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Policy insights from UNIDO's Partnership for Sustainable, Inclusive and Circular Supply Chains (PASS) project

FROM COMPLIANCE TO FAIR VALUE CHAINS: MAKING EUDR WORK FOR ECUADOR'S COCOA SECTOR

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ABOUT THIS PAPER

UNIDO's FairShare Learning Series contributes to UNIDO's work on sustainable and fair supply chains, under the overall guidance of UNIDO's Directorate of SDG Innovation and Economic Transformation (IET) and its Division for Fair Production, Sustainability and Trade (PST).

The Learning Series' Issue No. 1 stems from UNIDO's "Partnerships for Sustainable, Inclusive and Circular Supply Chains (PASS)" - PASS project (SAP 240255), financed by the Government of Finland. It draws on the baseline study of Ecuador's cocoa supply chain and EUDR compliance, conducted between September and November 2025, to inform UNIDO's intervention under the PASS programme, aiming to provide a comprehensive understanding of how the sector operates, while identifying key challenges related to EUDR compliance, digital readiness, and farmers' ability to achieve a living income. As the first issue of the project's learning series, this publication translates these baseline insights into actionable knowledge to inform stakeholders and guide future interventions. Its authors, Bastienne Andrea Paliz (baseline study author) and Alisa Herrero (knowledge and learning expert), are solely responsible for the content of this publication, including any errors or interpretations. The authors gratefully acknowledge feedback from UNIDO colleagues: Gabriela Cordoba Sandoval, Alberto Medina Isla, and Aleksi Alanko. Layout and infographics were designed by Callie Patten.

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Project "Partnerships for sustainable, inclusive and circular supply chains" - PASS

Partnerships for Sustainable Supply Chains

UNIDO's PASS project is an initiative funded by the Government of Finland to promote collaborative partnerships that strengthen responsible business practices and contribute to fair supply chains. In a context where global trade is increasingly shaped by sustainability-driven regulations and rising expectations for responsible business conduct, PASS supports stakeholders in developing countries in adapting, remaining competitive, and benefiting from emerging opportunities. The project promotes a holistic approach by combining skills development, institutional capacity building, and private-sector partnerships.

Structured around three technical pillars, PASS supports 1) smallholder farmers in Ecuador's cocoa sector to improve traceability capacities and achieve better livelihoods, in partnership with FAZER; 2) strengthens environmental, social, and governance (ESG) skills in India's machinery sector to enhance inclusion and competitiveness, in partnership with KONE; and 3) advances policy frameworks for circular economy and design for circularity with emphasis on Zambia and Kenya, in collaboration with SITRA.

By generating evidence, building capacities, and fostering collaboration among supply chain actors, PASS aims to accelerate the transition towards more resilient, transparent, and inclusive supply chains

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Key insights

The following are key insights from the PASS project's baseline study on Ecuador's cocoa supply chain & EUDR Compliance:

Expansion alongside informality

Ecuador is a leading global cocoa exporter targeting over 600,000 metric tons by 2026/2027 [1], yet production remains highly informal. Around 180,000 smallholders are involved [2], while only about 7% of exports pass through organised cooperatives [3] with established traceability and audit systems.

A structural traceability gap

Cooperative-based supply chains are increasingly audit-ready, but the conventional marketing route —handling approximately 85% of national cocoa volume— relies on informal intermediaries and lacks systematic parcel-level geolocation, producer registration, and deforestation-free verification required for EUDR due diligence.

Compliance risk without deforestation pressure

Ecuador's exposure to EUDR-related compliance risks is driven primarily by data, skills, and institutional capacity gaps, rather than by widespread recent deforestation. Risks are mainly concentrated in conventional routes at first purchase and aggregation points for dispersed smallholders. This is where traceability coverage is the weakest.

Contrasting production risks and incentives for sustainability

Rapid expansion of CCN51 monoculture systems has delivered short-term yield gains but increases exposure to soil degradation, pest pressure, cadmium risk, and climate vulnerability. Agroforestry and fine-flavour systems are more resilient but often undermanaged, resulting in lower yields that weaken producer incentives despite premium market potential. Achieving EUDR compliance and living income objectives depends on a balanced portfolio of production systems that combines productivity gains with resilience.

Living income gains remain fragile

Historically high cocoa prices in 2024–2025 temporarily narrowed living income gaps, but these gains are price-driven and volatile. Durable income improvements depend on sustained productivity, reducing the negative origin differential linked to inconsistent postharvest quality and a shared responsibility approach on the buyer and consumer side to pay fair farm gate prices. This is what allows smallholders to reach living incomes.

Skills are the binding constraint for both compliance and living income

The skills required for EUDR readiness —plot identification, record keeping, post-harvest management, quality control, and basic farm economics— are also skills needed to sustain

productivity and living incomes. Gaps are most acute among non-organised producers and intermediaries.

Institutional anchoring is essential for scale

Scalable and cost-effective EUDR compliance depends less on creating new tools than on anchoring core compliance functions within existing public systems—including producer registries, geospatial platforms, and transport documentation—while improving interoperability with private traceability solutions to reduce duplication and extend coverage beyond organised supply chains.

Methodology of baseline study

UNIDO applies a **ValueLinks based, system-wide framework** to map actors, flows, and risks across conventional and structured market routes, identify role-specific capacity gaps, and align skills development with market access and income pathways.

The core steps include:

1) Value chain mapping (system-wide cacao map, conventional cacao map, Fairtrade/organic certified cacao map)
2) Actor segmentation (producers, intermediaries, exporters, institutions)
3) Capacity gap diagnosis (traceability, agronomy, business, digital)
4) Adding Living Income lens (benchmarks)
5) Identifying institutional anchoring (public systems, TVET)

Key policy messages

Building on the baseline study's findings, UNIDO identifies the following key policy recommendations to ensure that EUDR compliance is inclusive and contributes to advancing fair and inclusive supply chains.

1

Compliance models must reflect market realities

Inclusive compliance pathways are essential to prevent market segmentation and ensure broad-based access to EU markets. EUDR implementation strategies must integrate Ecuador's dominant conventional marketing route, in which intermediaries aggregate cocoa from dispersed smallholders. Compliance models designed exclusively around cooperatives or certified supply chains will exclude the majority of producers.

2

Traceability must be embedded in upgrading strategies

Traceability alone does not generate higher incomes. EUDR compliance contributes to sustainable livelihoods only when integrated with productivity improvement, post-harvest quality management, farm economics, and resilience strategies. Linking traceability and compliance to value creation is essential to reduce origin-related price discounts ("castigos") and stabilise incomes beyond price cycles.

3

The first purchase point is the structural bottleneck

Compliance risks are concentrated at first purchase, where producer identification, parcel data, and product aggregation occur. Intermediaries are associated with higher compliance risks and often bypassed. Without integrating intermediaries into traceability systems through tailored capacity building, simplified digital tools, and incentive-compatible models, compliance will remain partial and costly. Addressing this bottleneck is critical for scalability.

4

Skills are a binding constraint

Skills gaps—rather than technology gaps—are the main barrier to both compliance and living-income outcomes. Scalable solutions require modular training, micro-credentials, and training-of-trainers approaches anchored in extension services, sector institutions, and national TVET systems able to reach producer communities, including youth as generational renewal. Skills development and an accessible and structured/institutionalized training offer is the most cost-effective long-term compliance investment.

5

Fair supply chains require shared responsibility

Compliance costs are currently absorbed disproportionately by producers, intermediaries and exporters. Inclusive EUDR implementation depends on risk- and cost-sharing mechanisms across the value chain, including longer-term sourcing arrangements (buyer-supplier), service bundling, and coordinated public–private co-investment in scalable and interoperable solutions.

6

Public systems must anchor compliance functions

Scalable and cost-effective compliance requires embedding core functions—such as producer registration, parcel-level geolocation, land-use verification, and data governance—within national public systems. While this approach can drive efficiency and ensure broader compliance across the value chain, it is essential to identify and address potential challenges related to infrastructure capacity, data privacy, and regional variations in compliance needs. Fragmentation between public databases and private traceability platforms increases costs and exclusion risks. Strengthening interoperability reduces duplication, improves data credibility, and lowers compliance burdens for producers, intermediaries, and exporters. Further analysis is needed to understand how to integrate decentralized tools and local solutions with national systems.

1 EUDR readiness is structurally unequal in Ecuador's cocoa sector

The EU Deforestation Regulation (EUDR) introduces new conditions for placing cocoa on the EU market. It requires that cocoa and cocoa derived products be proven to be deforestation free and legally produced, based on verifiable information at farm and plot level. These requirements apply to all cocoa entering the EU, regardless of whether it is certified or marketed under sustainability standards.

In practical terms, EUDR introduces four interrelated changes:

1. Market access becomes dependent on the availability and quality of data on production location, land-use change after 31 December 2020, and compliance with national laws;

2. Traceability requirements extend to individual producers and plots, rather than stopping at the level of first buyers or exporters;

3. Past land use becomes relevant for current market access, requiring verification based on geolocation and satellite data; and

4. While legal responsibility rests with exporters, much of the information required for compliance must be generated and maintained upstream, including by producers and intermediaries.

In addition to EUDR, other EU regulatory requirements are affecting Ecuador's cocoa value chain, notably the Corporate Sustainability Due Diligence Directive (CSDDD) and the EU cadmium limits regulation (EU 2023/915). CSDDD increases expectations for environmental and social risk management across supply chains, relying on upstream information to demonstrate compliance. Cadmium regulation introduces product quality constraints that depend on plot level differentiation. Together, these regulations reinforce the importance of traceability, data availability, and coordination across Ecuador's cocoa value chain.

Compliance under EUDR is fundamentally an institutional and capacity challenge shaped by political economy dynamics. Its implications depend on how Ecuador's cocoa value chain is organized, who carries responsibility for compliance, and how costs, risks, and benefits are distributed among producers, intermediaries, and exporters. Depending on how these factors are addressed, EUDR has the potential either to support the professionalization of Ecuador's cocoa value chain and deliver sustained living incomes at scale or to accelerate the exclusion of non-organized smallholders from EU linked markets.

Figure 1: EUDR in a Nutshell

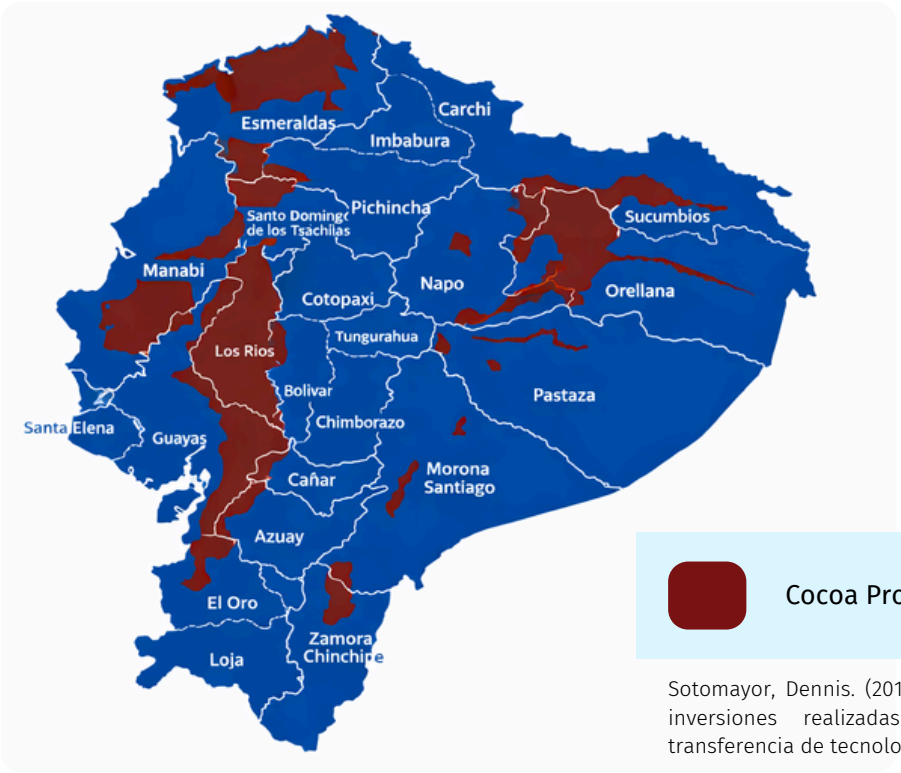
EUDR Requirement	What it means in practice	Key evidence required
Parcel-level traceability	Cocoa must be traceable to **individual production plots**	GPS coordinates/plot polygons
Deforestation-free production	Cocoa must not come from land deforested after **31 Dec 2020**	Land use and satellite verification
Legal production	Production must be compliant with **national laws** across the value chain	Land rights, environmental permits, labour & human rights, social security, tax & business registration, trade & customs
Risk assessment	Operators must assess risks before placing cocoa in the EU market.	Structured risk analysis; risk mitigation measures when non-negligible risks are identified.
Due diligence obligation	Exporters submit a **due-diligence statement** before EU market entry	Consolidated evidence package
Verifiable evidence	Information must be **verifiable** by authorities	Verifiable, reusable, auditable data

Ecuador is among the world's top three cocoa exporters and a global leader in fine-flavor cacao. Cocoa and cocoa derivatives are a strategic export sector, reaching approximately 471,000 tonnes and USD 3.6 billion in exports in 2024 [4], with more than 90% of national production exported [5] [1]. The sector supports rural livelihoods across coastal and Amazonian regions and involves an estimated 120,000–180,000 [6] [2] producers, the majority of whom are smallholders.

EUDR readiness in Ecuador's cocoa sector varies greatly across production systems, farm sizes, and marketing arrangements, reflecting long-standing structural features of the value chain rather than differences in willingness to comply.

These structural differences shape producers' access to traceability systems, documentation, and organized market channels, which are core requirements for EUDR compliance. Understanding the level of EUDR readiness in different cocoa production systems and market routes is therefore essential to identifying where targeted policy interventions and capacity development efforts can be more effective.

Figure 2: Ecuador's Cocoa Production Systems



Sotomayor, Dennis. (2011). Estimación de los retornos de las inversiones realizadas por INIAP en investigación y transferencia de tecnologías en cacao, Ecuador (2000-2010).

Ecuador's cocoa sector is structured around three dominant production systems:

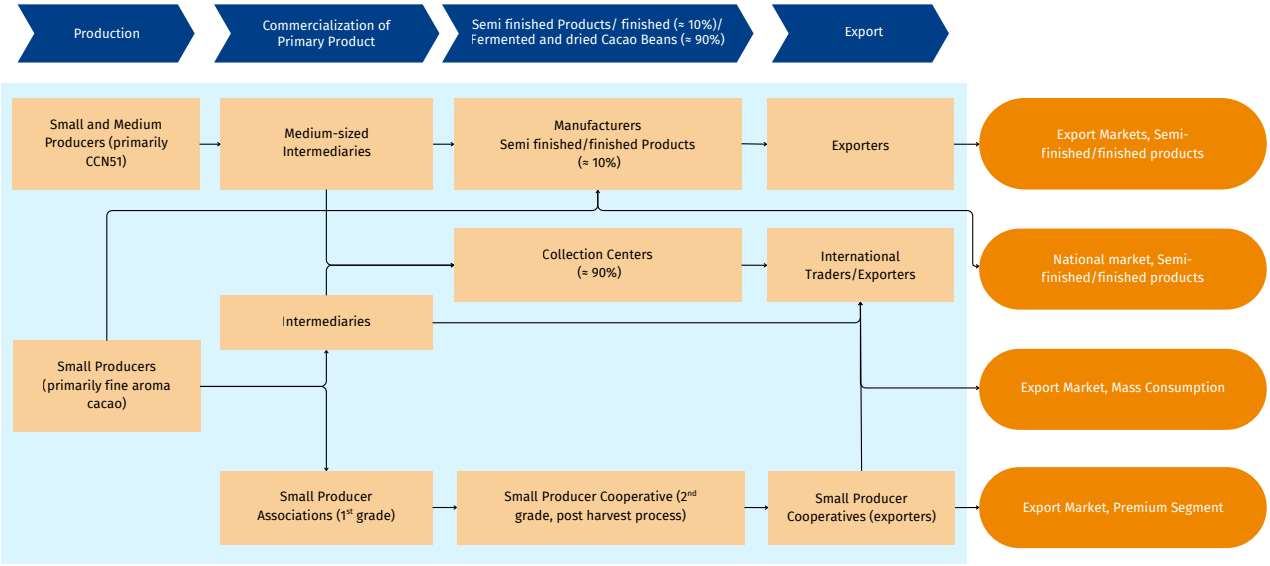
CCN51 Monoculture Systems are concentrated in coastal provinces (Los Rios, Guayas, Manabi, Esmeraldas, El Oro) and typically involve farms larger than 5 hectares. These systems achieve high yields (potentially 1.5–2.2 t/ha) and primarily supply bulk, conventional markets. However, they are highly input-intensive and increasingly exposed to soil degradation, pest and disease pressure, climate vulnerability, and elevated cadmium levels. While commercially competitive in the short erm, their long-term sustainability and compliance profile is constrained by environmental and regulatory risks.

CCN51 Associated Cropping Systems, present in the Coast and Amazon smallholder plots, most commonly intercropped with plantain, are prevalent among smallholders managing 1–5-hectare plots across the coast and parts of the Amazon. These systems deliver moderate yields (approximately 0.8–1.0 t/ha while providing income diversification and improved soil and microclimate conservation. They are less input-dependent than monocultures and offer a potential erm, their long-term sustainability and compliance profile is constrained by environmental and regulatory risks.

Nacional (Fine Flavour) Cocoa Agroforestry Systems are predominant in the Amazonia (Napo, Orellana, Sucumbios, Morona, Santiago) and increasingly present in coastal provinces. These systems exhibit lower average yields in practice (around 0.4–0.6 t/ha), often reflecting ageing plantations and production management constraints. However, they are more resilient over time, support high biodiversity, and can access premium markets when quality, segregation, and traceability are ensured. Improved planting material and better farm and postharvest management can raise productivity while preserving resilience.

Figure 3: System-Wide Cocoa Value Chain Map for Ecuador

The following chart presents the system-wide configuration of the Ecuador's supply chain, gathering the different actors that interact along the general steps from commercialization to export.



A more detailed perspective requires going beyond production systems. Ecuador's cocoa moves through mainly two distinct marketing routes; the way the are structured shapes who captures value from traceability and EUDR compliance and who does not.

The conventional route (≈85% of volume)

Most of Ecuadorian cocoa flows is produced by non-organized smallholders. They sell wet or dry beans to intermediaries (acopiadores), and intermediaries aggregate the beans from different sources and sell them to collection centers, traders, or exporters. As a result, intermediaries are often the only point of regular market access for cocoa smallholders. The conventional route prioritizes speed, liquidity, and volume. Post-harvest practices and segregation are often minimal, and traceability is typically added late in the chain, typically when explicitly requested by European buyers. Parcel-level data, such as parcel identifier, lot numbers, and purchase receipts, is frequently missing, and geolocation is stored in spreadsheets rather than integrated systems. See Figure 4 for a visualization of this route.

The associative route (≈5% of volume)

A smaller but more structured share of cocoa moves through producer organizations and cooperatives. These often supply premium, organic, or Fairtrade markets. The associative route (Figure 5) is certification-led and has benefited from decades of support from international cooperation; as a result, it is better prepared for EUDR compliance.

The associative route operates in a parcel-first mode, where small producers (mainly fine-aroma cacao) harvest beans. Producers are registered with the association or cooperative, and plots are mapped, their geographical coordinates captured, and deliveries are written down against producer/parcel, including moisture and quality data. First-grade associations collect and standardize post-harvest (fermentation

and drying) before export, directly or through a cooperative that maintains close relationships with its commercial partners. Second-grade associations (unions and federations) aggregate volumes from their members and act as exporters. The route relies on Internal Control Systems, where organic and Fairtrade cocoa beans are physically segregated, keeping lot-level traceability for organic and Fairtrade requirements. Third-party certifications manage inspections, deforestation risk assessments, and inform documentation packages. These systematically include geodata, risk outcomes, mitigation taken, and full transaction history. A set of operational service providers underpins both routes.

Figure 4: Conventional Cocoa Value Chain Map for Ecuador

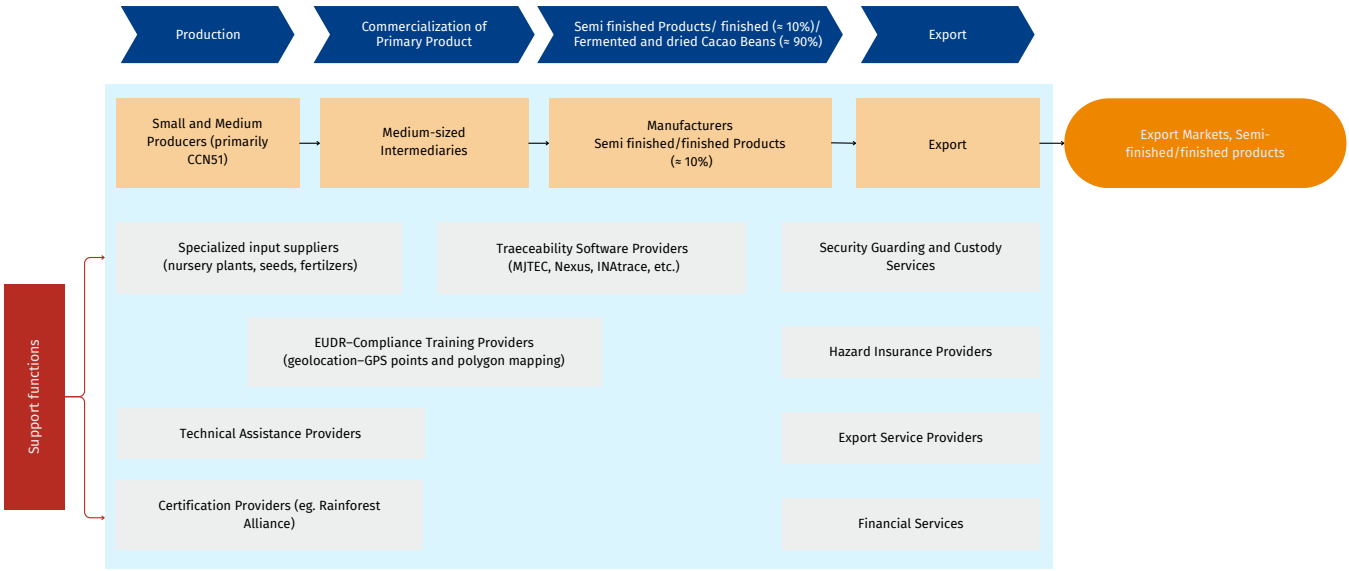
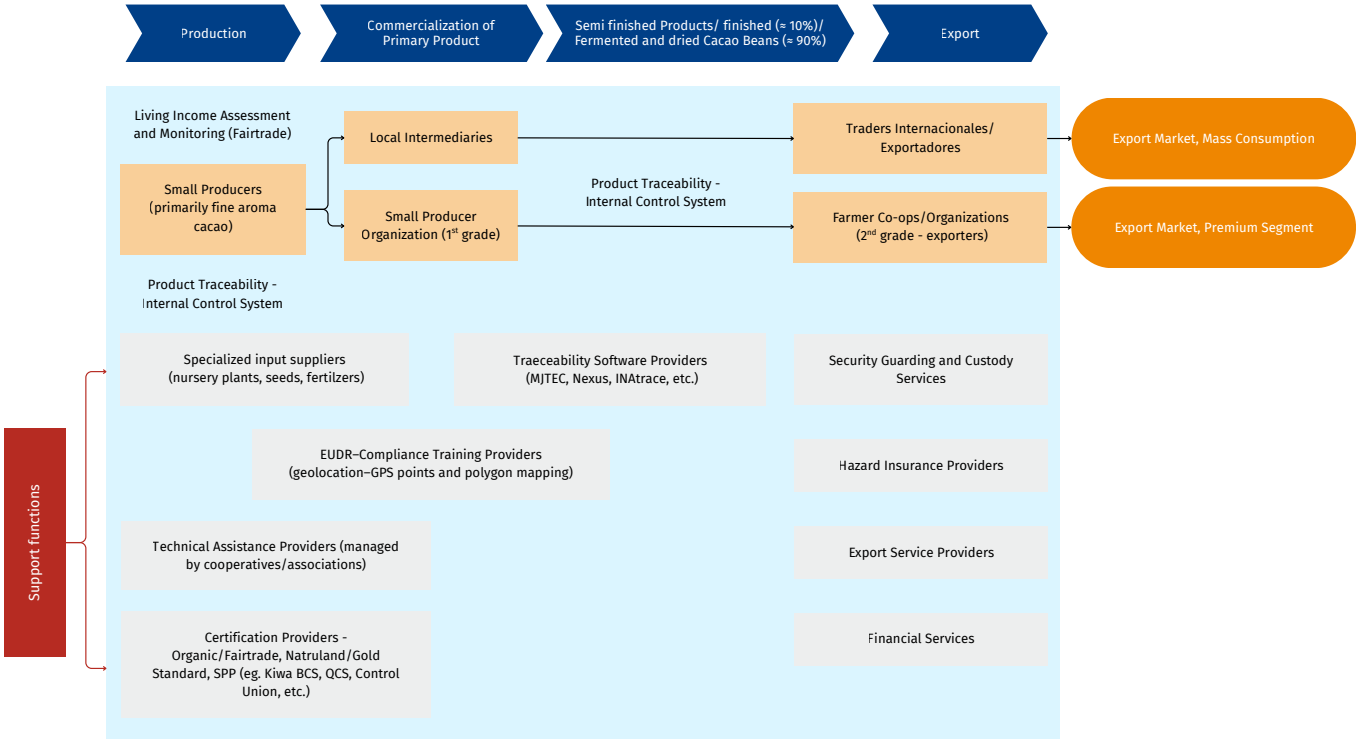


Figure 5: Organic/Fairtrade (Associative) Cocoa Value Chain Map for Ecuador



2 Intermediaries are the backbone of Ecuador's cocoa sector but the "missing middle" in traceability

EUDR compliance hinges on the ability to establish credible traceability at the first point of purchase, where cocoa moves from farm to market. The first point of purchase is where critical information could be captured: who the producer is, where the cocoa was grown, how much was delivered, and of what quality. Understanding why compliance breaks down at this stage is critical, as traceability weaknesses at first purchase increase the risk of market segregation of non-organized Ecuador's cocoa producers.

Ecuador's cacao value chain, is currently dominated by intermediaries that serve the majority of cocoa producers. They provide immediate cash payments, organize logistics from dispersed farms, conduct basic quality checks, and often serve as the main source of informal technical advice or access to inputs for non-organized farmers.

Several critical constraints explain why intermediaries are identified as the weakest link in existing traceability systems and are frequently bypassed or worked around by exporters and buyers seeking predictable EUDR compliance pathways.

First, intermediary transactions are characterized by limited formalization at first purchase. Producer identification is often incomplete, parcel-level information is rarely captured systematically, and cocoa from multiple producers and plots is routinely aggregated. Where geolocation data exist, they are frequently stored in non-standardized or non-integrated formats, reducing their reliability and increasing verification costs for downstream actors. These features create a first purchase data gap that complicates EUDR due diligence requirements.

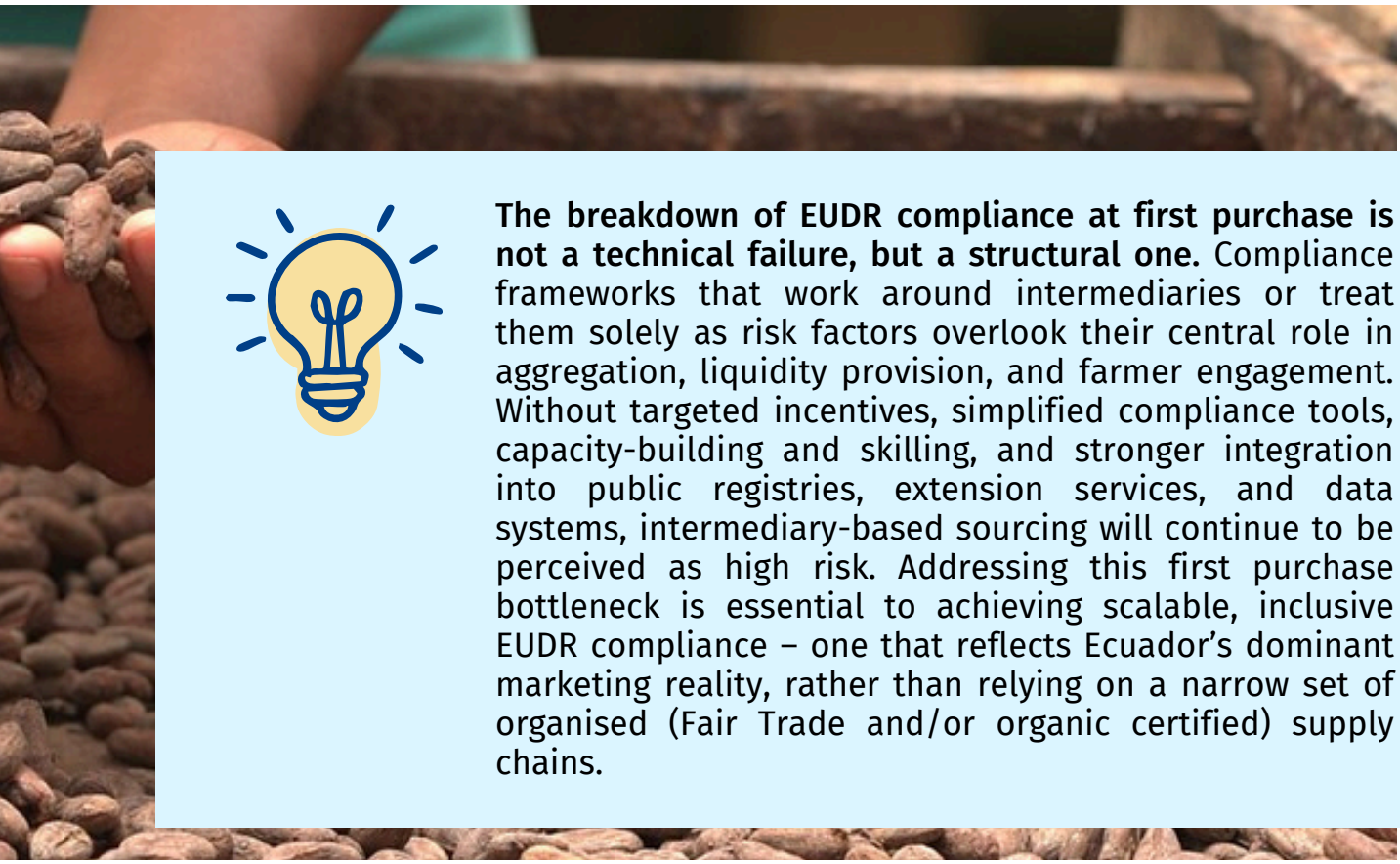
Second, intermediary business models are structured around speed, liquidity provision, and high transaction volumes. The baseline study notes that intermediaries operate on thin margins, leaving limited capacity to absorb additional administrative burdens associated with traceability, documentation, and risk management. Compliance with EUDR introduces additional requirements including plot mapping and geolocation, data collection and record keeping, segregation of compliant cocoa, and verification processes. Compliance-related

tasks are perceived by intermediaries as increasing costs and slowing transactions without generating corresponding benefits. Because EUDR compliance does not currently translate into higher margins, preferential market access, or contractual security for intermediaries, there are little economic incentives for them to invest in data systems, EUDR readiness training, or bean segregation.

Third, and as a result, sourcing through intermediaries is perceived by exporters and buyes as coming with higher compliance risks. The aggregation of cocoa from multiple producers and plots increases segregation requirements and complicates risk assessments, making intermediary-based sourcing less predictable, compared to cooperative or associative channels where producer registries, plot mapping, and Internal Control Systems are already in place.

Finally, the limited integration of intermediaries into public registries, extension services, and capacity development frameworks, also reinforces their exclusion from structured traceability initiatives and constrains their ability to adapt to new regulatory requirements.

This institutional gap is partly explained by reluctance among both intermediaries and producers to engage in formal registration processes, driven by concerns related to taxation, security risks (especially in the coastal region where insecurity has increased in recent years), administrative obligations, and increased visibility to public authorities. As intermediaries depend on maintaining trust-based relationships with producers, their reluctance to formalize discourages systematic data collection and registration at first purchase, further limiting the integration of intermediaries into public and donor-supported compliance and support systems.



The breakdown of EUDR compliance at first purchase is not a technical failure, but a structural one. Compliance frameworks that work around intermediaries or treat them solely as risk factors overlook their central role in aggregation, liquidity provision, and farmer engagement. Without targeted incentives, simplified compliance tools, capacity-building and skilling, and stronger integration into public registries, extension services, and data systems, intermediary-based sourcing will continue to be perceived as high risk. Addressing this first purchase bottleneck is essential to achieving scalable, inclusive EUDR compliance – one that reflects Ecuador's dominant marketing reality, rather than relying on a narrow set of organised (Fair Trade and/or organic certified) supply chains.

3 EUDR compliance, traceability costs, and income resilience

Living incomes depend on stable yields, consistent quality, and predictable market access. In practice, most Ecuadorian cocoa producers remain highly exposed to price volatility and lack the productivity and quality systems needed to sustain stable incomes over time. The historically high cocoa prices observed during 2024–2025 temporarily narrowed income gaps. However, these gains were driven by global supply shocks rather than structural improvements in production systems or market integration. As prices stabilise, producers who rely primarily on price cycles —rather than productivity and quality differentiation—are likely to fall below living income benchmarks once again.

Income in Ecuador's cocoa sector are strongly shaped by productivity and quality differentiation. In structured and certified supply chains, including fine-flavour cocoa, organic production, and segregated sourcing models, credible documentation of quality, origin, and compliance has enabled price differentiation and more stable market access.

By contrast, in the dominant conventional marketing route, persistent negative origin differentials ("castigos") continue to depress farmgate prices.

These mechanisms discounts are driven by structural factors, including mixed varieties at collection points, weak postharvest management—particularly fermentation, drying, and moisture control—and inconsistent traceability and documentation that increase buyer risk and transaction costs.

The skills required for traceability and EUDR compliance —sound farm management, record keeping, postharvest quality control, and basic farm economics—largely **overlap with the capabilities required to sustain living incomes.** Strengthening these capabilities reduces quality losses and negative origin differentials ("castigos"), improves productivity and cost-control, and can enable access to price premiums and market differentiation.

EUDR compliance requirements may increase operational and transaction costs for producers and intermediaries. This can reduce net incomes in the absence of adequate incentive or cost-sharing mechanisms—such as price differentials, measurable productivity improvements, and enhanced access to skills development, advisory services, and appropriate finance.

Conversely, traceability can support higher incomes only when it is embedded within broader value chain upgrading strategies. When aligned with productivity improvement, postharvest quality management, skills development, and access to services, traceability can reduce buyer risk, enable quality segregation, and lower origin related price discounts.

Interestingly, the skills and capacities required for traceability and EUDR compliance—sound farm management, postharvest quality control, record keeping, and basic farm economics—are also capabilities required to improve productivity and sustain living incomes. Under these conditions, traceability for EUDR compliance becomes not just a market access requirement, but a lever for sustainable value creation and income resilience.

4 Critical capacities for inclusive EUDR compliance

At a minimum, EUDR-ready supply chains must be able to:

- Register producers and production data, including producer identity, quantities sold, country of origin, and parcel level geolocation (GPS points or polygons);
- Capture first purchase information, linking each lot of cocoa to the specific producer and plot from which it originated;
- Document and manage evidence of legal compliance, covering land use rights, environmental requirements, social and labour obligations, and associated risk mitigation measures;
- Register and control postharvest and processing activities per lot, ensuring traceability throughout the processes of fermentation, drying, storage, aggregation, and processing;
- Consolidate and manage exporter-level evidence packages, including due diligence statements and effective interaction with national systems such as Sistema Guía or Geo-Visor.

These functions require capacities for consistent data generation and management across multiple actors. The baseline study identifies critical capacity gaps at the micro, meso and macro levels that need to be addressed at scale to ensure inclusive EUDR compliance. The baseline study also argues that EUDR compliance systems need to be anchored in strengthened, existing public institutions.

Capacity gaps at micro level: producers

At producer level, EUDR compliance builds on foundational technical, managerial, and institutional skills that remain unevenly developed across Ecuador's cocoa sector.

EUDR compliance requires basic traceability and digital practices, such as plot mapping, preparation of documentation packages, and awareness of data protection requirements. Many producers, especially those outside cooperatives, lack familiarity with these practices due to low digital literacy, limited connectivity, and an ageing producer population. These challenges are compounded by weak understanding of internal control systems, including standard operating procedures, documentation, and audit processes.

Producers must also demonstrate sound agronomic practices, consistent postharvest management, and basic economic decision making to sustain productivity and quality within traceable systems. Structural gaps persist in producers' deep understanding of productive systems, including renovation, pruning, nutrition, and pest and disease control. Weak postharvest practices—particularly in fermentation management, drying, moisture control, and quality assessment—undermine quality outcomes and the credibility of traceability claims. These technical gaps are closely linked to limited skills in farm economics, including cost calculation, pricing, and the effective use of bundled services.

Finally, liquidity and finance constraints limit producers' ability to invest time and resources in compliance-related activities

Figure 6: Capacity Framework for EUDR Compliance and Living Income Pathways – Micro Level

Actor level	Core capacity area	Key skills & functions	Why it matters (EUDR & income)
Producers (Micro)	Productive systems & practices	Renovation, pruning, nutrition, pest & disease control, agroforestry systems, diversification.	Sustains yields, reduces costs, supports stable incomes
	Post-harvest management	Fermentation management, drying, moisture & quality control	Reduces quality losses and "castigos"; enables premiums
	Farm economics & living income	Costing, pricing, bundled services	Improves margins; links productivity to income
	Traceability & digital basics	Plot mapping, evidence packs, data protection	Enables parcellevel compliance and market access
	Internal control & governance	SOPs, documentation, audits preparedness	Supports credible, auditable compliance
	Basic business skills	Financial literacy, access to capital, business/sustainability plans, negotiation, risk analysis	Enables investment, resilience, and income diversification

that do not yield immediate returns. Reliance on advance payments, informal credit, and short-term arrangements constrain investment in both EUDR readiness and productivity improvement, reinforcing low-income and low-productivity traps.

Capacity gaps at meso level: intermediaries, cooperatives, exporters

At meso level, readiness for EUDR compliance varies significantly across actors

Intermediaries, who serve as the first point of purchase for most non-organised producers, face the most acute capacity gaps. These include the absence of systematic producer and plot registries at first purchase, limited use of standardised codes, and weak alignment of quality and volume data with national systems such as Sistema Guía. Data management capacities—particularly for digital traceability and emerging solutions such as blockchain—remain limited.

Cooperatives and producer organisations demonstrate stronger institutional capacity, particularly in Internal Control Systems (ICS), use of traceability platforms, and management of audits linked to certification schemes. While many cooperatives already operate under long-term commercial relationships, capacity gaps persist in operationalising and managing these contracts to bundle compliance with services and productivity support, as well as negotiating commercial terms that enable fair price formation and cost-sharing.

Exporters possess more advanced administrative and technical capacities, but their compliance readiness depends on effective integration with upstream actors and with public systems such as Sistema Guía. Capacity gaps remain in preparing and consolidating due diligence evidence packs, largely driven by inconsistent upstream data

Figure 7: Capacity Framework for EUDR Compliance and Living Income Pathways – Meso level

Actor level	Core capacity area	Key skills & functions	Why it matters (EUDR & income)
Intermediaries (Meso)	First-purchase traceability	Producer & plot registry, polygons, coded lots at first purchase	Closes firstpurchase data gap; enables chain of custody
	Quality & volume management	Quality and volume records compatible with **Sistema Guía**	Reduces risk, improves data reliability
	Data management	Digital records, blockchain-enabled traceability	Supports verifiable and reusable evidence
Cooperatives (Meso)	Internal Control Systems (ICS)	ICS strengthening, risk assessment, internal audits	Lowers compliance costs; improves consistency
	Traceability & contracts	Use of traceability platforms, longterm contracts with services	Enables compliance plus productivity and income support
Exporters (Meso)	System integration, due diligence & risk management.	Integration with "**Sistema Guía"** and importer systems, evidence packs, risk assessment capabilities	Ensures regulatory compliance and market access

—particularly from first point-of-purchase intermediaries where plot identification, lotcoding, and transaction records are often incomplete—and by limited interoperability across traceability and public information systems.

Institutional anchoring for systemic solutions

Scalable EUDR compliance in Ecuador's cocoa sector depends less on the creation of new tools than on anchoring core compliance functions within existing public institutions and platforms, to ensure that they are standardized, shared and maintained over time. This reduces transaction costs, strengthens data credibility, and enables sector-wide implementation beyond organised and certified supply chains.

While exporters and cooperatives remain responsible for EUDR compliance, their capacity is significantly strengthened when public institutions provide reliable, recognised, and interoperable solutions. Intermediaries—currently weakly integrated into traceability systems—can also be more effectively included when compliance functions are anchored in national systems.

Several public institutions and information systems already perform, or are well positioned to perform, key roles in EUDR implementation:

Ministry of Agriculture and Livestock (MAG): MAG plays a central role in producer identification, agricultural extension, and engagement with smallholders. Through national producer registries, extension services, and field level presence, MAG provides a scalable entry point for plot identification, basic record keeping, skills development, and alignment of traceability requirements with routine agricultural practices. This role is particularly important for extending compliance coverage and skills support beyond organised supply chains.

Ministry of Environment and Energy (MEE): The newly created Ministry of Environment and Energy[2] sets environmental governance for legality and deforestation checks used in due diligence files. The national system to monitor forests (SNMB), supported by Sentinel-2, Planet, and Global Forest Watch (GFW), provides crucial land use and environmental information. This data is essential for demonstrating compliance with EUDR deforestation-free requirements, ensuring consistency and credibility across supply chains.

National registries and information systems (including Sistema GUÍA): Sistema GUÍA, hosted by the Ministry of Agriculture and Livestock (MAG), serves as a repository of producer and agricultural information and is critical for avoiding repeated data collection at supply chain level—a major source of inefficiency. When aligned with EUDR requirements and connected to other public and private systems, national registries can provide a shared foundation for traceability, reducing duplication across buyers and exporters and lowering compliance costs.

Geospatial platforms (including GeoVisor): Public geospatial platforms such as GeoVisor provide essential infrastructure for parcel level mapping and land use analysis, supporting deforestation risk assessment and verification. Limited interoperability between these platforms and private traceability tools remains a key bottleneck, contributing to inefficiencies and higher compliance costs.

Several public institutions can play complementary roles in skills development: The National Service for Professional Training (SECAP) can play a key role in hosting national vocational curricula, including youth brigades specialised in farm mapping, pruning, and basic traceability related tasks, supporting both EUDR compliance and rural employment. The National Institute for Agricultural Research (INIAP) provides critical technical guidance on soil health, improved agronomic practices, and high-yielding cocoa clones, helping align compliance efforts with productivity and resilience objectives. Agrocalidad can support the integration of private traceability data into public systems such as Sistema Guía and GeoVisor, contributing to a single, state-backed "window" for compliance evidence and strengthening interoperability and data governance.

Strengthening coordination, mandates and technical capacity across national entities offers the most effective pathway to scalable, cost-effective and inclusive compliance. This entails significant public sector investment in institutional reform and depends on coordinated engagement by development partners and the private sector – not as parallel implementers, but as co-investors in shared infrastructure, skills systems and data platforms that integrate local and decentralized solutions to meet the needs of different stakeholders.

Capacity gaps at the macro level: public systems

At macro level, public institutional capacity is the key enabler of scalable and inclusive is the key enabler of scalable and inclusive EUDR compliance.

Public institutions also face constraints in the design and delivery of targeted training and microcredential programmes, including training of trainers' models capable of reaching producers (including youth), intermediaries, and cooperatives at scale. Optimising Sistema Guía and GeoVisor tools —including improvements in data quality, interoperability with private platforms, and integration of data protection mechanisms interoperability such as blockchain-based solutions—is essential to reduce duplication (e.g. of origin and legality proofs) and increase trust.

Concerns related to taxation, administrative obligations, security risks and visibility to authorities continue to limit participation in public systems, constraining the effectiveness of EUDR implementation. Strengthening trust with and incentives for producers and intermediaries to facilitate formal registration is therefore critical.

Capacity Framework for EUDR Compliance and Living Income Pathways – Meso level

Actor level	Core capacity area	Key skills & functions	Why it matters (EUDR & income)
Public institutions (Macro)	Skills systems & governance	Microcredentials, training of trainers	Enables scale, inclusion, and sustainability
	Public traceability infrastructure	Optimization of **Sistema Guía,** interoperability with private platforms, data protection (blockchain)	Reduces duplication, builds trust, lowers transaction costs

Ecuador's cocoa sector is at a critical juncture. While organized, certification-oriented value chains are relatively well positioned for EUDR compliance, they represent only a small share of the cocoa sector. The conventional route—through intermediaries that serve the majority of smallholders—still faces major traceability gaps and a higher risk of excluding farmers.

Achieving fair and scalable EUDR compliance will require closing first-purchase data gaps, strengthening public systems, and building capacity across the value chain.

The infographic on the next page summarizes the key findings of the PASS project.

Ecuador's Cocoa Crossroad: Navigating EUDR for a Fairer Future

Two Paths to Market: Ecuador's Divided Cocoa Value Chain

The Associative Route
<10% of national volume

Managed by producer cooperatives (organic, Fairtrade) and focuses on quality.

Increasingly EUDR-Ready

By using Internal Control Systems (ICS) and maintaining plot-and lot-level traceability, cooperative-based supply chains are better positioned for EUDR compliance.

The Conventional Route
≈85% of national volume

Relies on intermediaries and non-organized small holders. Busiess model based on speed and volume, not quality or traceability

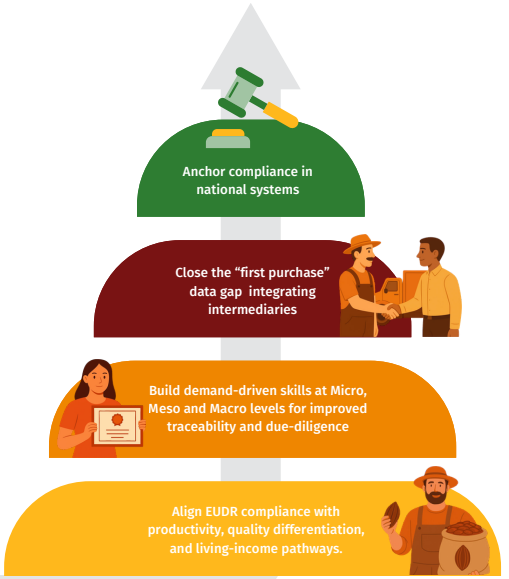
Critical Traceability Gap at "First Purchase"

Weak, informal, and rarely linked to specific farms or plots. Parcel-level data are incomplete or missing, making EUDR and other traceability compliance extremely difficult.

Intermediaries are the weakest link in cocoa traceability systems. There is limited formalization at first purchase. intermediary business models operate on thin margins and put a prime on volume and speed.

Mixed beans and informality prevail.

Priority actions for inclusive EUDR compliance in Ecuador's cocoa value chain



The EUDR Challenge: What is Required?

Plot-Level Traceability:
Cocoa must be traceable to individual producers and plots.
Evidence: GPS coordinates or plot polygons.

Deforestation-Free Production
No cocoa from land deforested after December 31, 2020.
Evidence: Land-use verification and satellite data.

Legal Production
Compliance with national laws across the value chain.
Evidence: land tenure, environmental permits, labour & social security, tax and business registration

Due Diligence Obligation
Exporters must assess risk and submit a due diligence statement before EU market entry.

Verifiable Evidence
All data must be auditable, reusable, and credible.

Priority Actions for Scalable Impact:

1. Anchor core compliance functions in public systems, while integrating local solutions
2. Close the first-purchase data gap by integrating intermediaries in targeted support
3. Invest in demand-driven skills and capacity development

5 Looking forward, UNIDO identifies three priority actions

The EUDR has the potential to contribute to fair and resilient cocoa supply chains, where risks and costs are more evenly shared among stakeholders and value is created and retained locally. However, this outcome is not straighforward. It requires addressing the root causes of potential market exclusion and investing in scalable and systemic solutions that align traceability with living incomes. Skills and capacities are identified as a critical constraint that require targeted action at micro, meso and macro levels.

UNIDO's baseline study highlights the structural challenges that EUDR compliance poses for Ecuador's cocoa sector. Building on these findings, UNIDO's PASS project identifies three immediate intervention priorities to accelerate inclusive EUDR compliance in Ecuador's cocoa sector:

Priority 1: Anchor core compliance functions in public systems, while integrating local solutions

Strengthen the integration of producer identification, parcel-level geolocation, land-use verification, and data governance within existing public platforms. Move beyond fragmented, company-based solutions while maintaining flexibility to incorporate locally adapted and decentralised approaches that respond to regional specificities and stakeholder needs3.

Priority 2: Close the first-purchase data gap by integrating intermediaries in targeted support

evelop and pilot intermediary-focused solutions, including simplified digital data capture tools, modular compliance training, incentive-compatible aggregation and segregation models, and structured integration into public registries and extension systems. This is critical to extend compliance across conventional marketing routes serving the majority of producers and represent a key current bottleneck for consistent upstream data and due diligence evidence generation.

Priority 3: Invest in demand-driven skills and capacity development

Develop modular vocational and technical training, micro-credentials, and training-of-trainers' approaches (including youth brigades) for producers (agronomy, post-harvest, farm economics), intermediaries (data capture, quality segregation, risk management), exporters (due diligence systems), and public institutions (data governance and verification, interoperability, training capacity).

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