Wageningen University & Research | Policy Brief

Tracing sustainability

A policy brief with recommendations for compliance with the European Union Deforestation Regulation for Colombia's Coffee and Palm Oil value chains

María A. Naranjo,[1] Elisa Ciravegna,[1] Verina Ingram,[1,2] Susanna Cocchini,[3] Natalia Herrera[3] and Timon Weitkamp[3]

1 Wageningen Social & Economic Research, 2 Forest and Nature Conservation Policy Group, 3 Resilience B.V.

December 2024

This policy brief is based on the results of the study "Tracing sustainability, A study of agricultural traceability options for compliance with the European Union Deforestation Regulation for Colombia's Coffee and Palm Oil value chains". Project commissioned by the Netherlands Embassy in Bogotá, Colombia and financed by the Ministry of Agriculture, Fisheries, Food Security and Nature (LVVN) (BO-43-113-044). All views and interpretations expressed in this document are those of the authors and not necessarily those of the supporting or cooperating institutions or individuals.

Contents

1. Introduction

Traceability and transparency are critical elements in ensuring sustainability and halting deforestation. Traceability refers to the ability to identify the origin of food and feed ingredients, and food sources (World Resources Institute, 2024). The EU Deforestation Regulation (EUDR)[1] exemplifies this effort by mandating that operators provide geographic coordinates of production plots and verify deforestation-free practices (Council of the European Union, 2023). While addressing global environmental concerns, the EUDR reflects increasing consumer demand for sustainable products and reinforces accountability mechanisms for forest conservation. The EUDR does not define traceability but talks of operators placing relevant products on the EU market being required to use diligence statements to demonstrate compliance with the EUDR.

In this policy brief, we answer key questions to provide key recommendations to stakeholders in the value chains of coffee and palm oil in Colombia can use to ensure the sustainability and traceability of their products. The implementation of the EUDR presents significant uncertainties for those involved in the Colombian coffee and oil palm chains due to the need for publicly available guidelines and benchmarking data. For implementation to be effective, we indicate that a mix of technologies is needed to support different compliance pathways (e.g. Corporate Systems, Certifications or National Stakeholder Collaborations). However, the question of who bears the costs still needs to be solved and requires choices and political decision-making. Achieving effective traceability without overburdening farmers requires coordinated efforts by public and private organisations, cooperatives and governments. A major challenge is to ensure that small farmers, especially those without geospatial data, are not excluded from the EU market due to the cost and complexity of complying with the EU Deforestation Regulation (EUDR). By promoting an inclusive approach and empowering smallholder farmers, Colombia can meet EUDR requirements while maintaining broad participation in global markets.

Implementing the EUDR requires understanding the actions of different value chain actors and verification steps and risks. Actions, verification, and risks in the value chain start at the production location. Identifying and audit systems should be implemented from the point of collection, processing and storage to ensure the integrity of deforestation-free value chains. Operators should ensure compliance in the exporting phase and record the required due diligence for regulatory adherence. The EUDR obligations apply to importers. Importers must declare that the components of the products they are importing have not contributed to the deforestation of agricultural land that has been deforested after the 'cut-off date'. This means that importers should demonstrate the origin of the raw materials via due diligence requirements. Upon import, importers should provide precise geographical information about the relevant agricultural land, with satellite images and GPS coordinates that operators must have verified along the value chain. A due diligence statement is a key document that importers are required to submit under the EUDR (European Commission, 2024).

Key messages

1. **Continuity of technology and data:** It is crucial to ensure the continuity of technology and data to ensure consistent compliance, for example, by using unique identifiers for farmers and farms. This means addressing issues of legality and legitimacy.
2. **Standardisation and commercial requirements:** Standardising traceability processes in Colombian national legislation and recognising EUDR due diligence as a commercial requirement can help align local practices with international (European) expectations.
3. **Empower farmers:** It is critical to organise and empower unorganised farmers, and prevent their exclusion from the EU market, as this group appears vulnerable, and least able to be able to comply with EUDR requirements without support.
4. **Monitoring market dynamics:** Monitoring changes in market shares and evaluating the costs and benefits of EUDR implementation for Colombian value chain actors will help communicate these dynamics to the EU. Understanding shifts in trade will be essential for the EU and Colombian stakeholders in the coffee and oil palm value chains to make informed decisions.
5. **Market shifts and risk mitigation costs:** The EUDR may prompt a shift of selling products originating from high-risk forest production areas in Colombia to non-EU markets. Strategies to minimise risks could involve gathering supplementary data, with operators establishing and enforce policies, controls, and procedures to mitigate and manage non-compliance risks.

[1] The EU has postponed enforcement, officially setting December 30, 2025, as the compliance deadline for the European Union Deforestation Regulation (EUDR). Consequently, the dates in this report have been updated to reflect this revised timeline.

2. What are the critical implications of the EUDR for Colombian palm oil and coffee?

The EUDR imposes strict guidelines for operators and traders, including a benchmarking system that evaluates compliance based on deforestation rates and production trends. Products not meeting these criteria by 31 December 2020, are banned from the EU market (Council of the European Union, 2023). While polygon mapping is essential for traceability, it faces challenges such as difficult terrain, lack of standardised mapping technology, and limited awareness of EUDR requirements among smallholder farmers. Land ownership issues and informal land tenure further complicate traceability, leading to monitoring errors or fraud. Additionally, the accuracy of maps used by the EU observatory is questionable, particularly in countries like Colombia, where deforestation drivers differ from those assumed by the EU. There is a risk that Colombian farmers, especially smallholders, will be excluded from the EU market due to difficulties in proving compliance with sustainability standards and geolocation requirements. This could decrease their bargaining power and create market barriers, as EU importers may prefer lower-risk countries. Furthermore, the regulation might lead to 'spillover' effects, where products such as coffee and palm oil are redirected to markets with less stringent deforestation regulations, such as the U.S. and China. This would undermine global efforts to promote sustainability and prevent deforestation, as unsustainable practices could persist unchecked in those regions. The EUDR could also drive domestic production into forested areas, worsening deforestation in non-EU markets (Naranjo et al., 2023).

Box 7.1 Recommendations on critical elements for implementing the EUDR

1. **Supporting coffee and palm oil farm polygon mapping via the current national initiatives (SICA and APSColombia).** A realistic timescale (which may take several years) for different stakeholders to conduct polygon mapping and integrate the details, aligning farm to farmer identification in a coordinated national system, is strongly recommended. Operators could engage with importers, presenting their proposed traceability systems to build confidence. Conversely, importers are encouraged to engage up their value chain to aid their supplies to meet the requirements.
2. **The benchmarking process should consider Colombian forest and deforestation definitions.** The differences in the definitions of forest and agroforestry classifications must be addressed by the EU with the Colombian government. Therefore, aligning institutional monitoring by the EU Observatory and Colombian authorities is crucial for effective compliance and monitoring with the EUDR.
3. **Alignment of forest maps and definitions is needed for production in agroforestry systems.** As the EU observatory may not accurately distinguish between forests and agroforestry systems it is recommended that stakeholders verify the status of individual farms through organisations such as IDEAM and the SMByC, ensuring that current mapping data accurately reflect the land use, and mapping data are also verified on the ground.
4. **Balancing traceability with restoration, reforestation and afforestation involving coffee and palm oil.** It is recommended that Colombian actors discuss with the EU and with other producer countries affected by the EUDR how the EU can support and incentivise, rather than penalise land restoration, agroecology, and reforestation projects involving coffee, oil palm and other commodities regulated by the EUDR.

3. What characteristics of the Colombian context are key factors for EUDR implementation?

Colombia's coffee and palm oil sectors drive social and economic development but face significant challenges to implement traceability throughout their value chains. Meeting the requirements of the EUDR will be challenging due to the large number of small farmers, the many pathways and actors, the complex logistics in both value chains, and the costs of traceability. The National Federation of Coffee Producers' information system (SICA) and the Palm Cadaster and APSColombia are key elements to achieve EUDR compliance (FNC, 2024; Fedepalma, 2023). While successful pilots have been implemented, exporters highlight the difficulty of scaling to all farmers and maintaining full traceability as obstacles to compliance. The many smallholder farmers who need to be organised may bear disproportional costs of implementation and changes to comply with the EUDR. The efforts to improve traceability in Colombia in the oil palm and coffee sectors, combined with ever-wider technology dissemination, could be expanded to include more farmers and buyers, mainly aiming to reach the many smallholders not in groups or certified. The question of who will bear the costs remains unresolved. More coordination and collaboration are required among commercial actors in the value chain, including the government, to ensure that Colombian products are exported to the EU. This approach will also enable farmers who are not members of organisations or who are hesitant to engage in collective action to still participate in value chains and be able to secure exports of their products.

Box 7.2 Recommendations on the Colombian context

1. **Strengthen communication channels within and between agricultural and forest sectors.** In the palm oil sector, palm nuclei help better address producers. However, most cooperatives and independent exporters active in the coffee sector are not interconnected, rendering it difficult to exchange information. Encouraging affiliation with sector associations like Fedepalma and FNC would be a good initiative to exchange experience successfully and share regulatory update.
2. **Keep expanding SICA and Palm Cadaster Coverage and updates to ensure comprehensive data collection and integration across the entire value chain.** Develop standardized data entry and reporting protocols to ensure consistency and reliability of information across different systems. This will facilitate easier data sharing and verification processes. Implementing a unique identification such as Cedula (citizen ID) is key in standardising information currently contained in different systems.
3. **Review national deforestation trade and forest policies.** Colombian trade and forest policies may require revision to enable compliance with the EUDR, which could be time consuming and costly. Non-compliance however could lead to trade bans, affecting revenue and employment. An alternative is bilateral negotiating with the EU for more national alignment, as occurred in the VPAs, or multilaterally in trade (geographic or commodity based) groups.

4. Which traceability technologies can aid EUDR implementation?

Geospatial data, satellite images and blockchain technologies can help design, implement, and monitor forest risk and loss, and trace production. Combining traceability technologies such as geospatial data, satellite images, barcodes, and blockchain to track the origins and movement of commodities can help establish robust traceability pathways. A mix seems necessary as there is not one technology that has been used to cover all requirements, with some focusing on tracking post-harvest transportation and others monitoring forest cover changes without covering subsequent stages. Monitoring controls, and field verification are crucial to ensure the accuracy and effectiveness of technologies (Astill et al., 2019; Fripp et al., 2023; V. Ingram et al., 2024).

Box 7.3 Recommendations on traceability technologies

1. **Implement unique identification mechanisms and scale up the use of Cedula to standardise traceability.** Using the Cedula (citizen ID) as a unique identifier within traceability systems can standardise and streamline information flows and ensure accurate tracking of products from farm to export. However, robust data protection measures are needed to safeguard farmers' personal information.
2. **Promote technology adoption through innovative financing.** Create and implement financing mechanisms such as blended finance initiatives and data-driven microcredit. These models can lower the financial barriers to technology adoption for operators in the agricultural value chain.

5. What can we learn from other traceability systems?

Key takeaways for ensuring effective traceability and sustainability in global value chains. Experiences with Geographical Indication (GI) highlight the importance of monitoring and consumer engagement (Ingram et al., 2020). While GIs can boost economic benefits for producers, the authenticity of GI products needs protection through traceability systems, as consumer preferences and costs influence implementation. Resistance to new methods often stems from established practices, and navigating global markets requires addressing privacy, regulatory, and technological challenges. Successful examples like Tony's Chocolonely (Tony's Chocolonely, 2024) demonstrate the value of transparency in gaining consumer trust and market advantages. Lessons from the EUTR emphasise penalties, cooperation, and transparency, while sustainability certification systems, such as Fairtrade and RSPO, show that traceability and enforcement are key to ensuring compliance and supporting deforestation-free production (Fedepalma, 2022; Solidaridad Network, 2021; Köthke et al., 2023). Balancing costs and incentives is crucial for effective implementation (WWF, 2019).

Box 7.4 Recommendations from experiences with other traceability systems

1. **Dialogue with the EU.**
   - Consistency in the application of the EUDR across EU member states so that exports of Colombian products to different EU member states will be handled uniformly.
   - Cooperation between Colombia and the EU, and between 'third' countries, especially producing the same commodities, is important for exchange on what's working and not in implementation and solutions to address problems.
2. **Ensure coordination in the value chains.**
   - Coordinating a traceability system to meet EUDR requirements means aligning EU and Colombian regulatory frameworks and technological standards.
   - Agreeing which stakeholders will ensure standardisation of traceability processes nationally and per commodity by coordinating between the multiple stakeholders, especially for smallholder farmers.
   - Combining and aligning technologies – such as geospatial, with certification and internet of things, can be effective ways of implementing traceability systems.
   - With revisions, existing private sector, collective and statutory traceability systems can help implement the EUDR.
3. **Transparency, legitimacy, and incentives.**
   - Transparency of competent authorities and all parties involved in the traceability system in third countries such as Colombia and in the EU is important for legitimacy.
   - Provide incentives for different stakeholders to participate in the traceability system, for example reduced taxes, providing back information on mapping, prices or benchmarking production data.

6. What are the key actions, verifications, and risks for traceability?

Traceability and transparency alone are not solutions, but they are essential for enabling value chain actors to make informed decisions that impact forest loss. Independent verification is necessary for ensuring system credibility (see Figure 1 for key actions, verifications and risks). Achieving traceability and transparency in commodity value chains is feasible but requires additional investment. Governments should create a well-resourced policy environment that supports traceability and transparency, especially given the complexities of value chains like coffee. Investments are often ongoing, necessitating continued funding. Practical approaches must consider the needs of smallholders. Significant data gaps persist, particularly in areas with many smallholders, making it critical to ensure data accessibility and usability. Investments are needed to address these gaps (World Resources Institute, 2024). Significant uncertainties surround the implementation of the EUDR, primarily due to the lack of publicly available guidelines and benchmarking data. These uncertainties carry potential implications for various stakeholders, including the need for a mix of technologies to support different pathways within the supply chain. Ensuring continuity of technology and data is crucial, mainly through using unique identifiers for farmers that are widely perceived by national stakeholders as legitimate and embedded in national legal and policy systems. A focus on standardising processes is essential, as compliance with local legislation is a legal requirement. At the same time, EUDR diligence becomes a commercial necessity.

Box 7.5 Recommendations on key actions, verifications, and risks for traceability

1. **Monitor changes in market shares for products sold to the EU and to communicate any shifts attributed to avoiding EU compliance.** Evaluating the costs and benefits of implementing the EUDR within Colombia's value chains is critical, particularly concerning prices, incomes, and the equitable distribution of these costs across the value chain. Furthermore, the regulation may drive a shift from high-risk production areas to markets outside the EU, potentially increasing the costs associated with risk mitigation.
2. **The government could ensure that *all* operators in the chains are engaged in developing traceability systems,** including intermediaries, farmers organisations and representatives, exporters and importers are engaged to ensure compliance and record the due diligence.

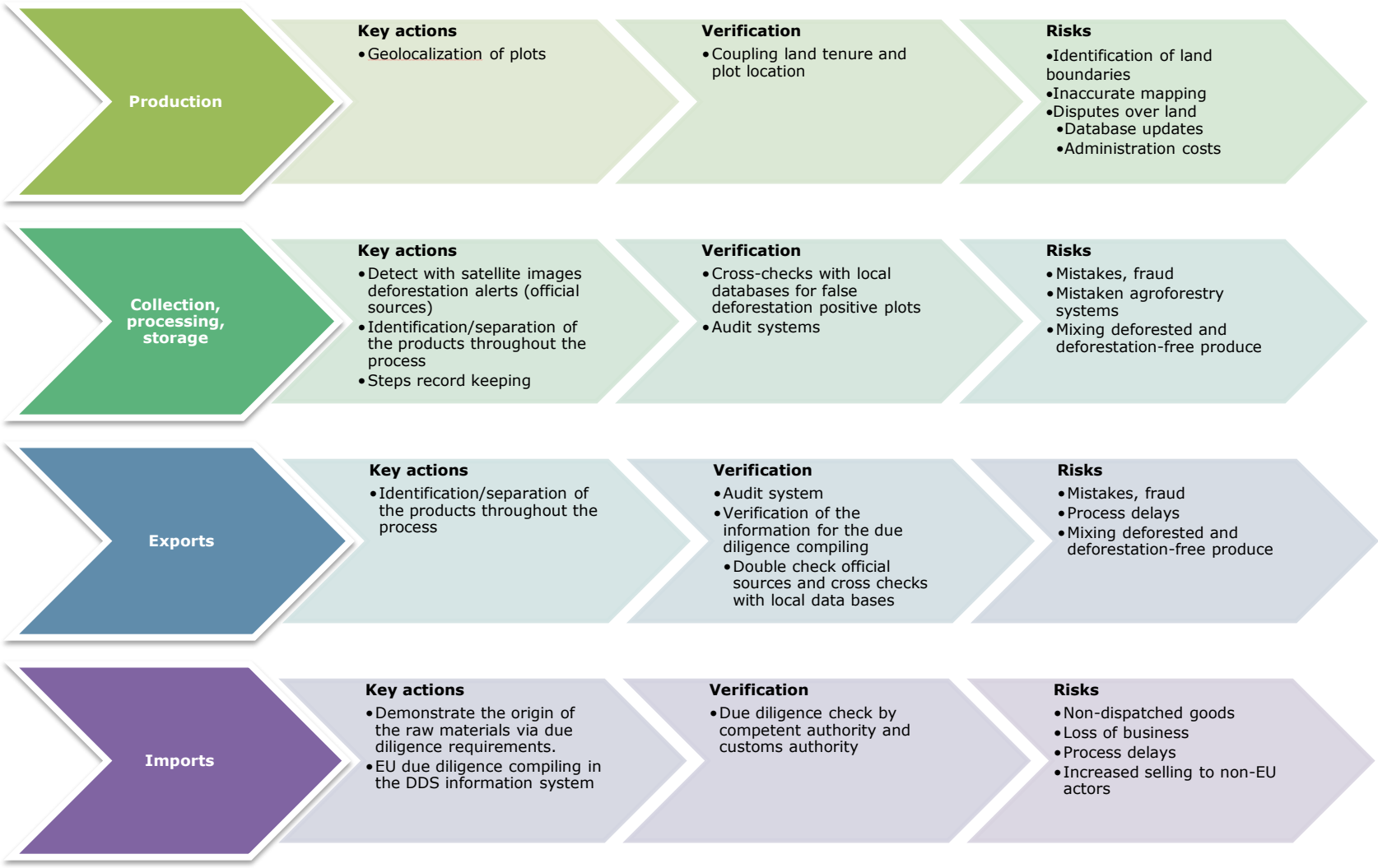

Figure 1 *Key actions, verifications and risks for traceability*

7. What is needed for a successful traceability implementation?

Enhanced stakeholder engagement is crucial for complying with the EUDR, with active participation needed from both public and private sectors. The Ministry of Agriculture and the Ministry of Commerce have been working with associations like FNC, Asoexport, and Fedepalma to address challenges in meeting the Regulation. Involvement should extend to exporters, importers, and individual farmers who are not part of organised groups, ensuring that even smallholders are included. Technical support from organisations such as IDEAM and the Ministry of Environment will be essential for providing solutions. However, implementing traceability systems and certification standards under the EUDR raises uncertainties for various stakeholders, particularly cooperatives, which face the challenge of reaching unorganised farmers. Smallholders risk being excluded from the EU market if they struggle to understand EUDR requirements or afford the necessary technology, as the costs of data collection and management are often prohibitive for smaller producers (Duffield & Christian, 2024). This leads to trade-offs in the equitable distribution of costs and benefits, with smallholders and non-landowners being at a disadvantage compared to larger enterprises. **Data standardisation is critical to ensure traceability is reliable, comparable, and ethically managed across the value chain.** Government data on land use, property registration, and trade must be integrated to avoid land use issues and create an accurate monitoring system. Farmer IDs linked to geospatial data can help build a nationwide record of farm locations and sizes, while blockchain traceability systems can facilitate data standardisation, improving communication and transparency across the value chain (Giagnocavo et al., 2017).

Box 7.6 Recommendations for a successful traceability implementation

1. **Support group and cooperative initiatives.** Encourage and support cooperatives in exploring and implementing new technologies. Cooperative structures can serve as effective platforms for collective technology adoption, sharing risks, and benefits among members.
2. **Empower farmers and seek opportunities.** Tracking the pathways used to facilitate exports to the EU is essential for organising and empowering unorganised or isolated farmers who are not included in corporate systems and cooperatives, and appear at more risk of being excluded from the EU market due to their lack of knowledge and ability to implement geolocalisation requirements needed for operators to comply with the EUDR.
3. **Facilitating technology and data sharing, including via standardisation.** Government agencies, private sector and producers associations (FNC and Fedepalma) can create a conducive environment to introducing and disseminate technologies and data required amongst value chain actors and providing secure platforms and rules for data and technology use and exchange, such as making clear requirements which will create standardisation.
4. **Promoting technology adoption through innovative financing and collaborative partnerships.** New financing models such as blended finance initiatives, data monetisation, and data-driven microcredit provision can be developed to facilitate technology adoption. Coordination between public and private entities and cooperatives willing to test and adapt new technology products is essential.

References

Astill, J., Dara, R. A., Campbell, M., Farber, J. M., Fraser, E. D. G., Sharif, S., & Yada, R. Y. (2019). Transparency in food supply chains: A review of enabling technology solutions. *Trends in Food Science & Technology*, *91*, 240–247. https://doi.org/10.1016/j.tifs.2019.07.024

Council of the European Union. (2023, May 31). *REGULATION (EU) 2023/1115 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL*. Official Journal of the European Union; L 150/206. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32023R1115

Duffield, L., & Christian, J. (2024). *Transformative traceability: How robust traceability systems can help implement the EUDR and fight the drivers of deforestation*. fern.

European Commission. (2024a). *Geographical indications and quality schemes explained*. https://agriculture.ec.europa.eu/farming/geographical-indications-and-quality-schemes/geographical-indications-and-quality-schemes-explained_en#how-products-are-protected

European Commission. (2024b, December). *The Deforestation Due Diligence Registry*. https://green-business.ec.europa.eu/deforestation-regulation-implementation/deforestation-due-diligence-registry_en

Fedepalma. (2022). *Key Sustainability Results of the Colombian Palm Oil Sector 2022*. Fedepalma. https://repositorio.fedepalma.org/bitstream/handle/123456789/142838/Plegable%20Sostenibilidad%20con%20INGL%C3%89S.pdf?sequence=1

Fedepalma. (2023). *Principales resultados en sostenibilidad del sector palmero colombiano 2023*. https://repositorio.fedepalma.org/bitstream/handle/123456789/142878/Informe-Sostenibilidad-2023-VF.pdf?sequence=5

FNC. (2024). *Federación Nacional de Cafeteros—Sitio de la Federación Nacional de Cafeteros*. https://federaciondecafeteros.org/wp/

Fripp, E., Gorman, J., Schneider, T., Smith, S., Paul, J., Neeff, T., Marietti, F., Van Wie McGrory, L., & Zosel-Harper, A. (2023). Traceability and Transparency in Supply Chains for Agricultural and Forest Commodities. *World Resources Institute*. https://doi.org/10.46830/wrirpt.22.00156

Giagnocavo C, Bienvenido F, Li M, Zhao Y R, Sanchez-Molina J A, Yang X T. Agricultural cooperatives and the role of organisational models in new intelligent traceability systems and big data analysis. Int J Agric & Biol Eng, 2017; 10(5): 115–125. https://doi.org/10.25165/j.ijabe.20171005.3089

Ingram, M., Vukcevic, D., & Golding, N. (2020). Multi-output Gaussian processes for species distribution modelling. *Methods in Ecology and Evolution*, *11*(12), 1587–1598. https://doi.org/10.1111/2041-210X.13496

Ingram, V., Janssen, V., Neh, V. A., & Pratihast, A. K. (2024). *Cocoa driven deforestation in Cameroon: Practices and policy*. Wageningen University & Research.

Köthke, M., Lippe, M., & Elsasser, P. (2023). Comparing the former EUTR and upcoming EUDR: Some implications for private sector and authorities. *Forest Policy and Economics*, *157*, 103079. https://doi.org/10.1016/j.forpol.2023.103079

Naranjo, M., Rahn, A., Arets, E., van den Berg, J., & Berkhout, E. (2023). *Deforestation and forest degradation in coffee supply chains* [Policy brief]. Wageningen Economic Research.

Solidaridad Network. (2021, December 2). *Colombia further increases sustainable palm oil production in 2020*. https://www.solidaridadnetwork.org/publications/colombia-further-increases-sustainable-palm-oil-production-in-2020-and-is-close-to-100-certified-exports/

Tony's Chocolonely. (2024). *Bean Tracker – Tony's Chocolonely*. https://tonyschocolonely.com/nl/en/our-mission/serious-statements/tonys-beantracker

TraceX. (2024). *Importance of Traceability in GI Products | Geographical Indication*. https://tracextech.com/importance-of-traceability-in-gi-products/

World Resources Institute. (2024, February). *Complex Supply Chains Are Still a Major Barrier to Ending Deforestation*. https://www.wri.org/insights/supply-chain-transparency-deforestation

WWF. (2019). *WWF Enforcement Review of the EU Timber Regulation (EUTR)—EU Synthesis Report*. WWF - World Wide Fund For Nature.

Contact & information

2025-037

María A. Naranjo
T +31 (0)317 48 07 52
E maria.naranjo@wur.nl
www.wur.eu/social-and-economic-research

The mission of Wageningen University & Research is "To explore the potential of nature to improve the quality of life". Under the banner Wageningen University & Research, Wageningen University and the specialised research institutes of the Wageningen Research Foundation have joined forces in contributing to finding solutions to important questions in the domain of healthy food and living environment. With its roughly 30 branches, 7,700 employees (7,000 fte), 2,500 PhD and EngD candidates, 13,100 students and over 150,000 participants to WUR's Life Long Learning, Wageningen University & Research is one of the leading organisations in its domain. The unique Wageningen approach lies in its integrated approach to issues and the collaboration between different disciplines.