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ESG Accountability and Cocoa Market Access under EUDR: A Nigeria-Brazil Conceptual Framework

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Abstract

This paper develops a conceptual comparative framework explaining how the European Union Deforestation Regulation (EUDR) may reshape ESG accountability, cocoa market access and competitive advantage in Nigeria and Brazil. The regulation shifts cocoa sustainability from voluntary certification and corporate reporting toward proof of deforestation-free production, legality, due diligence and traceability. For smallholder-based cocoa systems, the key issue is not only whether cocoa is produced sustainably, but whether such sustainability can be documented in forms accepted by regulated markets. Drawing on institutional theory, the resource-based view, dynamic capabilities, stakeholder and legitimacy theory, and global value-chain perspectives, the paper argues that ESG accountability becomes a competitive capability only when supported by credible verification systems, coordinated institutions, cooperative capacity and buyer responsibility. Nigeria and Brazil are treated as contrasting Global South cocoa contexts: Nigeria shows strong production potential but persistent governance, infrastructure, quality-control and traceability constraints, while Brazil offers stronger agroforestry and restoration cocoa narratives that still depend on proof, legality and smallholder inclusion. The paper reframes cocoa competitiveness as governance-mediated readiness for market access and proposes a framework for future empirical research on EUDR readiness and cocoa-sector upgrading in emerging economies.

Keywords: ESG accountability; EUDR; cocoa smallholders; market access; Nigeria-Brazil.

1. Introduction

Cocoa supply chains are moving from voluntary sustainability governance toward stricter regulatory accountability. For many years, cocoa sustainability was shaped mainly by certification schemes, voluntary standards, corporate social responsibility programs, ESG reporting, buyer commitments and supply-chain monitoring (Thorlakson, 2018; Keller et al., 2022; Martins et al., 2023). These instruments still matter, but they no longer define the whole governance field. The European Union Deforestation Regulation now links access to the European Union market with deforestation-free production, legality verification, due diligence and traceability (Gilbert, 2024; Solar et al., 2025; Cosimo et al., 2024).

This shift changes the meaning of ESG accountability in cocoa-producing countries. Accountability is no longer limited to reputation, reporting quality or certification labels. It increasingly concerns the practical ability to show where cocoa comes from, whether production complies with domestic law, whether land-use history is acceptable and whether supply-chain actors can provide credible evidence to buyers and regulators. In this paper, EUDR is therefore treated as a regulatory pressure that embeds ESG accountability directly into the logic of market participation.

The transition is especially consequential for smallholder-based cocoa systems. A farmer may cultivate cocoa without recent deforestation and still be excluded from a regulated chain if the farm is not mapped, documentation is incomplete, cooperative records are weak or the buyer cannot verify origin and legality (Steinke et al., 2024; Zhunusova et al., 2022; Solar et al., 2025). The central problem is therefore not only environmental conduct at farm level. It is whether the wider institutional and supply-chain system can make that conduct visible, verifiable and acceptable to a regulated market.

Nigeria and Brazil provide a useful comparative lens because they are both Global South cocoa contexts with smallholder relevance, but their institutional and ecological profiles differ. Nigeria has long-standing cocoa production and export potential, with evidence from South-West and other cocoa-producing zones showing opportunities alongside weaknesses in infrastructure, farmer organisation, finance, certification, extension support, quality control and institutional coordination (Aiyede, 2021; Amuda & Alabdulrahman, 2024; Babalola et al., 2017; Esan et al., 2025; Oginni et al., 2023). Brazil, by contrast, is associated with stronger agroforestry and restoration-cocoa narratives, especially in Bahia cabruca systems and Amazon-linked production debates, but these narratives also require legal clarity, farm-level proof, buyer recognition and smallholder support (De Oliveira et al., 2024; Santos et al., 2024; Schroth et al., 2015; Gama-Rodrigues et al., 2021).

Existing research has examined EUDR, cocoa traceability, ESG reporting, certification, sustainability governance and smallholder inclusion. However, these debates remain scattered across different literatures. EUDR is often discussed as a legal or technical compliance issue; ESG is frequently framed as corporate disclosure or firm-level sustainability performance; traceability is commonly treated as a supply-chain tool; and competitive advantage is often linked to profitability, productivity or export performance (Bhandari et al., 2022; Keller et al., 2022; Martins et al., 2023; Parra-Paitan et al., 2023; Renier et al., 2022). Less attention has been given to how these ideas interact in smallholder cocoa systems where compliance depends on domestic institutions, cooperative capacity, trader behaviour, buyer practices and farmer-level inclusion.

This paper asks three questions: How can EUDR-driven ESG accountability be understood as a market-access condition in cocoa smallholder systems? What institutional and supply-chain

conditions may shape EUDR readiness in Nigeria and Brazil? Under what conditions can ESG accountability support competitive advantage rather than exclusion? The contribution is threefold. First, it reframes ESG accountability as market-access governance. Second, it conceptualises competitive advantage in cocoa smallholder systems as governance-mediated market-access readiness. Third, it places Nigeria and Brazil in the same analytical conversation without assuming that Brazil is automatically prepared or that Nigeria is only weak.

2. Literature Review and Conceptual Gap

The EUDR introduces a stronger governance logic into agricultural commodity trade. For cocoa, the regulation intensifies the relationship between market access and the ability to demonstrate deforestation-free production, legality, due diligence and traceability (Gilbert, 2024; Solar et al., 2025; Cosimo et al., 2024; De Oliveira et al., 2024). This matters because cocoa competitiveness is no longer shaped only by quality, export relationships or buyer networks. It increasingly depends on whether supply chains can produce credible and auditable information about origin, land-use history and legal compliance.

The literature broadly agrees that EUDR raises the importance of traceability and geolocation, but it disagrees on whether this will produce better sustainability outcomes or simply reorganise market access. Optimistic readings view stricter due diligence as a way to close gaps left by voluntary commitments and weak transparency in global cocoa trade (Parra-Paitan et al., 2023; Gilbert, 2024). More cautious studies warn that compliance costs, risk benchmarking and documentation requirements may favour large farms, organized exporters and multinational traders over less visible smallholders (De Oliveira et al., 2024; Solar et al., 2025; Zhunusova et al., 2022).

Certification and traceability occupy an uneasy position in the cocoa sustainability literature. Certification can support farmer training, improved practices, market linkages and, in some contexts, price premiums (Oginni et al., 2023; Nelson & Phillips, 2018). Yet it may also create islands of compliance while many producers remain outside formal sustainability systems. Traceability is often presented as a stronger answer because it identifies where cocoa comes from and how it moves through the chain (Renier et al., 2022). However, digital systems, farm mapping and verification tools may shift costs to farmers, cooperatives and local organizations with weak finance and limited technical capacity (Steinke et al., 2024; Solar et al., 2025).

Under EUDR, certification should not be treated as a substitute for compliance. Voluntary sustainability standards may support due diligence, but EUDR requires more specific proof linked to geolocation, legality, risk assessment and deforestation-free sourcing (Cosimo et al., 2024; De Oliveira et al., 2024; Gilbert, 2024). The unresolved issue is distributive: who pays for tracing, who controls the data, who benefits from the credibility created, and who is left outside when proof becomes the condition for market access?

Buyer power is central to this problem. Cocoa markets are not organized through equal actors. Farmers, cooperatives, domestic traders, exporters, processors, manufacturers and retailers occupy different positions in the value chain. Evidence on global cocoa trade shows high trader concentration, uneven sustainability commitments and large visibility gaps across indirect sourcing channels (Parra-Paitan et al., 2023). EUDR may therefore intensify the tendency of powerful buyers to select suppliers that are already easier to verify.

The literature on buyer-driven governance suggests two competing possibilities. Buyers and exporters can support upgrading by investing in mapping, training, data systems, cooperative

capacity and longer-term sourcing relationships (Keller et al., 2022; Marschner et al., 2025). They may also protect their own market access by transferring risk, documentation burdens and compliance costs upstream. Market segmentation is therefore plausible: compliant or easily verifiable cocoa may remain connected to EU-oriented chains, while unverifiable cocoa may move to less regulated markets or lower-value channels (Parra-Paitan et al., 2023; Renier et al., 2022; Weber, 2025).

Nigeria and Brazil help clarify this gap. Nigeria has cocoa export potential but faces institutional and infrastructural constraints that directly affect EUDR preparedness, including weak infrastructure, limited technology, storage problems, poor roads, constrained credit, pests and diseases, and quality-control difficulties (Amuda & Alabdulrahman, 2024; Babalola et al., 2017; Esan et al., 2025; Oginni et al., 2023). Aiyede (2021) identifies smallholders as poorly organised and weakly represented in price transmission and value-chain decision-making, while government actors, CRIN, NGOs, TNCs and industry programmes shape sustainability through inputs, training and responsible-sourcing initiatives.

There are signs of partial capability. Certification studies in Ondo, Osun and Ogun show that certified farmers perceive better agricultural practices, premiums and market linkages, although delayed premium payments, compliance costs, price instability, insecurity, infrastructure gaps and limited credit continue to constrain participation (Oginni et al., 2023). Evidence from sustainable intensification and cocoa agroforestry in Southwest Nigeria suggests that productivity and climate-resilience pathways may reduce pressure for forest expansion, but this ecological potential still requires policy uptake, documentation and verification capacity (Kolapo et al., 2025; Koralewicz et al., 2025).

Brazil offers a different but not risk-free pathway. Its cocoa sector is associated with agroforestry traditions, especially Bahia cabruca systems, and restoration-oriented cocoa narratives in parts of the Amazon frontier (De Oliveira et al., 2024; Santos et al., 2024; Schroth et al., 2015; Gama-Rodrigues et al., 2021). These features give Brazil a stronger sustainability story than cocoa systems mainly associated with forest conversion. Yet De Oliveira et al. (2024) show that Brazilian cocoa has relatively low deforestation exposure and a high smallholder share, but also weak certification coverage and limited premiums. Agroforestry narratives do not automatically create market access; they must be converted into credible proof.

The conceptual gap is therefore clear. EUDR, ESG accountability, certification, traceability, buyer power, smallholder inclusion and competitive advantage are often analyzed separately, even though they are increasingly connected in regulated cocoa markets. A framework is needed to explain why the same external regulation may create a capability pathway in one context and an exclusionary pathway in another.

3. Theoretical and Conceptual Framework

This paper draws on four complementary perspectives: Institutional Theory, Resource-Based View and Dynamic Capabilities, Stakeholder and Legitimacy Theory, and Global Value Chain/Buyer-Driven Governance. These theories are used to explain different parts of the same problem: regulatory pressure, capability formation, legitimacy, buyer power and smallholder inclusion (Bhandari et al., 2022; Dai et al., 2021; Marschner et al., 2025; Soundararajan & Brown, 2016).

Theory	Function in this Paper	Specific Contribution
Institutional Theory	Explains EUDR as external regulatory pressure mediated by domestic institutions.	Shows why Nigeria and Brazil may respond differently to the same regulation.
RBV and Dynamic Capabilities	Explains compliance evidence, ESG data, legal proof and cooperative coordination as strategic resources and adaptive capabilities.	Reframes competitive advantage as market-access readiness.
Stakeholder and Legitimacy Theory	Explains how actors define credible accountability and distribute compliance burdens.	Shows who gains legitimacy, who bears costs and who may be excluded.
GVC / Buyer-Driven Governance	Explains buyer power, trader control, sourcing decisions and market segmentation.	Shows how EUDR demands travel backward through cocoa supply chains.

Source: Author's conceptual synthesis based on Bhandari et al. (2022), Dai et al. (2021), Marschner et al. (2025), and Soundararajan and Brown (2016).

3.1 Framework Logic, Propositions and Conceptual Contribution

Institutional Theory explains how EUDR operates as external regulatory pressure filtered through domestic institutions, while RBV and Dynamic Capabilities show how compliance evidence can become a strategic resource (Bhandari et al., 2022; Dai et al., 2021). Stakeholder and Legitimacy Theory clarifies how unequal actors define credible accountability, and GVC perspectives show how EUDR demands travel backward through cocoa chains through buyer selection, risk assessment and sourcing rules (Marschner et al., 2025; Soundararajan & Brown, 2016).

The framework can be summarized as follows: EUDR-driven ESG accountability creates proof, legality and due-diligence requirements; these requirements pass through domestic institutions and buyer-led supply-chain systems; the resulting mediation shapes whether smallholders are included or excluded; and these outcomes influence cocoa market access and competitive positioning.

Proposition 1: EUDR-driven ESG accountability is more likely to support market access where cocoa systems possess credible origin evidence, legal documentation and institutional coordination (Gilbert, 2024; Solar et al., 2025; Renier et al., 2022).

Proposition 2: Smallholder exclusion risk increases where geolocation demands and documentation burdens are shifted upstream without buyer, cooperative or public-sector support (De Oliveira et al., 2024; Steinke et al., 2024; Zhunusova et al., 2022).

Proposition 3: Competitive advantage under EUDR depends not only on cocoa production capacity, but on the ability to convert sustainability claims into credible market-access capabilities (Bhandari et al., 2022; Marschner et al., 2025; Parra-Paitan et al., 2023).

Proposition 4: Brazil agroforestry and restoration-cocoa narratives may support ESG positioning only where they are backed by legality, documentation and smallholder-inclusive verification (De Oliveira et al., 2024; Santos et al., 2024; Schroth et al., 2015).

Proposition 5: Nigeria cocoa competitiveness under EUDR may depend on institutional upgrading, farmer registration, cooperative strengthening, quality-control systems and buyer-supported traceability (Aiyede, 2021; Esan et al., 2025; Oginni et al., 2023; Tijani & Kehinde, 2026).

Proposition 6: EUDR may create segmented cocoa markets where verifiable supply chains remain connected to regulated markets while unverifiable smallholder production is redirected elsewhere (Parra-Paitan et al., 2023; Renier et al., 2022; Weber, 2025).

Conceptual contribution: The paper connects debates that are usually treated separately. It reframes ESG accountability as market-access governance rather than voluntary reporting, reconceptualizes competitive advantage as governance-mediated readiness rather than only firm-level profitability, and links EUDR, traceability, smallholder inclusion and buyer-driven governance into one comparative framework. This contributes to Global South agribusiness governance literature by showing how the same external regulation may produce different outcomes depending on domestic institutions, cooperative capacity, buyer practices and the ability of producer-country systems to translate sustainability into credible market evidence.

4. Conceptual Review and Comparative Framework Development

This paper adopts a conceptual review and comparative framework development approach. It does not report primary fieldwork, surveys, interviews or statistical testing. Instead, it synthesises existing debates on EUDR, ESG accountability, cocoa governance, certification, traceability, smallholder inclusion and agribusiness competitiveness to develop an analytical framework for future empirical research (De Oliveira et al., 2024; Gilbert, 2024; Parra-Paitan et al., 2023; Steinke et al., 2024).

The approach is appropriate because EUDR implementation is still evolving and the evidence on its smallholder-level effects remains prospective, uneven and geographically concentrated. Existing studies provide important insights into due diligence, voluntary sustainability standards, trader concentration, digital tracing, certification and producer-country readiness, but they do not yet offer a coherent explanation of how EUDR-driven accountability may reshape comparative cocoa competitiveness in Nigeria and Brazil (Cosimo et al., 2024; Renier et al., 2022; Solar et al., 2025; Weber, 2025).

The literature was used in three ways. First, EUDR-focused studies were reviewed to identify the regulation core market-access demands: deforestation-free proof, legality, due diligence and traceability. Second, cocoa governance and sustainability studies were examined to understand certification, trader power, buyer commitments, traceability gaps and smallholder inclusion risks. Third, Nigeria- and Brazil-focused sources were used to compare institutional conditions, sustainability narratives, farmer-support systems and export-readiness challenges (Aiyede, 2021; De Oliveira et al., 2024; Esan et al., 2025; Santos et al., 2024).

Nigeria and Brazil were selected as contrasting conceptual cases because they allow comparison across two Global South cocoa systems that share smallholder relevance but differ in institutional visibility, sustainability positioning and readiness narratives. The theoretical lenses were selected because each addresses a different mechanism in the framework: domestic governance, strategic capability, legitimacy and buyer-driven transmission. The main limitation is that the paper does not measure actual post-EUDR outcomes. This limitation is managed by avoiding causal claims and presenting propositions for future research rather than empirical findings.

5. Conceptual Comparative Discussion

EUDR can be understood as a market-access filter for cocoa supply chains. It does not simply ask whether cocoa exists as a tradable commodity. It asks whether cocoa can be connected to acceptable proof of deforestation-free production, legality and due diligence (Gilbert, 2024; Solar

et al., 2025; Cosimo et al., 2024). This changes the basis of competitiveness because regulated-market participation now depends partly on evidence infrastructure.

For smallholder systems, the governance challenge is practical. Farmers may produce cocoa on land that is not recently deforested, but still face market risk if farm boundaries are unmapped, land records are weak, supply chains are informal or cooperatives cannot manage documentation. In that situation, environmental performance and verification capacity become separated (Renier et al., 2022; Solar et al., 2025; Steinke et al., 2024; Zhunusova et al., 2022).

Table 2: Nigeria-Brazil Conceptual Comparison Matrix

Dimension	**Nigeria**	**Brazil**	**Conceptual Implication**
Institutional capacity	Strong cocoa potential but fragmented governance, infrastructure, finance and quality-control constraints.	Stronger forest-governance visibility but uneven smallholder support systems.	EUDR readiness depends on institutional translation.
Sustainability positioning	Agroforestry and sustainability opportunity exists but is less internationally visible.	Stronger cabruca, agroforestry and restoration-cocoa narratives.	Sustainability narratives matter only when verifiable.
Traceability readiness	Constrained by documentation, mapping, cooperative and extension gaps.	Potentially stronger in some systems but still incomplete for smallholders.	Origin evidence shapes market-access credibility.
Smallholder inclusion	High risk where farmers lack finance, support, organisation and documentation.	Inclusion risk remains where premiums, certification coverage and legal clarity are weak.	Participation depends on cost-sharing and support.
Competitive pathway	Possible if governance, quality-control and verification systems are strengthened.	Possible if ecological claims become credible compliance evidence.	Advantage is governance-mediated.

Source: Author's conceptual synthesis based on Aiyede (2021), Amuda and Alabdulrahman (2024), Esan et al. (2025), Oginni et al. (2023), De Oliveira et al. (2024), Santos et al. (2024), and Schroth et al. (2015).

Nigeria and Brazil illustrate different pathways under EUDR-driven accountability. Nigeria main challenge is not the absence of cocoa potential, but the conversion of that potential into verifiable readiness. Studies of farmers in Ondo, Osun and Ogun show the relevance of certification and farmer support, but also expose delayed premiums, compliance costs, poor roads, limited credit, insecurity and price instability (Oginni et al., 2023). Wider sectoral studies identify weak infrastructure, aging trees, pests and diseases, quality-control problems, uneven finance and fragmented governance as persistent constraints (Aiyede, 2021; Amuda & Alabdulrahman, 2024; Babalola et al., 2017; Esan et al., 2025; Gavrilova, 2022).

These issues make EUDR readiness an institutional problem. Farmer registration, cooperative strengthening, farm mapping, land documentation, quality-control systems, CRIN-linked research capacity, exporter coordination and public-private support must work together if Nigerian cocoa

is to remain credible in regulated markets (Aiyede, 2021; Esan et al., 2025; Tijani & Kehinde, 2026). If these systems improve, EUDR could support institutional upgrading. If they remain weak, compliance may become selective, with only farmers linked to stronger exporters, cooperatives or buyer programmes included in EU-oriented chains.

Brazil pathway is different. Its agroforestry and restoration-cocoa narratives may offer stronger ESG positioning, especially where cocoa is linked to biodiversity, shaded production or restoration of degraded land (De Oliveira et al., 2024; Gama-Rodrigues et al., 2021; Santos et al., 2024; Schroth et al., 2015). Yet the Brazilian case also demonstrates that a positive sustainability narrative is not enough. Cocoa may be relatively low risk, but smallholder participation is high and certification coverage remains limited (De Oliveira et al., 2024). Without targeted finance, legal clarity and inclusive data systems, EUDR can still reproduce earlier inequalities associated with voluntary standards.

Smallholder inclusion is central to the framework because cocoa sustainability cannot be considered successful if compliance is achieved by excluding the farmers who produce the crop. Inclusive EUDR readiness requires farmer training, mapping support, documentation assistance, legal guidance, cooperative backing and fair cost-sharing (Njoya et al., 2025; Solar et al., 2025; Steinke et al., 2024; Zhunusova et al., 2022). Without this coordination, EUDR may reward formal visibility rather than actual sustainability.

The exclusion pathway emerges when these conditions are missing. Smallholders may be dropped not because their cocoa is linked to deforestation, but because farms are unmapped, land documents are weak, certification is absent, data systems are incomplete or buyers choose lower-risk suppliers. This can create segmented markets in which verifiable cocoa flows to regulated or premium buyers while unverifiable cocoa moves to less demanding channels (Parra-Paitan et al., 2023; Renier et al., 2022; Weber, 2025).

The comparison therefore produces a balanced interpretation. Nigeria opportunity lies in building institutional and traceability systems before exclusion becomes entrenched. Brazil opportunity lies in turning ecological and agroforestry value into credible proof without marginalising smallholders. In both cases, advantage is mediated by governance: neither production potential nor sustainability narrative is sufficient on its own.

6. Conclusion and Implications

This paper developed a conceptual comparative framework for understanding how ESG accountability under EUDR may reshape cocoa market access and competitive advantage in Nigeria and Brazil. The central argument is that EUDR moves cocoa sustainability from voluntary signaling toward market-facing proof. Deforestation-free production, legal compliance, due diligence and origin evidence are becoming conditions through which cocoa supply chains gain or lose access to regulated markets (Cosimo et al., 2024; Gilbert, 2024; Solar et al., 2025).

The framework suggests that EUDR-driven accountability does not produce automatic outcomes. In better-supported systems, it may strengthen buyer confidence, legitimacy and market participation. In weaker systems, it may become a filter that separates visible producers from those the market cannot easily verify. This is why institutions, cooperatives, farmer documentation, buyer practices and public-private coordination matter (De Oliveira et al., 2024; Njoya et al., 2025; Steinke et al., 2024; Zhunusova et al., 2022).

The paper makes three contributions. First, it reframes ESG accountability as market-access governance. Second, it conceptualizes competitive advantage in cocoa smallholder systems as governance-mediated readiness rather than only firm-level profitability. Third, it places Nigeria and Brazil in the same conceptual conversation, showing how different institutional and sustainability pathways may shape responses to EUDR.

For Nigeria, EUDR readiness requires investment in farmer registration, farm mapping, land documentation, cooperative governance, extension services, quality-control systems and public-private coordination (Aiyede, 2021; Esan et al., 2025; Oginni et al., 2023; Tijani & Kehinde, 2026). For Brazil, the priority is to convert agroforestry and restoration-cocoa narratives into verifiable market evidence. Cabruca systems and biodiversity-linked cocoa may support ESG positioning, but they must be backed by legal clarity, documentation and buyer-recognized verification (De Oliveira et al., 2024; Gama-Rodrigues et al., 2021; Santos et al., 2024).

The paper is limited by its conceptual design. It does not report interviews, surveys, statistical analysis or direct measurement of EUDR outcomes. Nigeria and Brazil are used as contrasting conceptual cases rather than fully tested empirical cases, and because EUDR implementation is still evolving, some implications remain prospective. Future research should test the framework through interviews with farmers, cooperative leaders, exporters, traders, regulators, certification actors, NGOs and buyers, and should examine actual post-implementation outcomes such as contracts, premiums, certification demand, farmer inclusion and trade diversion. The future of cocoa competitiveness under EUDR will depend on whether producer-country systems can build governance arrangements that are credible enough for regulated markets and inclusive enough for smallholders.

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Appendix

Uncommon Abbreviations

CSR - Corporate Social Responsibility
ESG - Environmental, Social and Governance
EU - European Union
EUDR - European Union Deforestation Regulation
GVC - Global Value Chain
RBV - Resource-Based View