Forest Policy and Economics 184 (2026) 103709

Contents lists available at ScienceDirect

Forest Policy and Economics

journal homepage: www.elsevier.com/locate/forpol

Commentary

Dealing with the cost of EUDR compliance data and potential monetisation: Opportunities and risks

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ARTICLE INFO

Keywords
EUDR
Compliance cost
Data monetisation
Data protection
Personal data

ABSTRACT

The European Union Deforestation Regulation (EUDR) introduces strict due diligence obligations, requiring EU operators to trace the origin of commodities and verify that they are deforestation-free. While existing research has largely focused on the design of the regulation and the challenges of its enforcement, little attention has been paid to the role of EUDR compliance data as both a cost factor and a potential asset. This paper analyses the costs of EUDR compliance data, paying particular attention to the distributional effects among market actors. It also explores the opportunities for monetising such data and the implications for producer privacy and data protection. Our findings suggest that compliance costs may not be evenly distributed across the supply chain, with producers in exporting countries being particularly vulnerable. This could create unintended market distortions, including price shifts and the supplanting of EUDR-relevant commodities by illicit alternatives. Notably, the monetisation of EUDR compliance data could offer producer countries new revenue streams. However, many EUDR-relevant commodities originate from countries with weak data protection frameworks, raising concerns about the potential misuse of producers' data. While data monetisation could help offset EUDR compliance costs, it must be accompanied by robust data protection laws. We recommend harmonising, strengthening and enforcing data protection laws in producer countries to ensure that the benefits of EUDR compliance are not achieved at the expense of the most vulnerable. Addressing these issues is critical to aligning the EUDR with broader objectives of sustainability, fairness and inclusive global value chains.

1. Introduction

Data and data processing with artificial intelligence are increasingly seen as tools to support sustainability transitions (Aaronson and Leblond, 2018; Galaz et al., 2021; Hassani et al., 2021; Vance et al., 2024). Several novel environmental Regulations enacted by the European Union (EU) rely on the provision of large amounts of data for compliance reporting, notably the EU Regulation on Deforestation-Free Products (EUDR), the EU Corporate Sustainability Reporting Directive, the EU Corporate Sustainability Due Diligence Directive and the EU taxonomy. Together, these environmental Regulations support the implementation of the European Green Deal to transform the EU into a more resource-efficient and competitive economy (EUR-Lex, 2022).

These Regulations also aim to help businesses, investors and consumers at the EU level to identify environmentally sustainable activities and consumption patterns. They require economic operators to collect data, process it and communicate comprehensive proof of compliance. Collecting and processing the required data is a costly administrative burden (Hoos et al., 2025). Concerns about the added costs of collecting and processing the required information along complex supply chains have been raised, particularly in the context of the EUDR (Sevilla et al., 2025; Urugo et al., 2025; Zabel et al., 2025).

However, beyond the overall economic burden of data collection, little thought has been given to the distributional effects of compliance costs across supply chain actors and whether there could be opportunities for monetising the aggregated data to cover the cost. A further key aspect that has not been sufficiently addressed in the context of international data-driven sustainability policies is data protection. This paper takes an economic and policy perspective to analyse how the EUDR compliance data requirements could potentially distort markets. It further explores opportunities and risks of monetising compliance data to offset the costs of collecting data for compliance.

The EUDR aims to prevent deforestation-related and illegally produced commodities from entering the EU market (Regulation EU 2023/1115). Commodities covered by the EUDR include cocoa, coffee, timber, rubber, palm oil, soy and cattle. To achieve the regulation's goals, Article

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https://doi.org/10.1016/j.forpol.2026.103709
Received 29 August 2025; Received in revised form 8 January 2026; Accepted 11 January 2026
Available online 21 January 2026

4 mandates operators (importers) to exercise due diligence before placing any relevant products on the EU market. As outlined in Articles 8, 9 and 10 of the EUDR, due diligence includes collecting and assessing large amounts of data, e. g. geolocation data and documents proving legal production. This data must be collected at the beginning of each supply chain, processed by various actors and stored by EU operators for at least five years. Producers that do not pass on the relevant information to importers will lose access to the EU market (Susilawati and Kanowski, 2022).

Recent work and the Strategic Framework for International Cooperation Engagement of the European Commission characterise the EUDR's environmental and social aims. Accordingly, the EUDR is said to reduce commodity-driven deforestation, forest degradation, associated biodiversity and climate impacts and promote sustainable practices (Beltrame de Moura, 2025; European Commission, 2024; Srivastava and Banerjee, 2025). Furthermore, the EU Commission envisions the EUDR as a tool to fulfil the SDG commitment and the Paris Agreement. The Regulation is also seen as an opportunity to enhance responsible trade and boost opportunities for inclusion and equity among actors around the globe (Beltrame de Moura, 2025; European Commission, 2024; Linden et al., 2025).

Although the Regulation is well intended, its normative goals do not fully reflect the complex socio-economic realities of producer countries. Instead, they are influenced by a combination of the convictions and interests of NGOs, EU institutions and multinational businesses, while initially ignoring the perspectives of governments and smallholders in producer countries (Berning and Sotirov, 2024; van Noordwijk et al., 2025). It also fails to clarify who should pay for data collection and how the costs should be shared between the relevant parties (Muradian et al., 2025). We argue that in the absence of initiatives addressing implementation barriers (Azevedo-Ramos and Lima, 2024), the EUDR could be at risk of issues such as supplier substitution and market shifts, as was observed with its predecessor, the EU Timber Regulation (EUTR) (European Commission, 2023; Köthke et al., 2023; Köthke, 2020; Schulz et al., 2026). This in turn may jeopardise rather than promote sustainability goals (Beltrame de Moura, 2025).

Besides environmental and social aims, other important normative goals of the Regulation include traceability and transparency. A substantial body of literature has examined the benefits of transparent supply chains (Gardner et al., 2019; Schilling-Vacaflor and Gustafsson, 2024), particularly the EUDR's potential contribution to sustainable forest management, environmental governance and deforestation free and legal commodity supply chains. These include the reduction of global deforestation and forest degradation, the protection of biodiversity, the mitigation of greenhouse gas emissions as well as the promotion of legality and traceability of supply chains (Cosimo et al., 2024; Durán, 2025; Johnston et al., 2025; Muradian et al., 2025; Tonouéwa et al., 2024).

Existing literature has identified traceability as the core mechanism for effective forest governance and sustainable forest management (Mensah et al., 2025; Muradian et al., 2025; Tonouéwa et al., 2024). Traceability systems are thus necessary for achieving the zero-deforestation supply chain commitments (Fripp et al., 2023). They link products and actors to origin, enabling accountability and enforcement along global commodity chains (Gardner et al., 2019). Traceability technologies promote transparent markets, efficient forest resource management and reputational confidence (Lima et al., 2025; Stopfer et al., 2024).

Although Cosimo et al. (2024) and Muradian et al. (2025) identified gaps in several existing traceability systems, other studies report that traceability systems such as certification have reduced illegal logging, improved sustainable practices, forest governance, enforcement of legal requirements, accountability and market efficiency (Elias, 2024; Mensah et al., 2025). Miniarti et al. (2018) reported that the Indonesian Timber Legality Verification System has increased legality and sustainability compliance in supply chains in the country. In the Amazon, innovative traceability technologies such as isotopic analysis or big data are seen as promising solutions to legality verification and reducing illegal logging (Lima et al., 2025). Certification, third party-verification systems and traceability through due diligence systems in Europe have contributed to compliance with the EUTR (Gavrilut et al., 2016). Heilmayr and Lambin (2016) reported a reduction in deforestation when certification was combined with stakeholder collaboration in Chile. However, Muradian et al. (2025) reported that these systems have failed to stop deforestation.

Against this backdrop, the EU Joint Research Centre has developed the EU Observatory on Deforestation and Forest Degradation to support global forest monitoring and contribute to stopping deforestation. Specifically, the EU Observatory provides global forest data to help operators and authorities assess the risk of deforestation and degradation and support due diligence (Vogt and Caudullo, 2022). Furthermore, multilateral agencies and organisations like the International Trade Centre, Fraunhofer Institute for Material Flow and Logistics and the Food and Agriculture Organisation are developing platforms to support data collection for EUDR compliance (FAO, 2024; Frauenhofer, 2023; International Trade Center, I, 2024). However, these tools mainly focus on the deforestation aspect of the EUDR. Therefore, producers must still provide the legal information required, as outlined in the EUDR Guidance documents (European Commission, 2025a). Moreover, producers require expertise to operate the tools, collect data and pass it on to their EU-based customers. Likewise, EU operators require expertise or third-party assistance to apply EUDR-compliant due diligence systems. All these come at a cost that must be borne by the supply chain actors.

Although essential to the Regulation's objectives, data requirements of the EUDR raise two under-examined issues. First, who pays for the cost of collecting data for compliance? Compliance costs for importers arise from setting up and applying a due diligence system, submitting due diligence statements and complying with public reporting and data retention obligations (Rijk and Kuepper, 2024). In addition, producers face substantial costs when gathering information on legality and geolocation (Mabica et al., 2025). Second, what happens to the data collected for compliance?

Our study builds on these perspectives by analysing through an economic lens the implications of data requirements for compliance for producers and EU importers. It also offers insight into opportunities for monetising producers' data to offset costs of collecting data and to ensure that the Regulation supports not only environmental integrity, but also inclusive and sustainable trade.

2. Distribution of cost and data monetisation

How the costs are distributed can depend on supply and demand elasticities as well as political factors such as the actors' bargaining power or their capacity to strategically reposition within supply chains. This section focuses on the former and examines how elasticities influence the distribution of costs and explores the opportunities for data monetisation. The latter ranges from basic data sales to optimising market performance through complex data-driven services (Ritala et al., 2024). Ultimately, this analysis aims to provide insights into sustainable cost recovery strategies within EUDR-regulated supply chains. It is important to emphasise that producers are heterogeneous (Susilawati et al., 2019; Susilawati and Kanowski, 2022; Zhunusova et al., 2022). Hence, compliance costs and capabilities may differ widely between small-scale producers, out-growers and large companies, the type of product and even the risk category of the country (Directorate-General for Environment, 2025; van Noordwijk et al., 2025; Wolff and Schweinle, 2022). While our analysis remains at the conceptual level, further studies could empirically examine the actual cost implications and distributional effects among different actors once EUDR implementation begins.

2.1. The less elastic supply chain actors bear the brunt

The administrative costs added by the EUDR to the supply chain have a similar effect as an import tax. The distribution of the cost between producers and importers is affected by the elasticity of the commodities' supply and demand functions. As we illustrate in Box 1, the supply chain actor that is less elastic, i.e. reacts less strongly to the compliance cost, will bear the greater share of the costs. Cases when inelastic supply meets elastic demand (scenario B in Fig. 1) may be particularly worrying because of the social implications that a decreasing producer price may have, especially for smallholders (Azevedo-Ramos and Lima, 2024). Inelastic supply is typical for commodities for which producers have locked-in path dependencies, such as perennial crops which do not allow for swift reactions.

Apart from price effects, there may also be quantity effects to look out for. When both supply and demand functions are elastic, the commodity market may contract due to the additional cost, providing room for a substitute crop (scenario D in Fig. 1). This is of concern especially when a commodity regulated by the EUDR, such as coffee in Latin America, is easily supplanted by an illicit crop such as coca (Grisaffi et al., 2021). However, which of the four scenarios applies to a certain case will depend on the specificities of regional production systems and their commodity and substitute markets.

2.2. Possibilities for data monetisation

To cushion or even avoid the undesirable effects administrative costs can entail, there is need to explore whether the cost could be recuperated. One possibility could be to develop a market for data monetisation. Data monetisation refers to the commercialisation of data and information assets to yield financial returns like selling data or analytics-based services or improving operations, products or pricing (Ofulue and Benyoucef, 2024; Zhang et al., 2023).

Opportunities for data monetisation can be placed on a continuum ranging from insight to foresight. This continuum demonstrates how data can be converted and translated to aggregated data driven insight to gain relevant information about farming practices, new markets, business opportunities and entry points that would otherwise be inaccessible (Chamorro-Padial et al., 2025). Following Ritala et al. (2024), the information requirements of the EUDR [Art. 9] and referring to the cocoa value chain as an example, in Fig. 2 we highlight four opportunities of monetising data. Table 1 provides a more detailed analysis of the data requirements, necessary capabilities, potential risks and required safeguards. Moving from left to right along the continuum (Fig. 2), stratification and complexity of the data layers increase, adding value to potential products:

1) Data as a product involves selling raw or processed data in an aggregated format. As an example, a producer organisation could analyse cocoa producers' data by region, production practices, productivity, etc. to create meaningful insights on cocoa key performance indicators (KPIs). Similarly, extension services, non-governmental organisations (NGOs) and research institutions could use data insights to train models to recognise large-scale patterns or to target their efforts on farmers who would benefit from their services (Atik, 2022; Chamorro-Padial et al., 2025).
2) A data enhanced product adds additional value-enhancing information and insights. For example, chocolate manufacturers could provide supplementary insights into their products by adding information about the origin of the cocoa beans and the production practices to their labels. This would enable them to accrue a premium price.
3) Data driven services use insights from multiple sources of data to develop a solution to address problems or render services. Data insight on production behaviour can help predict future behaviour of producers to develop a service or a product that solves production problems (Bataineh et al., 2020). For instance, insurance providers could use data insights to identify high-risk areas and adjust premiums accordingly. Investors looking for new land acquisitions could use insights to inform their decisions and prospective investment returns.
4) Data driven performance outcomes combine stages of the continuum, e.g. cocoa production practices, consumer preferences and market trends to provide insights and improve performance outcomes (Lepenioti et al., 2020). Companies can use data to optimise products and resources, enhance customer experience and track long-term trends to anticipate market demands and refine their offerings. Researchers and policymakers can use data insights to predict production and behavioural patterns and inform evidence-based decisions that drive productivity and sustainability (Uyar et al., 2024).

However, transforming data into a marketable commodity requires strong data capabilities, including data literacy and technological know-how. It also requires upfront investment in research and development, as well as digital technologies and safeguards to address potential risks (Bataineh et al., 2020; Markfort et al., 2022; O'Hara, 2020; Steinke et al., 2024; Sweeney, 2002). In addition, measures to secure data from unauthorised access can cause substantial investment costs (Gopal et al., 2024). Table 1 presents an analysis of the minimum data required for each stage of the continuum, data capability needs, potential data buyers, risks and example safeguards.

3. Data protection

Scholars have warned that data can be (mis)used for surveillance, commercial exploitation, or even political influence (Zuboff, 2020). As the People's Republic of China's president Xi Jinping allegedly said some years ago, "whoever controls data will have the initiative" (Wei, 2021). Indeed, the EU, China, and the USA have created three major data

Box 1
Distributional effects of compliance costs

We assume there is a market on which commodity producers are the suppliers and EU importers represent the demand side. Fig. 1 shows four different scenarios with differing assumptions on supply and demand elasticities. In each scenario, there is an initial market equilibrium (P^0,Q^0). Adding the compliance cost shifts the supply curve upward (S^0 to S^1, the shift is identical across all four scenarios of Fig. 1). This shift results in a new equilibrium with the demand curve, with a resulting decrease in quantity from Q^0 to Q^1, and diverging prices for suppliers ($P^1_{producers}$) and importers ($P^1_{importers}$). The magnitudes of the quantity and price effects depend on the supply and demand elasticities.

In scenarios A and D of Fig. 1, the burden of the compliance cost is shared equally between producers and importers because the supply and demand elasticities are equal in absolute terms. In the other two scenarios, the burden is higher for the supply chain actors with the less elastic supply, i.e. in scenario B, the producers have a higher burden and in scenario C, importers bear the brunt.

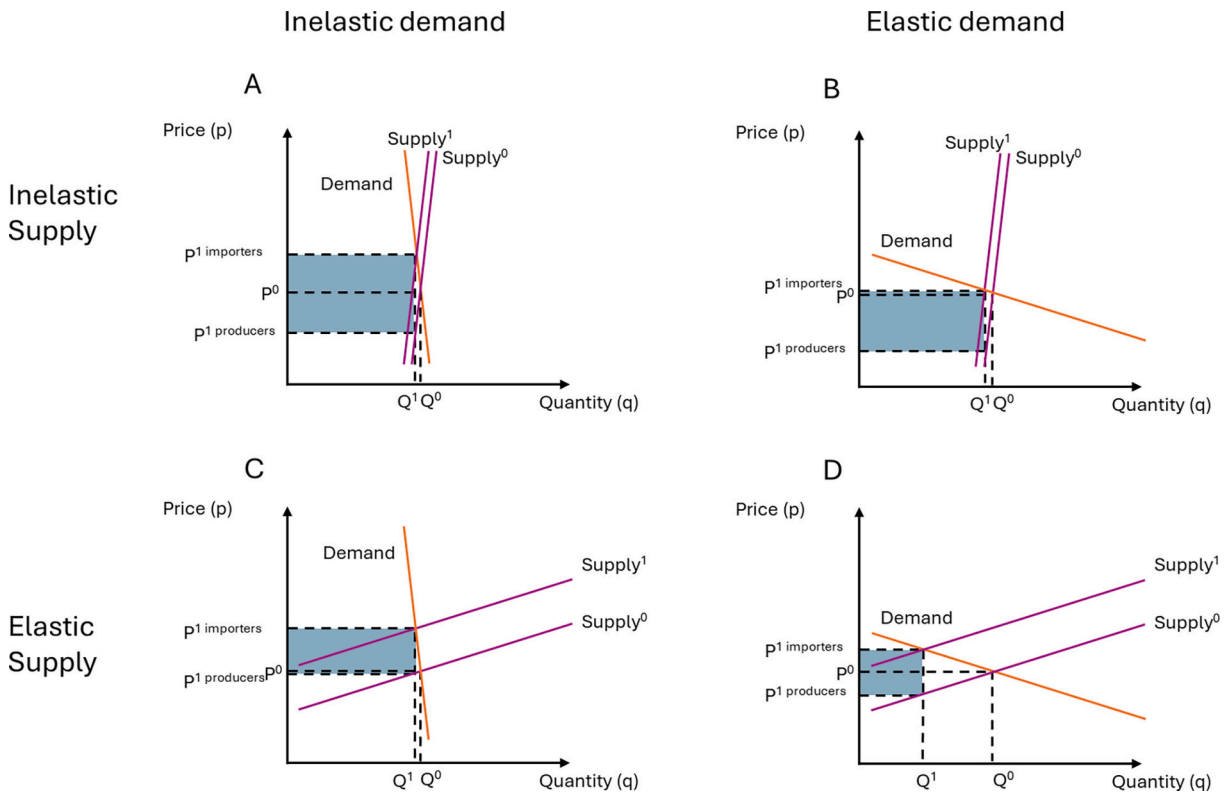

Fig. 1. Compliance costs and their distributional effects.
Source: authors' own drawing.

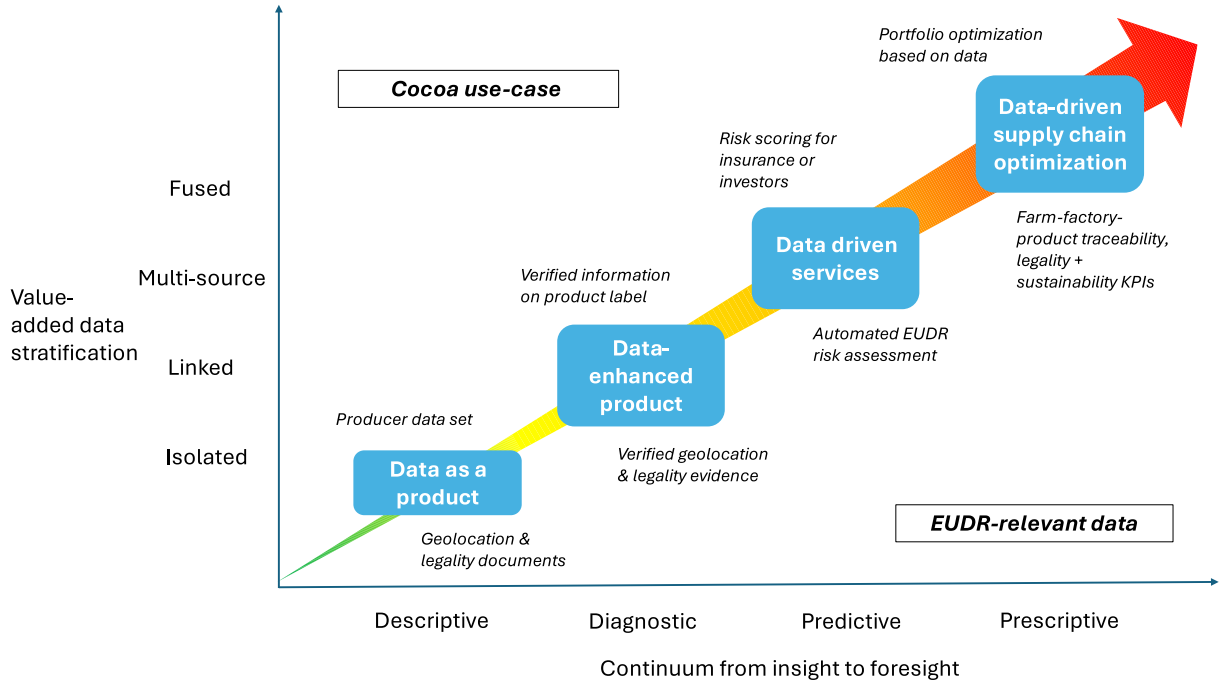

Fig. 2. Data products from information to dynamic optimisation, adapted from Ritala et al. (2024).

governance realms which their partners must adapt to (Aaronson and Leblond, 2018). In the EU, the General Data Protection Regulation (GDPR) gives fundamental rights and control over personal data to the primary owners (data subjects) (Regulation (EU) 2016/679). The GDPR protects the personal data of EU residents, as well as that of residents of third countries once it enters the EU. Although the scope of the EUDR does not directly require personal data per se, personal data includes information about an identified or identifiable individual (CNIL, 2024b). If information provided for EUDR compliance e.g. geolocation data or supply chain documents can be cross-checked to identify a farm or an individual, it can be considered personal data. In addition, the EU Data Act, applicable since 12.09.2025, regulates access and use of both

Table 1
Cocoa use-case framework for EUDR compliance data monetisation.

[d]Monetisation mode	Illustrative cocoa use-case	[a,c]EUDR-relevant data	Minimum data requirements	[g]Capabilities needed	[f]Value mechanism (who pays/why)	[j]Potential risks	[b,e,i]Safeguards
1) Data as a product	Producer data set e.g. region, practice, productivity, yield gaps	Geolocation of plots, legality and traceability documents	Cleaned, aggregated, anonymised cocoa farmers' data	Data governance, anonymisation or aggregation, metadata management, upfront investment	Government agencies, research institutions, NGOs, traders for benchmarking and targeting, train model about large scale patterns	*Re*-identification, misuse beyond license scope, exploitation, privacy violations	Aggregation thresholds, anonymisation, audits, consent registry, Data use/sharing agreement (DUA), prohibit incompatible re-use, fair benefit sharing e.g. grant free access of raw data, option to withdraw
2) Data-enhanced product	Chocolate Stock Keeping Unit (SKU) with verified origin, farm-practice attributes on package	Verified geolocation, traceability and legality evidence	Attribute model linking batch to farms, verification track	Attribute verification, label governance, consent management	Consumers pay price premium for origin & sustainability claim	Greenwashing, loss of consumer and investor trust	Third-party verification, claims standard, independent audits, QR-code linked disclosure
3) Data-driven services	Production and practice history, weather or remote-sensing data, risk scoring for insurance or investors, advisory that tailors inputs to predict behaviour	Aggregated geolocation and legality data packages	Explainability outputs and performance baselines	Machine-learning modelling & validation	Insurers, investors, NGOs etc. for risk management solutions, accurate demand forecast, risk pricing or yield uplift	Discriminatory/ biased pricing, model drift, opaque decisions	Explainability/ interpretability reviews, restrict non-EU transfers where protection is inadequate, blockchain technology, Internet of Things
4)[h] Data-driven performance outcomes	Portfolio optimisation using fused farm, market and consumer data	Automatic risk assessment, farm-factory traceability, legality and sustainability key performance indicators (KPIs)	Fused multi-source datasets, scenario library, decision rules linked to profit and loss	Data warehousing, optimisation, scenario analytics, change management	Cost improvements and strategic advantage	Competitive sensitivity, coordination failures	Data-sharing contracts, role-based access, change governance, code of conduct, regular audits, blockchain

The four monetisation modes follow established business to business (B2B) data-value typologies to translate and monetise the generated EUDR compliance data (Ritala et al., 2024). The EUDR-relevant data inputs reflect the Regulation's geolocation and legality requirements. Safeguards draw on the General Data Protection Regulation, compatible anonymisation principles, the EU Data Act and the OECD–FAO due-diligence guidance for contractual controls, verification and disclosure.

[a] EUDR relevant data: Operators must collect geolocation of plot of harvest/production and legality/traceability documentation prior to placing products on the EU market (European Commission, 2025b; Regulation (EU) 2023/1115).

[b] Data sharing & contracts: EU Data Act sets fair-access and use conditions for non-personal data, supporting Data Use Agreements, purpose limitation and role-based access (Regulation (EU) 2016/679; Regulation (EU) 2023/2854, 2023; Šestak and Copot, 2023; van der Burg et al., 2021).

[c] Due-diligence system: OECD–FAO Business Handbook details steps of risk-based due diligence, traceability/geolocation, supplier documentation and verification and disclosure of good practice (OECD/FAO, 2023).

[d] Monetisation modes: The four-part typology, data as a product, data-enhanced product, data-driven services, data-driven performance outcomes are driven from Ritala et al. (2024).

[e] Anonymisation/aggregation: The k-anonymity and related controls are used to reduce re-identification risks when sharing or aggregating producer data (Sweeney, 2002).

[f] Who pays: Consumers pay premiums for traceability/sustainability claim. On-pack/QR-code disclosure is a recognised channel to convey verified attributes (Chamorro-Padial et al., 2025; Li et al., 2024; Tran et al., 2024).

[g] Risk analytics: Machine-learning for supply-chain risk requires model validation/monitoring via explainability/ interpretability to avoid bias and ensure reliable scores for insurers/investors who might want to buy aggregated data (Nezianya et al., 2024).

[h] Performance outcomes: Digital traceability and integrated data flows improve operational efficiency/quality and support portfolio optimisation and performance management (Verna et al., 2025).

[i] Considerations for the data subjects and benefit sharing (Delacroix and Lawrence, 2019; O'Hara, 2020; Ruder and Wittman, 2025; Šestak and Copot, 2023).

[j] Potential risks: Inconsistent or misleading claims, data breaches, or opaque models can erode consumer trust and investor confidence. Linking data attributes can help re-identify producers, exposing them to targeted exploitation (Barocas and Selbst, 2016; Delmas and Burbano, 2011; Rudin, 2019; Sweeney, 2002; van der Burg et al., 2021).

personal and non-personal data within the EU. It also clarifies the conditions of processing, adding value and transferring data outside of the EU (Regulation (EU) 2023/2854, 2023).

Thus, while the EU is meticulous about data security when transferring personal data from EU citizens to third countries, data security in third countries is of lesser concern to the EU when requesting the collection of sustainability information. Indeed, compared to EU standards, the data protection laws in countries producing EUDR-relevant commodities are often far less stringent, if existent at all (Chamorro-Padial et al., 2025).

In 2023, the EU imported €115 billion worth of EUDR-relevant commodities from 207 countries and territories outside of the EU (United Nations, 2024). Fig. 3 shows the share of this total value originating from countries with differing levels of data protection adequacy as defined by the EU (CNIL, 2024a; United Nations, 2024). Data adequacy implies a level of protection that is substantially equivalent to that in the EU, allowing the transfer of EU citizens' personal data to that country without additional requirements (CNIL, 2024a; Greenleaf and Cottier, 2022). In evaluating a third country's data adequacy, the EU considers its respect for the rule of law, the supervisory authority's

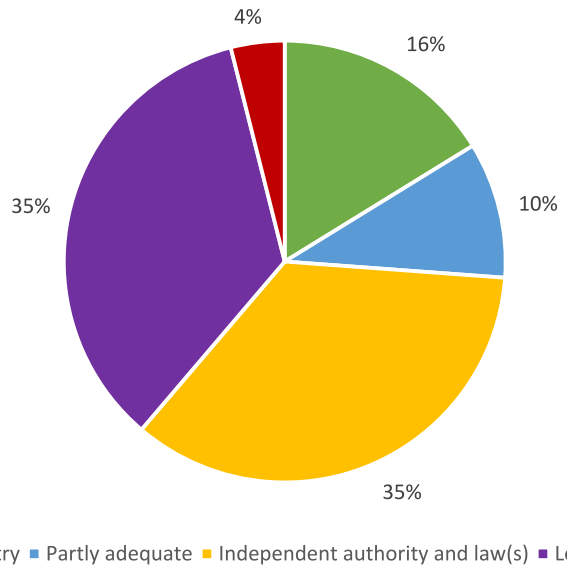

Fig. 3. Share of value of EUDR relevant imports from countries with (in)adequate data protection laws based on UN Comtrade data for the year 2023 and CNIL data, Source: (CNIL, 2024a; United Nations, 2024).

effective functioning and independence, and the international commitment to the development of data protection [GDPR Art. 45(2)].

Fig. 3 shows that, in 2023, 84% of the EU's imports of EUDR-relevant commodities came from jurisdictions without adequate data protection under EU law (CNIL, 2024a; United Nations, 2024). Specifically, 70% of these jurisdictions have laws and/or authorities that are not deemed adequate, 4% have no laws and 10% have laws that are only partially adequate. Only 16% originated from adequate data protection regimes. In other words, for every €1 sourced from adequate jurisdictions, about €5.25 come from non-adequate sources. This situation may increase risks regarding data privacy and -exploitation outside EU-adequate frameworks.

We assume that without adequate laws, the prospects for effective protection of producers' data for EUDR compliance are grim. This may open doors to potential data exploitation, commercialisation of essential sustainability information and unauthorised use of data that, for example, may inform those who pursue land grabbing intentions. To avoid these risks, while still recognising producers' cost burdens, we separate two categories for potential data monetisation:

Tier one is the core compliance data of the EUDR, e.g. geolocation and legality documentation, which serves a public-interest oversight function. This tier could enable regulatory oversight for monitoring, environmental protection and market entry and should not be sold. We propose monetisation of tier two data, which concerns value-added and anonymised analytics that employ aggregated benchmarking, advisory scores and optimisation tools derived from multiple data sources. Monetisation of tier two could be considered if safeguards such as those outlined in Table 1 are met.

4. Discussion

Above, we argued that the commercialisation of data collected for EUDR compliance could be an opportunity for producer countries. However, selling data may still be a bumpy rather than a smooth road to success. Initial efforts to sell data, like Microsoft's Azure DataMarket (launched 2010) and Kasabi (started in 2011, discontinued in 2012) failed due to low enterprise interest and difficulties in addressing diversified data requirements (Johnston, 2022). Presently, the data market is gaining traction as revealed by a recent empirical study of 451 data-driven organisations. More than a third of the respondents (38%), see data monetisation as one of their top five strategic priorities for the next three years (Johnston, 2022).

Our analysis further revealed that a large volume of commodities regulated by the EUDR is exported by countries with weak governance arrangements on data protection (CNIL, 2024a). This is reason for concern because the EU's rigid one-size-fits-all compliance requirements are placing producers in a dilemma in which they are urged into providing data despite having concerns over the security of sensitive commercial and personal information (Sevilla et al., 2025).

Viewed through this lens, the EUDR may be perpetuating power asymmetries by dictating trade rules to producers (Samriddhi, 2025). Some authors describe this as the coloniality of mandating behavioural change, where the colonial legacy continues to influence the distribution of power and shapes decisions (Collins et al., 2021; Kuhl et al., 2025). This situation as observed deepens inequalities and vulnerabilities as decision-making becomes external to the local context, leading to more global injustice (Collins et al., 2021; Kuhl et al., 2025; Manahan et al., 2024). Regulations such as the EUDR may thus fail to achieve their objectives and encourage redirection of non-compliant goods towards markets with lower sustainability requirements (Sevilla et al., 2025).

We argue that producer countries and regional as well as subregional bodies could co-design a more robust multi-level ethical data governance and management regime for effective compliance with sustainability requirements (Liu, 2022; Ruder and Wittman, 2025; Steinke et al., 2024).

A multi-level approach could foster consistency, improve efficiency and avoid fragmentation across jurisdictions (OECD, 2019). However, care must be taken to avoid static regulations and rather design an adaptive governance framework that is sufficiently flexible to cater for rapid developments especially in the artificial intelligence domain (Sayan and Bueechl, 2025).

Within such a framework, producer country governments could step up their efforts in harmonising and developing robust data protection regimes (Greenleaf and Cottier, 2022). This could be about turning EUDR compliance from a high-cost obligation into a win-win situation, protecting producers‘rights and enhancing benefits (Wilhelm, 2024) A priority will be to harmonise basic privacy rules, establishing consistent provisions for cross-border data flows and consenting to the access and use of data (Babalola, 2024; Delacroix and Lawrence, 2019). A second approach is building shared compliance data spaces such as national registries for geolocation, like in the case of Brazil, to enable verification of compliance (Jung et al., 2017; Sevilla et al., 2025) without centralising raw producer data or compromising confidentiality (Dembani et al., 2025; McDermott et al., 2025). Third, producer countries should

address corruption to gain recognition for audits and credibility of certification schemes anchored in sustainability standards and conformity assessments (Castka et al., 2023; Hassani et al., 2021; Nygaard, 2023). This would cut duplicative costs for audits and facilitate trade with the EU as well as other trade partners (Greenleaf and Cottier, 2022; Pham et al., 2025).

At the international level, regional bodies such as the African Union, ASEAN or sub-regional economic communities could increase efforts to develop new frameworks that support producer countries in developing consistent data governance regimes. First, regional bodies could establish a forum of data-protection authorities to coordinate enforcement and redress (Greenleaf and Cottier, 2022). Thus, producers are not locked into bespoke buyer terms. Second, programs like the EU's Team Europe Initiative could upscale support for producers through measures such as training programs and joint procurement of traceability tools (Burni et al., 2022; Directorate-General for International Partnerships, 2023; McDermott et al., 2025; Steinke et al., 2024). While participation in these initiatives is at the discretion of the producer countries [EUDR-Recital 29], broader awareness-raising by the EU is imperative to encourage wider coverage and ensure the fair and inclusive implementation of the Regulation (Srivastava and Banerjee, 2025). Similarly, producer countries should collaborate with the EU for expanded and targeted technical and financial support through existing initiatives to develop robust traceability systems (Muradian et al., 2025; Srivastava and Banerjee, 2025). For instance, together with the EU, producer countries could define clear requirements for the data and documents needed for each country, like the Country Conclusions and Country Profile, developed for some countries under the EUTR (EUTR Expert Group, 2020; UNEP-WCMC, 2018). Finally, any data monetisation should be paired with benefit-sharing, producer consent and sovereign oversight to avoid undesirable outcomes in the growing field of data transfer (Gani and Marshall, 2022). Specifically, benefit-sharing mechanisms could be executed by producer-controlled intermediaries e.g., cooperatives or data trusts, that set purpose-limited access and use conditions for shared datasets (Delacroix and Lawrence, 2019; Šestak and Copot, 2023; van der Burg et al., 2021). Likewise, buyers of data-enhanced claims or services can adopt revenue-sharing contracts with explicit minimum producer shares e.g., a certain percentage of ex-factory price or net surplus, and transparent escrowed payouts, consistent with supply chain coordination literature and cooperative-centred models (Šestak and Copot, 2023; van der Burg et al., 2021).

5. Conclusions

The EUDR has been analysed through different lenses e.g. human right and environmental due diligence (Solar et al., 2025) or radical transformation (Verhaeghe and Ramcilovic-Suominen, 2024), and compared to other supply chain legislations and voluntary sustainability standards (Cosimo et al., 2024; Partzsch, 2025). This article complements existing work by applying an economic lens to analyse the implications of compliance data requirements. We investigated how the distribution of the administrative cost depends on the supply and demand elasticities, outlined possibilities for data monetisation and assessed data protection issues. We derive the following four main conclusions:

Firstly, in our small comparative statics analysis, we found that the compliance cost may give rise to unintended price and quantity effects. Price effects play out especially if consumers are elastic, i.e. can quickly shift to a substitute product while producers are confronted with path dependencies. Quantity effects are of concern when producers' supply is elastic and the substitute is an illicit commodity. We recommend that EU and producer country governments should vigilantly observe for such undesirable shifts. Counter measures could include EU co-financing of compliance cost or programs to support the cultivation of legal substitute commodities. However, it is important to note that this analysis was done from a forward-looking perspective and remains purely conceptual. Prior to the implementation of the EUDR, the findings of the comparative statics analysis obviously cannot be tested empirically.

Secondly, we discuss data monetisation as a potential way to offset producer costs of collecting EUDR compliance data. However, this pathway requires very careful consideration of the risks outlined. While selling data can be an opportunity, it is key that this business is conducted under a robust data governance framework that was deliberated with producers, especially in contexts of still nascent and emerging national data laws and authorities.

Thirdly, empirical evidence on whether analytics materially offset compliance costs without creating privacy concerns (Liu, 2022) or equity risks remains limited. We therefore recommend pilot projects with independent evaluation before data commercialisation. This will help to ensure that progress on the EUDR is consistent with fairness, inclusion and the broader aims of sustainable global value chains.

Fourthly, we argue that data justice is a relevant instrument with various dimensions: procedural, instrumental, distributive, rights-based and structural (Ruder and Wittman, 2025). It can be defined as ‘fairness in the way people are made visible, represented and treated as a result of their production of digital data’ (Taylor, 2017) and revolves around giving people choices of being (in)visible, (dis)engaging with technology as well as antidiscrimination. We emphasise data justice as a focal point for governance. Hence, integrating it into extension work and raising awareness on data rights and responsibilities among producers could advance fair use and equitable benefit sharing (Ofulue and Benyoucef, 2024; Ruder and Wittman, 2025).

Future research could evaluate the benefits of traceability-based datafication of sustainability transition policies and the potential of jurisdictional approaches to reduce compliance complexity for smallholders. Furthermore, research should explore privacy-preserving data technologies to strengthen protection and fairness in the use of big data (Tajabadi et al., 2024). Finally, producer countries, especially African countries, should see the EUDR as an opportunity to strengthen regional integration and to focus more on intra-continental trade, to prospectively reduce dependency on foreign trade partners like the EU.

CRediT authorship contribution statement

Lydia Afriyie-Kraft: Writing – original draft, Methodology, Investigation, Formal analysis, Conceptualization. **Astrid Zabel:** Writing – original draft, Supervision, Funding acquisition, Conceptualization. **Thomas Breu:** Writing – review & editing, Supervision, Funding acquisition.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Professor Thomas Breu reports financial support was provided by Velux Stiftung. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

This research was supported by the Velux Stiftung Grant number 2157.

Data availability

No data was used for the research described in the article.

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