response, companies are shifting towards more integrated supply and larger production contexts where origin can be more easily verified, highlighting the need for mechanisms that ensure smallholders are not left behind. This is most evident under the EU Deforestation Regulation (EUDR), which currently requires, and proposes heavy penalties for non-compliance.

**Despite over two decades of voluntary certification efforts, a major gap remains in tracing materials back to plot.** Downstream companies may only have visibility back to the first aggregator, such as a mill or trader. The challenge is particularly acute in smallholder-dominated sectors, where plots are small and dispersed.

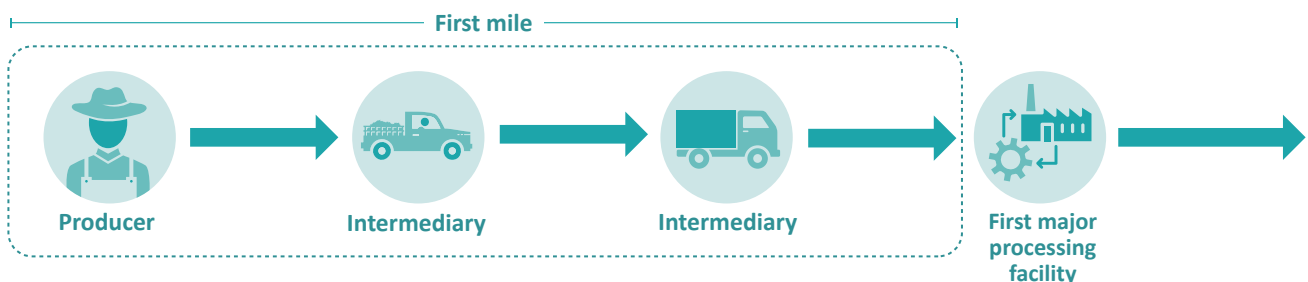
**Addressing first-mile traceability is critical for supporting compliance with regulations and voluntary sustainability commitments, and ensuring smallholders aren’t excluded.**

ISEAL member systems have long sought to increase smallholder inclusion, often through group certification and credit trading models that bridge the gap between farms and aggregators. Recent regulations have intensified this focus, prompting innovation from sustainability systems, governments and traceability solution providers, especially in commodities affected by the EUDR.

**This document is a summary of a study by Proforest, commissioned by ISEAL, that explores the first mile of agricultural commodity supply chains, with a focus on cocoa, coffee, rubber and palm oil.** Through mapping, interviews and case studies, the study reveals the informal and complex networks that shape this stage. It aims to uncover structural dynamics, traceability challenges, and opportunities for more inclusive and effective models, and documents efforts to improve first-mile traceability and support smallholder inclusion. The findings are intended to guide ISEAL member systems and others to scale impact through practical, context-sensitive approaches that balance formalisation with flexibility

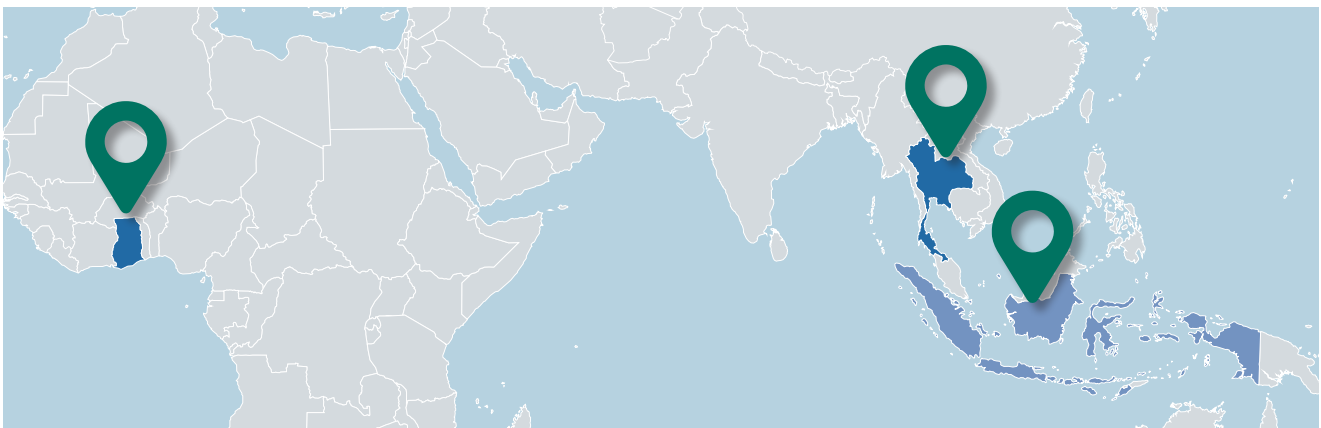
## Defining the ‘first mile’

The **first mile** is the initial stage of a supply chain, where raw materials move from producers to the first large-scale point of processing or aggregation. Its structure is shaped by local cultural, social and economic realities, with intermediaries sometimes also providing credit, inputs or community functions. The first mile varies depending on the commodity (e.g., perishability, seasonality, bulkiness) and market conditions (e.g., price volatility, competition). Because it is often informal and complex, especially with small-scale production, traceability and transparency are difficult, sometimes enabling actors to conceal activities or evade regulations.





## Rubber: Côte d'Ivoire, Indonesia and Thailand



The rubber supply chain is dominated by independent or informally organised smallholders, contributing approximately 85-90% of rubber by volume globally. First-mile traceability is challenging, with an estimated 6 million smallholders and 100,000 pre-processing intermediaries globally, often in very remote locations.

The first mile can vary by country and region, but typically farmers will sell unprocessed cup lump rubber to a local collector, who in turn will typically sell directly to a processing facility or independent processor (with the transaction sometimes brokered by a sales agent employed by the processor). As unprocessed natural rubber is non-perishable, it may travel farther distances, pass through one or two additional actors, and be in storage for longer than other natural commodities.

Levels of formality can vary substantially between countries. In Côte d'Ivoire, many smallholders operate under purchase agreements with manufacturers, leading to more documented and regulated transactions. Indonesia has a more informal structure, with local collectors buying rubber directly from farmers through cash-based,

undocumented transactions and long-term trust-based but non-contractual relationships.

There is very little formal documentation and segregation of volumes throughout the first mile, with formal documentation only really beginning at the primary processing facility.

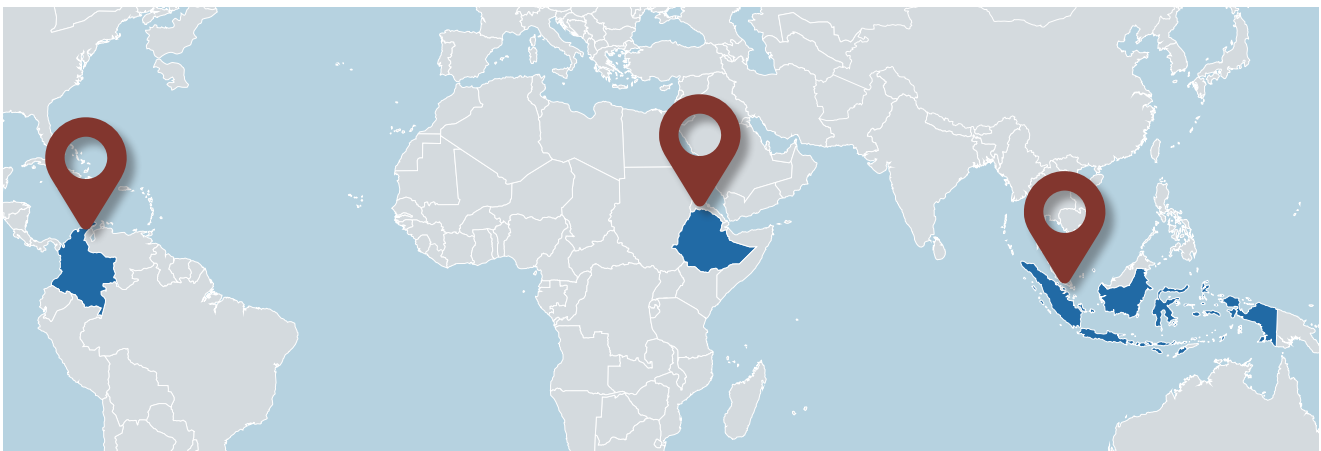
Traceability efforts have focused on mapping smallholders at the national level, trialling solutions such as digital tools and formal auctions, and empowering smallholders to cut out intermediaries and sell directly to processors or exporters – usually through digital trading tools or informal cooperative systems.

### Registration and traceability efforts in Thailand:

While the first mile in Thailand's rubber sector has historically been quite informal, the authorities have stepped up traceability efforts to comply with the EUDR. As of December 2025, about 79% of national cultivation area has been mapped, and 95% of all rubber smallholders have been mapped and registered. The Rubber Authority of Thailand has set up weekly auctions and a traceability platform.



## Coffee: Colombia, Ethiopia and Indonesia



The first mile in the coffee sector varies between and within countries, but is typically a short stage that passes through one or two intermediaries before arriving at the dry mill, the main processing point prior to export. Smallholders usually sell their coffee cherries to a local collector, who sells to the mill either directly or via a trader. Primary (wet) processing in the first mile may be carried out by farmers, collectors or independent washing stations.

Independent smallholders, particularly in remote regions, often rely on intermediaries for sales and services such as transportation and advance credit. Prices set by the intermediary are typically low. In some supply chains (e.g. in Colombia) farmers carry out their own wet processing and sit closer to the dry mill, which may increase opportunities to sell at a higher price by cutting out intermediaries.

The sector is characterised by large numbers of smallholders and intermediaries, often in remote locations. A single collector/trader or processor may purchase and aggregate volumes from a number of

upstream intermediaries, making traceability to plot extremely difficult. There is little formal documentation and segregation of volumes, particularly for independent smallholders. In formal cooperative systems, full traceability from cooperative group to exporter is more readily available.

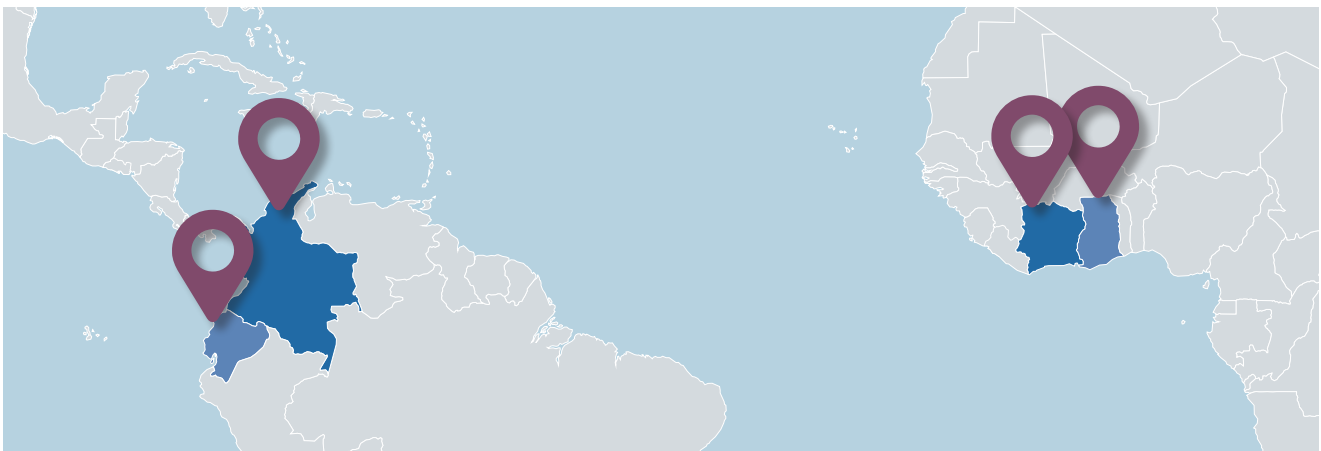
Most solutions have focused on digital traceability apps from mill back to farmer level. These are mostly developed by the private sector with cooperatives, NGOs and producer associations helping to fund access and train farmers.

### Producer-led traceability in Colombia:

In Colombia, larger smallholders often do their own wet processing and sell to mills directly or via a single collector. Cooperative membership is also more prevalent, providing additional support for aggregation, quality control and market access. This presents opportunities for producer-led traceability initiatives. The National Federation of Coffee Growers of Colombia has set up a digital database logging farmer details, geolocation and production data, covering 93% of affiliated farmers to date.



## Cocoa: Côte d'Ivoire, Ghana, Ecuador and Colombia



The first mile in cocoa supply chains typically begins with smallholders harvesting cocoa pods, followed by on-farm fermentation and drying. From there, cocoa beans pass through one or more intermediaries, such as independent traders, or through cooperatives, before reaching the first processor, exporter or retailer.

Independent smallholders, particularly in remote regions, often rely on intermediaries for market access, transportation and financial services. Farm-gate prices are typically low and volatile, directly affecting farmers' income stability and limiting their ability to plan beyond the short term, though intermediaries themselves are subject to price volatility and other risks. In some supply chains, cooperatives and government-regulated systems offer stable prices and support services. While certification schemes can reinforce this support, improving accessibility for smallholders remains an important goal.

Levels of formality vary significantly across cocoa-producing countries. Traceability is particularly difficult in informal systems where land ownership is fragmented and sales are undocumented.

Digital traceability is limited, with paper-based records still common and prone to loss and manipulation. In some cases, farmers may avoid traceability systems altogether, especially if they are cultivating in protected areas. Traceability is more feasible in formal cooperative systems.

Most traceability solutions focus on digital tools such as mobile apps and satellite imagery to map farms and collect farmer-level data. These are often developed by private sector actors, with support from cooperatives, NGOs and producer associations. Other approaches include strengthening farmer organisations to improve data collection and compliance, and offering incentives such as premium payments, input subsidies or access to credit for traceable cocoa.

### Ghana Cocoa Traceability System (GCTS):

Cocoa production and trade in Ghana are tightly regulated, with all cocoa sold through licensed buying companies. The GCTS is a government-backed initiative designed to map every cocoa farm in the country and track beans from origin to export. It aims to ensure compliance with international sustainability and deforestation regulations, while also improving transparency and accountability across the supply chain.



## Palm oil: Indonesia, Malaysia, Thailand and Honduras



The first mile begins with smallholder growers and ends at the mill, where fresh fruit bunches (FFBs) are processed into crude palm oil. Smallholders may sell directly to mills but more commonly rely on several layers of intermediaries, from informal agents to registered dealers. Initial interactions are often informal, characterised by long-term but non-contractual relationships and cash-based transactions.

Independent smallholders, particularly those in remote areas, often rely on intermediaries for sales, transportation and market information. Prices offered by intermediaries are typically low and set unilaterally, and smallholders who depend on intermediaries for transport or credit may receive even lower prices. Timing is critical as delays can significantly reduce oil yield and quality; mills may reject overripe or damaged FFBs, further impacting income.

Cooperatives may provide more stable prices and support services, and certification schemes such as the Roundtable on Sustainable Palm Oil (RSPO) also aim to reinforce support for smallholders. However, first-mile traceability challenges mean certified independent producers are often excluded from fully traceable segregated value chains.

With many smallholders and intermediaries operating informally and in remote areas, traceability to plot level is extremely difficult. Land ownership is often fragmented, and disputes over tenure are common. Mixing of fruit at collection points is common, breaking the chain of custody. Formal documentation typically begins only once the FFBs reach the mill.

Most traceability solutions have focused on digital mechanisms from mill back to farm level, including mobile apps, satellite imaging and GPS, and blockchain technologies.

### Area-based risk

In Indonesia, the dispersed nature of independent smallholders makes farm-level traceability expensive and difficult to scale, particularly in remote or infrastructure-poor regions and where land tenure is unclear. Rather than placing the full burden of traceability on each individual farmer, the Palm Oil Collaboration Group's Minimal Smallholder Deforestation approach evaluates the collective deforestation risk associated with smallholders within administrative areas, such as villages or sub-districts.

# Key challenges



## The structural realities of the first mile

Across all commodities, the first mile is dominated by independent smallholders who operate with limited resources and minimal infrastructure, and often outside formal regulatory frameworks. These producers are typically reliant on intermediaries – local collectors, traders, agents – for market access, transport and credit. While these intermediaries play a vital role in enabling trade, their operations are frequently informal, undocumented and poorly integrated into traceability systems.



## Livelihood risks and opportunities

Smallholders often face low and volatile prices, limited bargaining power, and exposure to climate and market shocks. Their dependence on intermediaries, especially for credit, can trap them in cycles of debt and disadvantage. Intermediaries themselves are vulnerable and risk being excluded from emerging traceability systems. Yet they are often deeply embedded in local communities, providing essential services that formal actors cannot easily replicate – like informal credit, transport, aggregation, quality control, market access and trusted local relationships.

Traceability initiatives, if poorly designed, risk displacing these first-mile actors either by bypassing them through direct-to-processor models or by imposing compliance requirements they cannot meet. Conversely, inclusive traceability systems can empower smallholders, improve incomes and formalise intermediary roles in ways that enhance both equity and efficiency.



## The role of governance and formalisation

The degree of formality and government oversight is a key determinant of traceability success. Countries with strong regulatory frameworks and centralised governance demonstrate higher levels of traceability and fewer

unlicensed actors. In contrast, countries with fragmented governance tend to show more persistent informality and traceability gaps, especially in remote regions.

Government-led systems can accelerate visibility in the first mile by mandating farm registration, licensing intermediaries and introducing digital traceability platforms. However, overly rigid systems risk excluding smallholders and informal intermediaries who lack the capacity to comply with supply chain expectations.



## Traceability bottlenecks and breakthroughs

The most significant traceability bottlenecks occur at the level of the first intermediary who aggregates produce from smallholders. These actors often operate without contracts, documentation or digital tools, making it difficult to trace volumes back to plot level. Various promising solutions are emerging, including digital tools that enable farm-level mapping and transaction logging. These tools are most effective when paired with physical infrastructure such as regulated auctions, collection centres and cooperative mills that serve as traceability anchors in the supply chain.



## Cost-to-impact dilemmas

Mapping thousands of smallholders and intermediaries requires significant financial and technical resources, often with limited impact on deforestation or labour risks. Informal structures, low digital literacy, weak infrastructure and fluid, dynamic supply chains make reliable data collection challenging and costly to maintain. Rigid traceability requirements can marginalise smallholders and informal actors, undermining inclusivity and equity goals. For downstream companies, the question is not whether traceability matters – it is increasingly a regulatory requirement – but rather when and for whom traceability creates meaningful value. This means ensuring systems meet downstream compliance and risk-management needs while also supporting, rather than disadvantaging, first-mile producers and intermediaries.

# Recommendations

Improving first-mile traceability in a way that is both effective and equitable requires a nuanced approach. Given the diversity and informality of smallholder supply chains, a one-size-fits-all model is unlikely to succeed. The following recommendations outline immediate, practical steps and longer-term strategies for building traceable systems that are resilient, inclusive and adaptable to evolving realities on the ground.



## Design for inclusion

Traceability mechanisms must start from the realities of the first mile, where smallholders and intermediaries often operate in informal conditions with limited digital access and literacy. Promising approaches include creating low-barrier entry points such as mobile-based registration tools; enabling group-level traceability through cooperatives or producer associations; and recognising and integrating intermediaries, leveraging their local networks and trust relationships to connect remote farmers to markets rather than excluding them.



## Strengthen digital access and skills

Digital tools are central to modern traceability, but their effectiveness depends on access and usability. Without access to mobile devices, connectivity and training, digital tools will remain out of reach for many producers and intermediaries. Training and capacity building should accompany digital rollouts, while shared access models, such as community digital kiosks or cooperative-managed devices, can help bridge the digital divide.



## Support cooperative and group models

Cooperatives and producer groups are often the most effective vehicles for traceability in fragmented supply chains, offering aggregation of volumes, governance structures, and social and environmental services. However, cooperatives vary widely in capacity. Strategic support should include support with legal registration and formalisation, technical support for traceability systems, and incentives for sustainability

and compliance. Rather than displacing intermediaries, cooperatives can formalise and redefine their role to support logistics, outreach to remote smallholders, and traceability compliance.



## Balance formalisation with flexibility

Regulatory and voluntary frameworks should set clear expectations but allow for diverse pathways to compliance. This includes allowing transitional models, where informal actors are gradually integrated into formal systems through phased requirements, and hybrid systems, for example combining verbal agreements with community verification or paper and digital records. Instead of one-size-fits-all frameworks, requirements should be to commodity, geography and actor type. This approach is particularly important in countries with fragmented governance or high levels of informality.



## Encourage first points of processing (e.g. mills) to engage with intermediaries and support the rollout of traceability tools

The first point of processing, such as a mill, is where sustainability certification often starts or resumes if smallholder certification is available. It is at this point where the last in the chain of intermediaries reconnects with the certified supply chain. Where mills require further traceability information from these top-level intermediaries, it sends a strong market signal. Shared responsibility and cost-sharing mechanisms can help ensure mills themselves receive recognition for increasing fully traceable supply, so they in turn can financially recognise the efforts of intermediaries and smallholders.



## Foster collaborative approaches

Governments, companies, NGOs, sustainability systems and producer organisations must work together to align incentives, share data and positive examples, and scale any successful pilots. No single actor can solve first-mile traceability alone. Governments can provide regulatory frameworks, farmer registration and enforcement. Private sector companies can invest in tools, infrastructure and inclusive sourcing models, and provide incentives to the first mile. NGOs and producer organisations can support training, advocacy and community engagement.



## Support broader strategies focusing on impact over granularity

In informal smallholder-dominated supply chains, pursuing plot-level traceability alone can be costly and slow. In parallel, some resources should be focused on addressing underlying issues. Promising approaches include adopting risk-based approaches to identify and address high-risk areas for deforestation, labour issues and other sustainability concerns, and investing in landscape and jurisdictional

initiatives that enable collective action to tackle systemic issues across entire regions. Companies, governments and NGOs should pool resources to reduce duplication, align incentives and scale impact. Interventions should focus on inclusivity and strengthening local governance and producer organisations, so smallholders and intermediaries remain part of the solution rather than being excluded.



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### ISEAL

The Green House,  
244-254  
Cambridge Heath Road,  
London E2 9DA  
United Kingdom

T: +44 (0)20 3246 0066  
E: [info@isealalliance.org](mailto:info@isealalliance.org)  
[www.isealalliance.org](http://www.isealalliance.org)  
**Registered Charity number:**  
**1199607**

### Proforest Initiative

South Suite,  
Frewin Chambers,  
Frewin Court,  
Oxford OX1 3HZ  
United Kingdom

T: +44 (0) 1865 243439  
E: [info@proforest.net](mailto:info@proforest.net)  
**Registered Charity number:**  
**1137523**