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**ÁP DỤNG QUY ĐỊNH CHỐNG PHÁ RỪNG CỦA LIÊN MINH CHÂU ÂU
(EUDR) ĐỐI VỚI HOẠT ĐỘNG XUẤT KHẨU CÀ PHÊ CỦA VIỆT NAM: TÁC
ĐỘNG, SỰ THÍCH ỨNG VÀ CÁC GỢI Ý CHÍNH SÁCH**

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Tóm tắt

Tại thị trường nông sản Việt Nam, cà phê được coi là mặt hàng xuất khẩu chủ lực với Liên minh châu Âu (EU) là thị trường lớn nhất, tiêu thụ hơn 40% tổng kim ngạch. Mặc dù Hiệp định EVFTA đã mở ra cơ hội lớn về thuế quan, việc EU ban hành Quy định chống phá rừng (EUDR) vào năm 2023 đã thay đổi căn bản cấu trúc thị trường, chuyển dịch yêu

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cầu từ cạnh tranh về giá sang tuân thủ các tiêu chuẩn kỹ thuật nghiêm ngặt về truy xuất nguồn gốc và định vị địa lý. Bài viết này chú trọng nghiên cứu tác động của Quy định chống phá rừng (EUDR) đối với ngành cà phê Việt Nam trong bối cảnh các tiêu chuẩn kỹ thuật dần thay thế cạnh tranh về giá. Sử dụng phương pháp định lượng (dữ liệu từ ITC, Eurostat giai đoạn 2018–2025) và định tính (phân tích văn bản, bên liên quan) dựa trên khung lý thuyết Chuỗi giá trị toàn cầu (GVC) và Biện pháp phi thuế quan (NTMs), nghiên cứu chỉ ra rằng EUDR gây áp lực lớn về chi phí tuân thủ và rủi ro loại bỏ hộ nông dân nhỏ lẻ khỏi chuỗi cung ứng. Tuy nhiên, kết quả phân tích cũng cho thấy sự thích ứng chủ động của Việt Nam thông qua kế hoạch hành động quốc gia, các mô hình hợp tác công tư (PPP) và ứng dụng công nghệ số. Trên cơ sở đó, bài viết đề xuất các giải pháp về hoàn thiện cơ sở dữ liệu đất đai, củng cố mô hình hợp tác xã và tái cấu trúc chuỗi cung ứng để giúp ngành cà phê Việt Nam thích ứng bền vững và duy trì vị thế tại thị trường EU.

Từ khóa: EUDR, xuất khẩu cà phê, biện pháp phi thuế quan, chuỗi giá trị toàn cầu, Liên minh Châu Âu, Việt Nam

APPLYING THE EU DEFORESTATION REGULATION (EUDR) FOR VIETNAM'S COFFEE EXPORTS: IMPACTS, ADAPTATION, AND POLICY IMPLICATIONS

Abstract

In Vietnam's agricultural market, coffee is a key export commodity, with the European Union (EU) serving as the largest destination, consuming over 40% of total export value. While the EVFTA provided significant tariff advantages, the 2023 EU Deforestation Regulation (EUDR) has shifted market requirements from price-based competition to strict compliance with traceability and geolocation standards. Utilizing quantitative data (ITC and Eurostat, 2018–2025) and qualitative methods (document and stakeholder analysis) within Global Value Chain (GVC) and Non-Tariff Measures (NTMs) frameworks, this study highlights that the EUDR imposes heavy compliance costs and risks excluding smallholders from supply chains. Nevertheless, Vietnam has demonstrated proactive adaptation through its National Action Plan, public-private partnerships (PPP) and digital transformation. Subsequently, the paper suggests improving land databases, strengthening cooperatives and restructuring supply chains to help the sector adapt sustainably and secure its position in the EU market.

Keywords: EUDR, coffee export, non-tariff measures, global value chain, European Union, Vietnam.

1. Introduction

Vietnam is the world's leading Robusta producer and second-largest coffee exporter, with the industry serving as the economic backbone of the Central Highlands. The European Union (EU), accounting for over 40% of Vietnam's export value (Nhan Dan, 2026), remains its most critical market. However, the introduction of the EU Deforestation Regulation (EUDR) in 2023 has transformed market access, shifting

competition from price-based advantages to strict requirements on traceability and geolocation.

From a Global Value Chain (GVC) perspective, this transformation reflects a deeper shift in governance structures within buyer-driven chains. European lead firms, including roasters, retailers, and multinational traders, increasingly exercise control through data-intensive compliance mechanisms, using traceability to coordinate and discipline upstream suppliers. The EUDR thus functions not only as an environmental regulation but also as a governance instrument that restructures coordination and redistributes power along the Vietnam–EU coffee value chain.

Despite a growing body of literature on the regulatory and sustainability implications of the EUDR, limited attention has been paid to its role in reshaping GVC governance and enforcing mandatory environmental upgrading. In particular, few studies examine how data-driven traceability creates coordination challenges in fragmented production systems. This gap is evident in Vietnam, where approximately 600,000 smallholders operate on small, dispersed plots, creating a significant “logistical puzzle” for complying with geolocation requirements.

Against this backdrop, this study adopts two key research questions: (1) How does the EUDR reshape governance structures and coordination mechanisms within the Vietnam–EU coffee global value chain? and (2) To what extent does it induce environmental upgrading, and what constraints limit smallholders’ ability to remain integrated within the value chain? To address these questions, the study adopts a GVC-based framework to analyze governance transformation, coordination mechanisms, and upgrading pressures.

Accordingly, the research aims to (1) analyze how the EUDR transforms governance structures within the Vietnam–EU coffee value chain; (2) examine how traceability requirements function as tools of control and coordination; and (3) assess the extent of environmental upgrading and the structural constraints facing smallholders.

This study contributes to the existing literature in three ways. First, it reconceptualizes the EUDR as a driver of GVC governance transformation rather than merely a non-tariff environmental measure. Second, it provides a process-oriented analysis of traceability as a mechanism of data-driven coordination. Third, it offers new insights into the challenges of integrating smallholders into emerging governance structures, highlighting conditions for inclusive environmental upgrading.

2. Overview of EUDR

2.1. Legislative origin and policy context

The European Union Deforestation Regulation (EUDR, Regulation 2023/1115) constitutes a fundamental pillar of the European Green Deal. This paradigm replaces the EU Timber Regulation (EUTR) and builds upon the FLEGT Action Plan (Tefera et al., 2025). While the EUTR focuses on the legality of timber, the EUDR directly addresses deforestation and extends its scope to seven agricultural commodities, including cattle; cocoa; coffee; oil palm; rubber; soy; and wood. (European Union, 2023). The core objective of EUDR is to reduce the EU's involvement in global deforestation and forest degradation. The first goal is to mitigate climate change by curtailing approximately 32 million metric tons of global greenhouse gas (GHG) emissions annually (Solar et al., 2025). In addition, this regulation is expected to promote sustainable consumption by ensuring that the existing commodities in the EU market do not encroach on forested areas (Tefera et al., 2025).

2.2. The three pillars of compliance

To access the EU market, the products must comply with three strict conditions under the EUDR. First, the commodities must be verified as deforestation-free, meaning products originate from the land that has not been subject to deforestation or forest degradation after 31 December 2020. Second, products must adhere to the relevant legislation of origin countries' production regarding environmental protection, third parties' rights, labor standards, and regulations of tax (Cosimo et al., 2024). Third, operators must submit a due diligence statement including three crucial steps: information collection (including product details, traceability and geolocation, supply chain contacts and evidence of compliance), risk assessment of non-compliant commodities from collected information, and risk mitigation measures where non-compliance is identified.

2.3. Country-risk benchmarking system

The European Commission employs a three-tier benchmarking system to classify countries into three different risk levels: low, standard, and high. Low-risk countries are applied simplified due diligence, while countries with a high probability of non-compliant products are forced to obey enhanced due diligence. Countries not falling into either of the above categories are classified as standard risk.

3. Theoretical background

3.1. Non-Tariff Measures (NTMs)

3.1.1. Definition and classification of NTMs

Non-tariff measures are understood as policy measures other than ordinary customs tariffs that can potentially have an economic effect on international trade in goods, changing quantities traded, or prices or both (UNCTAD, 2012). In the contemporary era, global trade has gradually reduced tax measures and non-tariff measures have gained

greater prominence (Santeramo & Lamonaca, 2019). Within the framework of non-tariff measures, “Green NTMs” have accounted for up to 90% of global trade, serving as indispensable tools to protect human health, safety and the environment (Organization, 2020), while addressing biological risks, natural resource depletion and environmental pollution (Fontagné et al., 2005).

3.1.2. Mapping EUDR within the TBT framework

EUDR is considered a non-tariff environmental measure belonging to the TBT group. Specifically, according to UNCTAD 2012, TBT refers to technical regulations and procedures for assessing conformity with those technical regulations and standards.

This study will focus on several specific TBT Codes associated with EUDR regulations. B41 mandates production processes not classified under SPS, such as the use of environmentally-friendly equipment. This corresponds to EUDR regulation on deforestation-free practices, showing that market access is no longer based solely on price but also on the ability to strictly comply with EUDR regulations. Within TBT, B83 requires a certificate of conformity required by the importing country, corresponding to EUDR's due diligence statement. B851 mirrors the EUDR's traceability requirements of the disclosure of information on the origin of materials and parts used in the final product. In accordance with this regulation, the EUDR requires exporters to trace the origin and provide precise geographical coordinates for all shipments of that product. The classification of EUDR under NTMs theory reshapes global trade flows through the increase in compliance costs and the establishment of trade barriers for exporting countries.

These three TBT mechanisms — B41, B83, and B851 — form the compliance architecture that GVC analysis in Section 3.2 will examine through the lens of power distribution and value chain governance

3.2. Global value chain theory

Gereffi et al. (2005) conceptualizes the GVC framework as a set of interconnected activities covering design, production, distribution, and consumption. Rather than viewing production as a linear sequence of stages, GVC sees production as a governed chain in which coordination, control, and power asymmetries are central analytical concerns.

Building on this perspective, the GVC framework provides a useful lens for understanding how coordination and power are structured within international trade. A key concept is governance, which defines how authority is exercised to allocate resources, set quality standards, and distribute risks along the chain. In the coffee sector, value chains are typically buyer-driven, with European roasters and retailers acting as lead firms, setting market access conditions through sustainability and compliance requirements despite lacking direct control over production.

The application of GVC theory is indispensable for assessing the EUDR's impact, as the regulation functions as a trade governance tool that allows downstream players to strengthen control over upstream suppliers. In this context, plot-level traceability should not be seen simply as a technical requirement, but also as a mechanism that reshapes coordination across the value chain. It induces a process of environmental upgrading, transforming opaque, fragmented networks into transparent, data-rich systems. These changes are particularly significant for smallholders who operate in fragmented production systems and are facing increasing pressure to comply with data-intensive requirements.

Employing this framework, the study analyzes how geolocation requirements redefine the rules of the game, marking a shift from price-based coordination to data-driven governance. This lens allows the research to analyze whether Vietnam can successfully navigate this structural shift, assessing Vietnam's ability to adapt to more integrated governance structures where data transparency becomes central to market access. This framework provides the basis for analyzing governance transformation (Section 6) and adaptation strategies (Section 7) in response to the EUDR.

To operationalize this framework, the analysis focuses on three key dimensions: governance, coordination, and upgrading. First, governance is examined in terms of how control and decision-making authority shift along the value chain. Second, coordination is analyzed through the role of traceability and geolocation requirements in structuring interactions and information flows between actors. Third, upgrading is assessed by evaluating the extent to which these requirements induce environmental improvements, as well as the constraints that may limit smallholders' ability to comply.

4. Research methodology

This study is descriptive and policy-analytical in nature, relying exclusively on secondary data sources. As such, it does not purport to establish causal relationships or quantify the precise impact of the EUDR on Vietnam's coffee export performance. The absence of primary data — such as farm-level surveys or firm interviews — limits the granularity of stakeholder analysis, particularly regarding smallholders's lived compliance experiences.

4.1 Research design

This study adopts a mixed-methods design, integrating quantitative trade analysis with qualitative stakeholder evaluation. This approach ensures a comprehensive assessment of the EUDR, capturing both macro-level trade patterns and micro-level stakeholder responses within Vietnam's coffee sector.

4.2 Quantitative data and analysis

Quantitative analysis identifies export trends using secondary data (2018-2025) from ITC TradeMap, Eurostat, and the General Department of Vietnam Customs. Focusing on HS Code 0901, the study evaluates changes in export volume, value, and market share.

Data quality is ensured through three criteria: relevance (Vietnam-EU coffee trade), reliability (official statistical sources), and temporal consistency (capturing patterns before and after EUDR adoption).

4.3 Qualitative analysis

4.3.1 Document analysis

In addition to statistical analysis, the study employs document analysis to examine the regulatory framework associated with the EUDR. Key legal documents include the official text of the EU Deforestation Regulation as well as relevant Vietnamese laws and policy instruments related to land governance, forest protection, and agricultural management.

The analysis focuses on identifying the core regulatory requirements of the EUDR, particularly those related to due diligence obligations, deforestation-free production, and supply-chain traceability. These requirements are then compared with Vietnam's existing legal and institutional frameworks in order to identify potential compliance gaps that may affect the implementation of the regulation in the coffee sector.

4.3.2 Stakeholder analysis

To assess the socio-economic implications of the EUDR, the study applies stakeholder analysis based on the framework proposed by R. Edward Freeman. This approach allows the research to identify key actors affected by the regulation and to examine how regulatory requirements reshape responsibilities within the coffee value chain.

Following Freeman's (1984) framework, the study evaluates three key groups: public authorities, exporting firms, and smallholder farmers. Building on the conceptual framework established in Section 3, each group is assessed based on their compliance burden, resource accessibility, and adaptive capacity. This enables a systematic comparison of how regulatory pressures are distributed across the value chain.

5. Vietnam's coffee export performance

5.1. Overview of coffee export performance of Viet Nam

According to data from the Vietnam Customs, Vietnam's total coffee exports in 2025 reached 1.59 million tons, valued at USD 8.9 billion, up 18.3% in volume and 58.8% in value year-on-year.

In 2025, the European Union remained Vietnam's largest coffee export destination, accounting for 40.7% of Vietnam's total coffee export value. Coffee exports to the EU reached 666.3 thousand tons, with a total value of USD 3.63 billion, representing a 26% increase in volume and a 68.3% increase in value compared to 2024. Major EU markets such as Germany, Italy, Spain and the Netherlands all recorded strong growth.



Figure 1: Vietnam's Coffee Export Value to the EU from 2015 to 2024 (ITC)

Source: ITC calculations based on Association of Southeast Asian Nations (ASEAN) statistics since January, 2022.

The data illustrates the trend of Vietnam's coffee export value to the European Union between 2015 and 2024. Overall, it indicates a gradual upward trajectory with several fluctuations during the period. This pattern reflects the continuing importance of the European Union as a key destination for Vietnamese coffee. As one of the largest coffee-consuming regions in the world, the EU provides a stable and high-value market for coffee exports. The consistent growth observed in the figure may therefore reflect the strong structural demand for coffee within the EU market.

Vietnam's coffee exports to the EU increased from approximately USD 1.1 billion in 2015 to around USD 1.3 billion in 2016, followed by a relatively stable phase between 2016 and 2018. A decline can be observed from 2019 to 2020, when export earnings dropped to below USD 1.0 billion, which may be associated with global market disruptions and price volatility during that period.

From 2021 onwards, however, Vietnam's coffee exports to the EU experienced a significant recovery and rapid growth. Export earnings rose to approximately USD 1.4 billion in 2022 and continued to increase in 2023 before reaching nearly USD 2.0 billion in 2024, representing the highest level in the observed period. The upward trend in the years immediately preceding the implementation of the EU Deforestation Regulation may indicate that exporters have begun adjusting their strategies in anticipation of stricter regulatory requirements. Firms may have accelerated shipments or strengthened trade relationships with EU partners during this transition phase. While it is still too early to fully assess the long-term impact of the regulation, the available data suggest that Vietnam's coffee exports to the EU remained relatively resilient during this period of regulatory transition.

5.2. Overview of EU coffee market

First, regarding coffee consumption demand in the European Union, the region accounts for approximately one-third of global coffee consumption annually (CBI, 2025). While the EU remains a massive coffee buyer, its coffee appetite has essentially plateaued. Recent data shows imports have settled into a steady rhythm, holding between 2.7 and 3.0 million tonnes (ITC, 2024).

Post-pandemic coffee consumption has transitioned from a functional routine to a lifestyle-oriented preference. This shift toward the specialty segment reflects a growing consumer willingness to pay premiums for value-added attributes that extend beyond basic stimulant properties. Within this paradigm, market value is increasingly derived from origin-specific narratives, geographical traceability, and artisanal processing techniques. (Fortune Business Insights, 2026; ICO, 2024).

These shifts are forcing a total rethink of sourcing strategies within global value chains. Although Arabica still holds the crown in terms of volume, we're seeing a real hunger for high-quality Robusta (CBI, 2025). This is where Vietnam steps into the spotlight. As the world's leading Robusta exporter, Vietnam has become indispensable to the EU's supply stability.

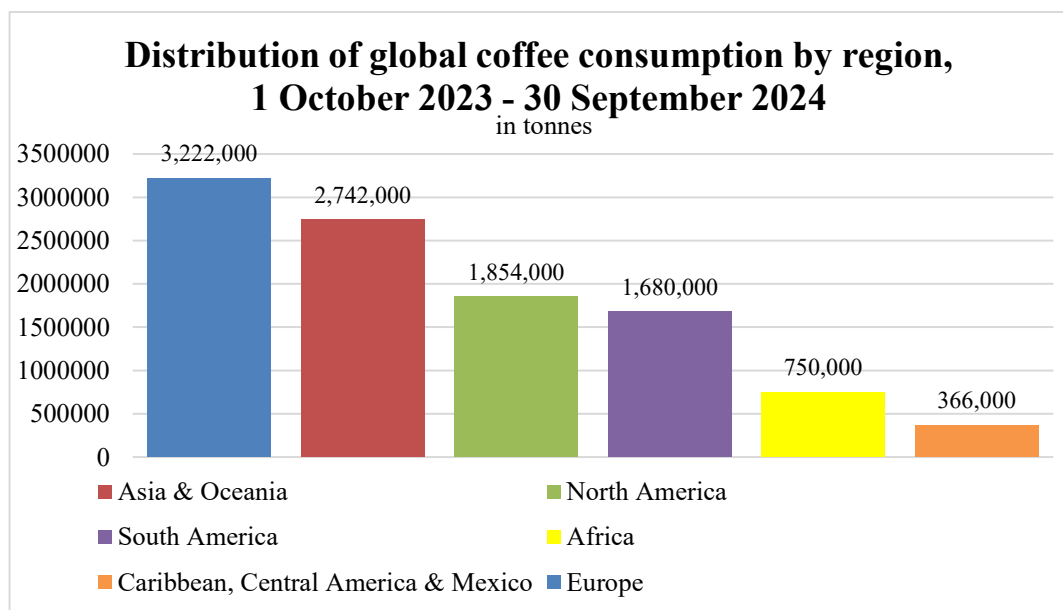


Figure 2: Distribution of global coffee consumption by region

Source: International Coffee Organization market report, March 2025

5.3. Competitiveness of Vietnam's coffee

European Coffee Federation 2024 trade figures for EU27 green coffee imports (excluding intra-EU trade) confirm a clear duopoly: Brazil accounted for 41.8% of total import, followed by Vietnam with 18.6%. But while they share the market, their internal engines are worlds apart.

Large-scale plantation systems and a diverse production structure are Brazil's strengths, whereas Vietnam remains highly specialized in Robusta production and relies heavily on smallholder farming. This structural divide is where the EUDR creates an uneven playing field. Within a buyer-driven value chain, EU buyers increasingly prioritize regulatory certainty. Mapping a single large plantation in Brazil is a straightforward task; however, collecting geolocation data across a fragmented landscape of tiny plots in the Central Highlands is a logistical nightmare. Nonetheless, Vietnam's "low-risk" status, combined with a sudden surge in digital traceability infrastructure, is helping the country piece together a framework that could soon level the playing field again. (CBI, 2025; Vietnam News, 2025).

6. Impacts of EUDR

6.1. Shifts in lead firm-supplier power dynamics

The emergence of the EUDR marks a significant shift from voluntary commitments to mandatory governance, where multinational corporations utilize environmental standards as a strategy of "green capital accumulation" to consolidate control over value chains (Ponte, 2019). In this context, sustainability is no longer a mere matter of social responsibility but has become a key competitive factor that enables lead firms to create and capture value.

The requirement for detailed reporting on geographic coordinates and production processes is not solely for compliance purposes; it also allows these firms to gain detailed insights into the costs and capacities of the upstream. The power of roasters has now shifted decisively toward the "power of exclusion" (Schleifer & Sun, 2020). They possess the authority to eliminate partners unable to provide transparent data, thereby driving the consolidation of the supply base into the hands of entities with superior digitalization capabilities.

This pressure compels public authorities in Vietnam to transform their role from administrative management to actively establishing compatible national legal and data infrastructures, aiming to protect the position of the coffee industry within a value chain structure that is increasingly dependent on digitalized standards.

6.2. Changes in information exchange and traceability requirements

The shift toward mandatory regulations has transformed field data and satellite monitoring from mere technical parameters into a pivotal competitive advantage, marking a transition toward a model of sophisticated data-driven governance (Grabs, 2021). However, establishing this information flow in Vietnam faces structural hurdles within a complex supply chain. As noted by Nguyen Viet Vinh, General Secretary of the Vietnam Coffee and Cocoa Association (Vicofa) (VnEconomy, 2017), over 90% of Vietnam's coffee production is collected through a multi-tiered intermediary network of Level 1 and Level 2 agents, where commodities are often mixed from various sources before reaching processing plants. This obscures real-time traceability and creates challenges for

compliance. According to Grabs (2021), the effectiveness of digital tools is further limited by the lack of synchronization in local public management infrastructure, forcing exporters to invest in independent monitoring systems. In Vietnam, the overlap and inconsistency between forestry maps and cadastral maps (particularly in defining the boundaries between natural forests and cultivated land) lead to numerous discrepancies in issuing Planting Area Codes (Le Minh Quang, 2023). This is evident in the cases of major exporters such as Vinh Hiep or Simexco, who must self-fund individual surveillance systems to meet EU client requirements. Nevertheless, digitalization is essential to overcome cost barriers. Rather than maintaining traditional field verification methods, which are costly and fragmented, digital data systems help consolidate information from all levels of the supply chain, thereby addressing stringent EU requirements more efficiently.

6.3. Challenges for smallholder integration and compliance

Despite its sustainability goals, the EUDR unintentionally creates an excessively high entry barrier for smallholders, indigenous peoples, and local communities (Zhunusova et al., 2022). In the Central Highlands, with over 640,000 farming households producing on fragmented plots (averaging less than 1 ha per household), collecting geographic coordinates (GPS) and land-use records is a monumental challenge. The EUDR threatens to marginalize millions of smallholders, particularly ethnic minority groups who lack digital resources and valid land-use certificates (Fern, 2025).

Without timely support, compliance pressure could lead to farmers shifting to less demanding markets to avoid costs (Solar et al., 2025). Nevertheless, experimental landscape management models still demonstrate the potential for positive upgrading if farmers are integrated into multi-stakeholder support networks. A prime example is the "Production, Protection, and Inclusion" (PPI Compacts) model implemented by IDH in Dak Lak and Lam Dong. This initiative helped over 30,000 farming households reduce chemical fertilizer use by 14% and irrigation water by 10%, while simultaneously creating transparent planting area data through cooperation between local authorities, purchasing companies, and farming communities (IDH, 2020, 2022). This proves that compliance is not merely a cost burden but can become a lever to restructure the industry toward greater sustainability.

7. VietNam's adaptation strategies

This section examines Vietnam's multi-level response to the EUDR, transitioning from the national institutional framework to specific technical and legal adaptations. While Vietnam has demonstrated strong political will, practical implementation faces significant structural bottlenecks, particularly regarding land tenure and data infrastructure.

7.1. Institutional adaptation

In this field, Vietnam has adopted an active stance, distinguishing itself as the first country in Southeast Asia to issue a more completed roadmap for EUDR compliance (Khôi, 2025). By recognizing the EU as a critical market consuming approximately 40% of its coffee exports, the government has shifted its role from a passive regulator to an active facilitator.

First, the cornerstone of this adaptation is the National Action Plan, approved by the Ministry of Agriculture and Rural Development (MARD) under Decision No. 5179/BNN-HTQT in August 2023 (MARD, 2023). This decision mandates a synchronized effort across central and local authorities to:

- Establish a dedicated information database for crop production areas.
- Delineate forest boundaries clearly to prevent encroachment.
- Set up a dialogue mechanism with the EU to clarify technical guidelines.

Second, to bridge the resource gap, Vietnam has leveraged Public-Private Partnerships (PPP), a collaborative governance mechanism which allows the Government (Public sector) and Corporations/NGOs (Private sector) to share the burden of data collection and technical implementation. MARD has since signed Memorandums of Understanding (MOUs) with major industry stakeholders, including JDE Peet's, Nestlé, and IDH (The Sustainable Trade Initiative) (Baochinhphu, 2024). These partnerships all aim to pilot compliance models in key provinces like Dak Lak and Lam Dong, indicating a shift towards governance by collaboration, reducing the administrative burden on the state while ensuring market access.

7.2. Legality adaptation

While the deforestation-free requirement poses a technical challenge, the legality requirement of the EUDR presents a more complicated institutional problem. The regulation demands that products must be produced in accordance with the relevant legislation of the country of production, specifically regarding land use rights.

However, a significant portion of coffee cultivation in the Central Highlands occurs on land with ambiguous legal status. There is a marked discrepancy between official land classification and actual land use. Many smallholders have cultivated coffee on land technically classified as "forestry land" or land without formal Land Use Rights Certificates (LURCs or "Red Books") (Forest Trends, 2024). Thus, under strict EUDR interpretation, coffee from these areas could be deemed illegal even when whether deforestation has occurred recently.

Nevertheless, Vietnam is approaching these requirements through two critical international frameworks: VPA/FLEGT and REDD+. These platforms provide the institutional backup and technical baseline for EUDR compliance. Specifically, the Vietnam Timber Legality Assurance System (VNTLAS) under VPA/FLEGT has already established a definition of "legal product" based on seven principles, including land use

rights and environmental protection. Instead of creating a new definition from scratch, MARD is utilizing the VNTLAS framework to conduct gap analyses for the coffee sector. In addition, the Department of Forestry acts as the competent authority for EUDR, guaranteeing the transfer of enforcement capacity (Forest Trends, 2024).

Besides, in order to address the bottleneck of fragmented production landscapes where 80% of agricultural land in provinces like Dak Lak consists of isolated patches, Vietnam is adopting the PPI Compact (Production, Protection, Inclusion) approach. This model serves as a practical implementation of the "Zoning and Risk Classification" strategy mandated by MARD (IDH, 2020). Instead of verifying millions of individual smallholders, the PPI approach establishes a "Verified Sourcing Area" (VSA) at a district level. Local authorities, private companies (such as JDE and Simexco) and IDH have signed a compact to manage the entire landscape. Specifically, evidence of this success is seen in the PPI Compact implemented in Krong Nang District (Dak Lak). This partnership successfully established a verified sourcing area of 5,000 hectares (as of 2020), with plans to expand to 10,000 hectares. Moreover, farmers within the Compact reported a 30% increase in income compared to those outside, mainly due to sustainable intercropping practices, while Simexco confirmed that coffee from this region has consistently met strict EU market requirements for nearly a decade (IDH, 2020).

7.3. Traceability adaptation: digitalization and geospatial data

The most profound technical barrier is the EUDR's requirement for geolocation (latitude and longitude coordinates) for all plots of land. For Vietnam, this is a challenge since the supply chain relies on approximately 600,000 smallholder households (VICOFA, 2023) who manage fragmented farms averaging 0.8 to 1.2 hectares (World Bank, 2017; OECD, 2023).

While the EUDR allows for a single GPS point for plots under 4 hectares, collecting data for millions of points requires robust digital infrastructure. Yet, Vietnam currently lacks a unified national database that integrates cadastral data with forest monitoring data. In order to address this problem, Vietnam is currently implementing a layered approach to digitalization:

First, on a national level, the government is upgrading the Forestry Management Information System (FORMIS). The authorities aim to create a centralized digital map that overlays forest boundaries with production areas, thus facilitating automated risk checking (VietNamNet, n.d.).

Second, on a landscape level, Vietnam is piloting EUDR-compliant landscapes in districts such as Di Linh (Lam Dong) with support from IDH. Within these zones, 100% of farm plots are mapped collectively rather than individually, reducing due diligence costs per farmer (IDH, 2023).

Third, on a technical level, Vietnam deploys the Terra-i+ system, which was developed by CIAT representing a significant step of adaptation (Son, 2024). Terra-i+

functions as a near real-time monitoring tool, utilizing neural networks to detect vegetation loss by analyzing rainfall and satellite data anomalies. For stakeholders in the Central Highlands, Terra-i+ serves as an Early Warning System, allowing companies to proactively identify deforestation hotspots before the harvest season. Major stakeholders, such as ECOM Group, are already integrating this tool. Mr. Thuan Sarzynski, Sustainability Director at ECOM Vietnam noted that the industry has shifted from relying on manual surveys to utilizing high-resolution data from Terra-i+ for precise risk assessment (Son, 2024).

8. Implications

8.1. Land governance and legal alignment

The government must accelerate the issuance of Land Use Right Certificates (LURCs) to ensure that farmers do not violate the EUDR's prohibitions of cultivation on deforested or degraded land. In parallel, Vietnam needs to adjust its domestic definitions of "forest" to align with FAO/EU standards. This is a process of Institutional Compatibility, providing smallholders with the legal framework necessary to satisfy the compliance mandated by EUDR regarding land-use origins of "deforestation-free"

8.2. Digital transformation and geospatial traceability

The Ministry of Agriculture and Rural Development (MARD) should establish a standardized data framework—incorporating GPS coordinates, farm size, crop varieties, and planting years—to ensure synchronized implementation across the Central Highlands provinces. By integrating agricultural data (cultivation areas) with environmental and land resources data (cadastral maps and forest planning), authorities can precisely define boundaries and eliminate land-use overlaps. Ultimately, the creation of a centralized “Digital Data Repository” will allow exporters and EU competent authorities to access verified information seamlessly. This approach facilitates transparent and efficient coffee traceability, thereby bolstering the credibility of Vietnamese coffee in the global market and attracting potential high-value importers to the industry

8.3. Supply chain restructuring and cooperative empowerment

Most coffee producers and businesses in Vietnam currently use multi-tiered procurement systems, making traceability difficult, expensive and error-prone. To tackle these problems, lead firms should shift from fragmented procurement via intermediaries to direct cooperation with cooperatives. Exporters provide technical support and off-take guarantees, while cooperatives are responsible for cultivation oversight and farmer-level data management. This collaborative framework contributes to changing the “Governance Structure” from a Market-based model to a Relational model, eliminating the risk of substandard batches and enhancing supply chain transparency.

8.4. Financial mechanisms and green credit incentives

The government needs to introduce preferential green credit packages without collateral requirements, helping smallholders cover initial compliance cost to comply

with EUDR regulations. This solution addresses the issue of "Value Chain Inclusivity" ensuring that environmental upgrading does not cause negative social consequences or disrupt the participation of vulnerable smallholders.

9. Conclusion

To conclude, the EUDR marks a shift from price-based competition to data-driven governance in the Vietnam–EU coffee value chain. By imposing traceability and geolocation requirements, it strengthens downstream control while placing significant compliance pressure on smallholders. Although the regulation promotes environmental upgrading, its effectiveness is constrained by structural challenges, particularly the logistical complexity of mapping fragmented smallholder plots and persistent land legality gaps. Vietnam's long-term competitiveness will depend on its ability to overcome these bottlenecks and adapt to increasingly data-driven forms of coordination.

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