AGRICULTURAL POLICIES IN DEBATE

EUDR Adaptation in Brazil
Impact Mitigation and Cooperation

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ABOUT THIS STUDY

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Sumário

Introduction

As one of the key drivers of climate change and biodiversity loss, deforestation has become an important topic on the sustainability agenda. Food production is central to this debate, as the agricultural sector now stands in a position to both mitigate and aggravate current deforestation problems. The interconnectedness of global production and consumption of agricultural commodities means that decisions made in one part of the world can have strong impacts on distant actors linked through the networks of global supply chains (Eakin et al. 2017; Liu et al. 2013). The governance of challenges associated with commodity-driven deforestation has therefore also disseminated beyond where production takes place and now involves a diverse set of actors along food chains. In recent decades, many transborder initiatives to confront the link between agriculture and deforestation have relied on voluntary action by players within the sector. To combat forest loss, buyers in high-income countries are also increasingly conditioning market access upon sustainability compliance. However, continued spikes in deforestation rates in recent years have meant that some countries have begun resorting to legally binding regulations to limit the deforestation footprint of agricultural products. As part of these trends, mandatory due diligence for supply chains has been adopted by different countries and regions with the goal of ensuring compliant imports.

The European Union Deforestation Regulation (EUDR) stands as the most ambitious attempt thus far to institute binding legislation to confront deforestation embodied in agricultural imports and exports. The three key pillars of the EUDR are based on demands for 1) adherence to relevant producer country legislation, 2) a 2020 cut-off date for deforestation, and 3) demand for a due diligence procedure for social and environmental risks. As an important agricultural supplier to the European Union, Brazil would be strongly affected by the EUDR, as exporters will need to adapt to these regulations to maintain European market access. A large amount of deforestation in Brazil can be ascribed to the commodities covered by the EUDR (namely soy and beef), and agriculture has historically - and up until today - been closely linked to native vegetation loss (Rajão et al. 2020; Strassburg et al. 2017; Pendrill et al. 2019). However, as we show in a companion study to this report, it is still relatively uncertain whether the EUDR will have a significant impact on deforestation in Brazil, due to insufficient EU market leverage, market leakage risks, and incentive problems (Soendergaard & De Sá, 2023). Moreover, in a Brazilian context, the EUDR also entails risks related to

value chain exclusion of small- and medium-sized producers and intermediaries in certain sectors, supply chain disruptions, and producer pushback. **This report seeks to provide insights into how these risks can be mitigated in the process of adaptation to the EUDR in Brazil, and how cooperative measures can help ensure compliance and sustainable agricultural production**. In the current situation, in which the regulation will become effective from 2025, we thereby seek to provide constructive input to debates about the risks associated with the impacts of the EUDR in producer countries. In that regard, we seek to assess the potential of traceability, technical assistance, and possible initiatives under Article 30 of the EUDR, which focuses on cooperation with producer countries. Our goal is thereby to shed light on how partnership approaches can help to spur best practices and transparency among the most vulnerable groups concerning the EUDR adoption implications. The remainder of the introduction presents the risks and dilemmas of the EUDR and the report's methodology. The sections thereafter treat some of the key challenges of the regulation in the Brazilian context, which is followed by an assessment of mitigation measures and cooperative approaches. The report concludes with key points and policy recommendations.

Risks and Dilemmas of the EUDR

The EUDR builds on a regulatory movement towards confronting deforestation that encompasses the Forest Law Enforcement and Governance (FLEGT - 2005), the EU Timber Regulation (EUTR - 2010), as well as the Action Plan and related voluntary partnership agreements (VPAs) with producer countries. The EUDR nonetheless differs fundamentally from earlier regulations as it represents a paradigmatic shift away from relying on home country legislation to de-facto mandating the implementation of sustainability standards defined by the EU (Duran & Scott 2021, p. 10). It is thereby part of a wider regulatory movement towards inserting due diligence legislation for transborder commodity flows within a hard-law basis of domestic legislation (Berning & Sotirov 2023; Rudloff 2022, p. 3; Weiss et al. 2022). In a global context in which multilateral institutions are challenged (Debre & Dijkstra 2022; Fehl & Thimm, 2019), the EUDR thus constitutes an attempt to confront the "wickedness" of the global deforestation problems through unilateral European action (Henn, 2021, p. 338). This also raises certain questions related to compatibility with existing multilateral trade rules, which could be addressed in the years ahead (Capuzzi, 2023). The legislative formation process stands as a response to strong internal European demands emanating from civil society and

the NGO community for the EU to halt the import of commodities associated with global forest loss (Plea to end deforestation 2019; Schilling-Vacaflor & Lenschow, 2021). The public consultations during the legislative formation process received nearly 1.2 million responses, reflecting a strong engagement on behalf of domestic constituents (WWF, 2020). The EUDR has been estimated to hold the potential to protect 71,920 hectares of forest annually (CDP, 2022), as the EU along with China stands as the largest global importer of embodied deforestation from forest-risk commodities (Li et al, 2022).

Proponents of the EUDR have stressed the importance of mandatory due diligence rules, and to thereby moving away from previous voluntary commitments and towards hard environmental compliance (Bager et al. 2021, p. 301; Brandt et al. 2022; Partiti 2020). Strong calls have also argued in favor of expanding the regulation's scope to include a stronger focus on human rights (Client Earth 2021; Schilling-Vacaflor & Gustaffson 2024; Massaranti et al. 2022 p. 25), as well as other biomes (FERN, 2022) or commodities (Powell et al., 2023). Hopes have also been raised that the EUDR could produce a so-called "Brussels Effect" with the regulation inspiring similar legislation in other countries and global regions (Partiti 2021, p. 172; Vasconcellos et al. 2024). Regarding other biomes, the EUDR encompasses the Amazon, as well as parts of other biomes, depending on the level of forest cover. From June 2025, the regulation will be revised to potentially include other biomes. This could be important to ensure that deforestation currently taking place in the Cerrado and Pantanal biome will not be intensified because of leakage from the Amazon. It is noteworthy that nearly all deforestation in the Amazon forest is illegal or irregular deforestation, while a part of the clearances of native vegetation Cerrado, occurs in accordance with the Brazilian Forest Code, albeit illegal deforestation also is widespread within this biome (Valdiones et al. 2021).

The EUDR has also raised critical voices and a range of different concerns related to its potential effect. A crucial point in this regard relates to the potential for **market exclusion**, not least in the case of smallholders (IDH 2022; Angel & Kurniawati 2023; Hasan et al. 2022; Karsenty 2022 p. 130). Another risk that could compromise the effect of the EUDR relates to **market leakage**, which could happen if non-compliant products are re-directed towards less demanding markets and little or no reduction in deforestation occurs (Chun et al. 2023; Villoria et al. 2022). Important questions have been raised concerning the **cost-effectiveness** of the instruments chosen under the EUDR, and how burdens of implementation would be allocated amongst actors along the supply chain (Bellfield et al. 2022; Sellare & Borner 2022). Finally, the **unilateral approach** to

adopting the EUDR through a process in which many of the affected producer countries felt largely excluded, could also undermine its legitimacy amongst producers, besides potentially compromising its effect (Saltness et al. forthcoming; Oegroseno, 2023).

Faced with the challenges of averting the negative risks associated with the process of EUDR adaptation, different lines of action have been highlighted by specialists and researchers. Key amongst them is the increased attention to improving partnerships and engaging in meaningful dialogue with producer countries to avoid negative social and economic consequences (Bellfield et al. 2022; Oliveira et al. 2024; TNC 2022; FERN 2022; Li et al. 2022; Sielski 2023). In this regard, the regulation's legitimacy appears to hinge on its context-sensitivity in relation to the diverse realities in producer countries (Schilling-Vacaflor & Lenschow 2021). This underscores the importance of paying attention to the complex local drivers of deforestation and land-use change, and how they interact with the effects of the EUDR. Hence, **mitigation** and **cooperation measures** may prove to be a critical element to both avoid existing risks related to the regulation and to reduce the costs associated with the process of adaptation, especially to the smallholders.

Methodology

This report is part of a commissioned research project conducted by the authors in cooperation with the Agricultural Policy Dialogue Brazil-Germany (APD). Along with its companion report, this study seeks to evaluate the likely impact and the key dilemmas of the EUDR. As the regulation will become effective from 2025, the aim is to "foresee" its future implications in order to generate a concrete basis for current discussions about its consequences. This was done through interviews with key stakeholders from the soy and beef sectors in Brazil and the Conosur region. From April 2023 to March 2024, 27 interviews were conducted with sectoral representatives, NGOs, public policymakers, diplomats, consultants, and smallholder producers. The interviews were conducted in two rounds with sets of questions addressing the likely consequences of the regulation (Round 1 from April-July 2023) as well as the opportunities for mitigating risks (Round 2 from February-March 2024). All interviews were anonymous, and prior permission to record or annotate the conversations was conceded in all cases. The interviews

adhered to existing guidelines for informed consent[1]. This provided a diverse overview of the challenges and opportunities related to the EUDR in the form of assessments of its impacts and the pathways that should be taken to avert risks and foster positive outcomes. The interviews followed a semi-structured format which permitted each interviewee to express her/his specific key points and to also answer a structured set of questions. While the estimates and suggestions provided by the interviewees diverged on some points, convergences on others made it possible to highlight some issues in relation to which a certain degree of consensus appeared to be evident. The authors also participated in workshops and conferences organized by the APD in Brasília, Brazil, in February 2024, and in Iguazú, Argentina, in March 2024, in which debates took place with the participation of a wide array of stakeholders. This study thereby builds on the key findings from the interviews, workshops, conference participations and grey literature from relevant research institutes, public institutions, and civil society organizations, as well as existing academic studies within the field.

[1] See the Oxford guidelines for oral informed consent in interviews: https://researchsupport.admin.ox.ac.uk/governance/ethics/resources/consent_

Challenges of the EUDR in Brazil

This section outlines the current challenges of EUDR adaptation in a Brazilian context, building mainly on findings from stakeholder interviews. An initial challenge that has become evident from the very outset of the legislative process of defining the EUDR regards the **consultation** (or lack of the same) of actors in producer countries. Shaped by countervailing interests and pressures from domestic constituencies, such as NGOs' demands for mandatory zero-deforestation rules and EU companies' particular economic concerns, the regulation does not appear to have prioritized producer countries' perspectives, albeit some of these states were consulted. However, the general sentiment amongst Brazilian public, private, and civil society actors is that no meaningful or substantial consultations took place. As Brazil and other producer countries stand to be significantly affected due to compliance demands mainly needing to be carried by their producers, lack of inclusion in the deliberations defining the EUDR has been negatively perceived. As part of a group of 17 producer countries, in September 2023 Brazil signed a joint letter that strongly criticized the substance and procedural approach taken to confront deforestation within the EUDR. These sentiments could entail a risk of pushback and an unwillingness to comply with the regulation. This could eventually dilute the regulation's effect on deforestation and disrupt trade flows with the EU. More broadly, this would pose a serious risk to the perceived legitimacy of European environmental policies amongst global partners, and potentially compromise the EU's ability to support crucial agendas such as biodiversity preservation and climate mitigation.

Another key challenge concerning the EUDR relates to concerns about its **effectiveness** in a Brazilian context, - in other words, the degree to which it will serve to reduce deforestation. Consultations across stakeholders from the Brazilian agricultural supply chains, including NGOs, agribusiness, and public actors thus suggest a very limited effect of the regulation on deforestation. This is mainly because **incentives** appear more likely to result in a segregation of non-compliant products away from EU supply chains, rather than a change in the mode of production. This process is also known as leakage. In key sectors of Brazilian agriculture, such as soy and beef, the EU does not hold a market position which would give it enough leverage to disseminate new standards with sector-wide effects, - especially compared to China. Thus, segregation could become a more likely outcome than compliance, as it would still be viable to continue

deforestation for many producers who would redirect exports towards non-compliant markets. This situation is compounded by **logistical challenges** related to the difficulties of segregating products meant for different export destinations. This is particularly relevant with regard to the soy sector, as existing warehouses and transport facilities are not structured to separate compliant and non-compliant soy. This could eventually lead to a process of **regionalization** of sourcing, meaning that sourcing would move to regions without significant deforestation problems. Such an outcome would significantly constrain the effects of the regulation, as it would have very few additionalities compared to the current situation. So, while the EUDR will guarantee post-2020 deforestation-free soy shipments to the EU, it is much more uncertain whether it will result in a decrease in deforestation rates in Brazil.

Another important challenge related to the EUDR regards the **distribution of costs** in the adaptation process. Environmental demands conveyed through global supply chains often result in additional costs for producers in the Global South, while benefits and premiums are reaped by Northern buyers (Partiti 2021, p.149; Ponte 2019a & 2019b). The logistical restructurings, elaboration of detailed compliance documentation, and opportunity costs associated with conservation efforts are some of the costs associated with EUDR adaptation in Brazil. Article 30 of the text does mention the possibility of the EU engaging in different cooperation initiatives with producer countries to support adaptation to the regulation (see next chapter). However, there is a concern regarding the fair distribution of costs throughout the chain. Brazilian authorities have created a platform that would help ensure that part of compliance costs, such as farm polygons and legal adherence documentation can be provided for producers. This does not include risk assessments related to the necessary due diligence statements required by the law. Crucially, there are substantial administrative costs associated with ensuring that all products in shipments bound for the EU are EUDR compliant. These expenses increase further with the number of small suppliers within the chain. Combined with the potential costs associated with non-compliance, this could spur traders to prioritize large producers in consolidated production regions within their supply chains, making **market-exclusion** of small- and medium sized producers and distributors more likely. In other words, the larger the number of producers supplying the products within single shipments, the larger the risk of non-compliance, and the larger costs of documental analysis. Costs associated with supplying the EU could potentially be passed on through a higher price of EUDR-compliant products, but this depends on the demand and

willingness of EU buyers to incur these costs. Preliminary estimates suggest that these costs could amount to 5-10% of the current price. If sourcing agents in the EU shift to other global suppliers, Brazilian exporters would incur the costs of a decreased European market share.

As actors seek to comply with the EUDR, a range of immediate **implementation challenges** are also evident. The large number of **indirect suppliers** within different agricultural commodity chains could well provide a significant obstacle to traceability. This challenge is particularly pronounced within the beef sector, where cattle can pass through 5-6 different rural properties before reaching slaughterhouses. Soy chains, from farmgate to the point of export are shorter, but in some regions, the universe of producers supplying intermediaries such as elevators and cooperatives is very large. The many suppliers that each would have to document compliance, as well as the limited administrative capacities of small- and medium-sized producers could mean that exporters will try to exclude them because of **risk aversion**. Risk aversion by traders could spur efforts to **limit transactions** between these actors to maintain a "closed system" around their own sourcing. Long chains (i.e. a larger number of intermediaries) will likely also generate higher transaction costs, especially due to more expensive contracts. This would feed a **vertical integration trend** to reduce transaction costs.

Compliance procedures and criteria are also still unclear. Stakeholders consulted have highlighted how divergences between different **satellite monitoring systems** have led to the detection of forest clearances by one system, but not by another. Low-quality maps are another factor which results in uncertainties concerning deforestation detection. Different interviewees pointed to both problems being evident in the case of the EU Copernicus System. There are also different knowledge gaps regarding the traceability solutions adopted and a need for clarification on how information should be organized to be placed in the EUDR data system. For **human rights compliance**, *in locu* verification would be necessary to definitively verify basic issues, such as working conditions, pay, safety, etc. This is likely to be a costly and prolonged process. Therefore, the most viable option appears to be the demonstration of the absence of legal non-compliance, although this is a less robust approach. Identification of human rights compliance is much more complex than detection of deforestation. The development of systems to ensure human rights compliance in accordance with 'relevant legislation of the country of production' (Art.2 (40)) has lacked priority from both producer country governments as well as EU institutions.

Another challenge is to ensure that **sensitive information** about farm geolocation, polygons, plots of land, production volumes and producer identification remains undisclosed for the actors along the supply chain. This is important because disclosure of this information could potentially distort the competitive position of actors upstream. **Gaining producers' confidence** and persuading them to move towards compliance is also key. If traceability is perceived as a top-down imposition on behalf of foreign countries, there is likely to be much more resistance towards adopting existing traceability systems at the producer level. Finally, some sectoral representatives in Brazil have been advocating for a **transition period** to gradually adapt to the EUDR, considering industry-specific nuances. For instance, the livestock sector contends that the compliance requirements for producers would affect animals that have already been born and, therefore, cannot be fitted within the due diligence demands.

In sum, at the moment of writing in mid-2024, a broad array of challenges remains with regard to the EUDR, related to both its legitimacy, efficiency, and implementation. This raises a series of questions concerning which measures can be taken to mitigate the risks and costs associated with the regulation, as it will become effective from 2025. Consequently, cooperation around key challenges such as traceability and technical assistance becomes necessary to support any compliance effects the regulation might have. This is the focus of the next section.

How to adapt?

Besides discussing the potential risks and challenges of the EUDR, its imminent implementation underscores the need to identify concrete measures to ensure a smooth entry into force. To facilitate this transition, specific actions can be taken. These include supporting traceability adoption among Brazilian supply chain stakeholders, and providing assistance during implementation together with other complementary measures. In the following sections, we explore how these efforts can be undertaken both within the scope of Article 30 of the regulation and beyond.

Technical assistance for supply chain inclusion

Article 30 of the EUDR states that through partnerships and cooperation mechanisms, efforts will be made to jointly address the underlying causes of deforestation and forest degradation. The Commission hereby seeks to create a comprehensive strategic framework within the EU for engaging in initiatives that prioritize the conservation, restoration, and sustainable utilization of forests, as well as the transition to sustainable commodity production, consumption, processing, and trade. Special attention will be given to the needs of indigenous peoples, local communities, and smallholders. **Technical support** is an important factor spurring the ability of these minority groups to adopt modern and sustainable production practices. At the farm level, EUDR implementation entails adopting unfamiliar routines, practices, and technologies, including assistance with legal requirements and the implementation of traceability technologies in the beef sector. Technical assistance should thereby be viewed as a cooperative pathway which could be embraced within the scope of the EUDR. Moreover, the implementation of practices and technologies such as pasture recovery, integrated systems, and regenerative agriculture requires strong technical support. The provision of localized extension services to groups not yet assisted by private or public schemes could thereby provide a pathway for further collaboration.

Agriculture in Brazil is marked by the co-existence of farms adopting cutting-edge practices, while others rely on extensive, low-productivity modes of production (Sá et al. 2023a). This structural heterogeneity is mostly due to the absorptive capacity of farmers. Those who have had the means to adopt modern technology-oriented production

systems have generally achieved high productivity growth and thus been able to prosper (Chaddad, 2016). The Brazilian livestock sector illustrates the heterogeneity of rural Brazil, with the coexistence of ranchers who rely on deforestation to expand low-yielding production areas with those who make use of modern practices for pasture management, integration with crops and forestry, and feed supplementation with agricultural co-products (Sá et al. 2023a). In this regard, the beef sector has a large potential for improved technical management. Sustainable intensification of beef production is key to raising profit margins and pasture recovery is central to this strategy - even more so considering the recovery target of 40 million hectares within the government recovery program for degraded pasturelands carried out by the Ministry of Agriculture and Livestock (MAPA). Technical assistance is, therefore, crucial as it can support farmers to yield superior profits and sustainability performance. Bragança et al. (2022) demonstrate that personalized training and technical assistance for Brazilian ranchers in sustainable pasture restoration provides long-term economic and environmental benefits. Producers in the Cerrado have thereby been able to raise productivity and achieve a 39% income increase. After two years of training, ranchers have increased outputs and profits and reduced GHG emissions. Successful experiences with the provision of rural extension services for smallholders in the Amazon have resulted in income increases of around 121% and a corresponding decline in deforestation of 79% (Stabile et al. 2020).

Notwithstanding, in general, many Brazilian farmers have not had access to formal education and technical assistance. The low public investments in services to farmers such as rural education and extension exacerbate this problem. According to the 2017 Brazilian Census of Agriculture, the level of rural education is low: 15% of farm operators have never been to school; only 14% have completed high school, and only 6% have a bachelor's degree. Only 20% of farmers reported receiving technical assistance in 2017, against 24% reported in the previous 2006 Census. This number drops to 10% and 8%, respectively, in the North and Northeast regions. **Technical support is therefore a crucial measure aimed at achieving compliance with the EUDR that should be considered through partnerships and cooperation mechanisms.**

The Role of Traceability

It is widely perceived within the context of the EUDR, that the legislation is driving the adoption of traceability, which is one of the major challenges facing agricultural bulk commodity firms today. Traceability policies play a key role in integrating the various

stakeholders within supply chains, especially in places where such integration is often lacking. However, implementation has proven to be a complex task. Recent developments have shown that farmers must be included from the outset in the process, which begins upstream (Nassar and Custodio, 2023). Therefore, actively supporting the establishment of national traceability systems can significantly enhance transparency and accountability across global supply chains.

In the soy industry, traceability means being able to control the origin by pinpointing the geolocation of the farms, polygons, or plots where soy was produced, and providing information on its trajectory to the ship or processing unit. Animal traceability refers to the ability to identify every animal obtained from each supplier farm. This can be done individually or in batches. In the beef industry, the case is more complex due to the cattle life cycle - from breeding to fattening stage, the animals usually spend time on several properties before reaching meatpackers. Ranchers are normally specialized in one or more stages and don't even sell directly to the processing unit. For this reason, it is challenging to track down indirect suppliers, which allows for cattle laundering - the practice of moving animals between farms to conceal their true origins, which may be illegally deforested land (Gibbs et al., 2016).

Although one positive aspect of the EUDR is that it can support the institutionalization of traceability in supply chains covered by the legislation, ensuring adoption among smaller producers and regional intermediary companies poses an obstacle, as does the understanding of its benefits. There are differing opinions regarding the implementation of traceability systems in Brazil, with approaches ranging from mandatory or voluntary to individual or collective. Sá et al. (2023b) gather perspectives from various stakeholders on a national system for traceability and monitoring within the Brazilian livestock sector. The authors observe that some stakeholders view individual traceability as too costly. This perception could be influenced by regional environmental contexts, suggesting a need for individualized systems in high-risk regions and collective systems in regions with lower environmental risks. Calls have been made within the sector for mechanisms that do not only reduce implementation costs but also distribute them equitably across the different links in the chain. In other words, incentives for adopting a traceability and monitoring system should include means for on-the-ground implementation and distribution of value throughout the chain.

During our interviews with stakeholders within the Brazilian livestock sector, concerns related to the divergence between different databases in terms of land use information and resulting inefficiencies were highlighted. Greater homogenization of information could be reached through consolidation in a single place and by maintaining only one registry for rural properties. Another source of concern refers to the heterogeneity of the livestock sector in Brazil and the need to include smaller producers in a unified solution. Without support, low-profit and low-productive cattle ranches spread across a continent-sized country with varying climate, soil, and infrastructure features create a challenging environment for technology adoption. In this sense, the EU should consider providing support for funding these solutions as a concrete cooperative approach with tangible effects.

Regarding traceability in the beef and leather chain, several initiatives in Brazil have already been mapped (Froehlich et al., 2022). This mapping encompasses perspectives on objectives, scope, coverage, impact, technologies, and costs. Additionally, a number of workshops and proposals to design a national traceability system have been developed by organizations such as the Mesa Brasileira da Pecuária Sustentável, Coalizão Brasil Clima Florestas Agricultura (2024), Coalizão Brasil Clima Florestas Agricultura, Mesa Brasileira da Pecuária Sustentável, Abiove, Abiec, Programa Boi na Linha, GTFI, and Proforest (2023), as well as Insper Agro Global (2023). Consequently, there exists a reasonable volume of consolidated knowledge that could be useful for the EU in the designing of partnership programs to support farmers in adopting traceability schemes.

Complementary Measures to Support Traceability and Inclusion

As treated in the previous section, improving traceability is key to facilitating adaptation to the EUDR, and more broadly, to improve sustainability performance within the sector. Public actors can also play an important role in terms of supporting access to traceability systems. Public databases with detailed information on land-use change, including geolocated polygons, as well as legal conformity at the property level are essential to ensure accessible compliance demonstration, meaning that adherence to traceability systems is simple and financially viable, especially for small- and medium-sized producers. In the case of due diligence statements demanded within the EUDR Article 3(c), private actors may provide services for producers to demonstrate compliance. Yet, the more information

on socio-environmental factors, such as land use change, labor conditions and the presence of indigenous populations that public entities can provide, the more accessible and robust the due diligence statement will be. Close public-private cooperation can still be very important in terms of disseminating traceability and due diligence systems and to improve the quality of the data on which they are based. Moreover, modular and flexible platforms would make it possible to include new commodities and product flows to meet future compliance demands beyond those of the EUDR. This would make it possible to adapt exports to global market trends in a situation in which sustainability issues and environmental concerns become increasingly salient.

A key point in question also regards the interpretations of definitions and the contextual operationalization of the compliance criteria within the EUDR. **Legal compliance** constitutes a key point in this regard. The most viable option will be to rely on existing verification procedures and systems by local/national governments, as interpretations by third parties could lead to much uncertainty. This would avoid ambiguities arising from different interpretations of domestic legislation, and ensure a central place for national authorities and standard interpretations already used in producer countries. However, measures to support legal implementation could be important in this regard, and the demand for compliance with producer country legislation could potentially also boost the rule of law. Another key point in question regards the interpretation of "**negligible risk**" of non-compliance (Article 2(36)). Some interviewees proposed an interpretation of negligible risk that would allow for a transition period when a minimal risk associated with 3% of volumes in 2025, 2% in 2026, and 1 % in 2027 would be deemed acceptable in shipments of bulk commodities. This would lower the risk of non-compliance to thereby facilitate adaptation to the EUDR while guaranteeing compliance of the vast majority of exports. A crucial open question regards how sensitive information about suppliers should be passed on through the chain of custody without being disclosed to all actors within it. This could compromise the competitive position of actors upstream if their sourcing networks were disclosed. To reduce this risk, an important measure would be the creation of data containers in the form of a barcode or a QR code to ensure the anonymization of sensitive information related to producers. In general, ensuring compatibility and streamlined procedures along supply chains seems to be a crucial issue. Finally, the apparent problems of the EU Copernicus **monitoring system** in detecting deforestation and providing detailed maps of land cover pose another challenge. In the specific case of Brazil, elaborate monitoring systems already exist and have received large amounts of investments throughout many years, meaning that these systems have become

highly calibrated. Hence, EU authorities could accept national databases as references for forest cover or deforestation in cases when there is scientific proof of higher classification accuracy of these sources.

Responsibility to ensure a smooth and unproblematic process of implementation and adaptation to the EUDR arguably also lies with European actors. **Article 30** partly addresses these concerns, as it aims to support joint measures within producer countries to confront the root causes of deforestation. The intent is to focalize efforts on areas with particularly complex deforestation problems and to include civil society and local populations in this process. As such, Article 30 provides a potential mechanism for the EU to support both traceability solutions and technical assistance and rural extension as crucial factors in addressing current deforestation problems in Brazil. This could lean on an alternative and supplementary approach to confronting socio-environmental challenges, compared to chain-based market exclusion mechanisms on which the EUDR currently rests. In contrast to this, Article 30 could lay the ground for landscape approaches to ensure compliance, by adopting a bottom-up perspective on inclusive and sustainable development at the local level. While still at an incipient stage of development, such initiatives can address a wider span of sustainability challenges, and thereby reflect a more holistic engagement with the complex realities in sourcing regions. Engaging with the 'messy' realities in sourcing regions may be much more demanding and complex than simply shifting sourcing patterns away from risk-prone regions. Yet, confronting the socio-environmental and economic root causes of deforestation is nonetheless likely to produce more robust and long-term sustainability outcomes. In sum, Article 30 provides a potentially critical tool to distribute the costs and responsibilities of confronting socio-environmental challenges upstream in global supply chains amongst actors throughout the length of the chain. As such, it can also serve to attenuate negative sentiments in producer countries grounded in the perception of having to assume the costs of adaptation. Whether sufficient priority and resources are allocated for this purpose by EU institutions stands as an open question. This highlights the importance of stressing the crucial nature of cooperation in averting risks and exploiting opportunities associated with the EUDR.

Key points and policy recommendations

The European Union Deforestation Regulation aims to institute an unprecedented ambitious legal framework to ensure mandatory compliance for cross-border agricultural commodity flows. A range of challenges and different types of risks can nonetheless be identified as the date when the regulation will apply moves closer. To anticipate and mitigate such impacts, this paper has presented a series of complementary and cooperation measures which can either support positive outcomes of the EUDR or address problems in areas where it could fall short of its stated objectives. The key points and policy recommendations are presented below:

- By instituting a mandatory basis of hard law for compliance of transborder commodity flows, the EUDR responds to many years of largely unsuccessful attempts to confront global deforestation problems through voluntary initiatives.

- Existing studies of the EUDR have detected a potential to confront deforestation embodied in EU agricultural imports, but also point to risks related to market exclusion, effectiveness, cost distribution and the unilateral character which could compromise its legitimacy.

- A companion study to the current report identifies serious challenges associated with the adaptation to the EUDR in Brazil, such as lacking consultation and local pushback, skewed compliance incentives, logistics, regionalization of sourcing, unequal cost distribution, and potential smallholder exclusion.

- Ensuring transparency for the flows of agricultural products is one of the major issues facing agricultural commodity firms. Despite the complexity of implementation in Brazil, a governance framework aiming to universalize traceability is currently under development. Different types of associated costs of adoption are a challenge that could be tackled through collaborative efforts.

- Farmers' ability to adopt modern and sustainable production practices is closely tied to their access to knowledge and technical capacities. Promotion of practices such as pasture recovery, integrated systems, and regenerative agriculture through technical assistance is essential. The provision of these services has demonstrated long-term economic and environmental benefits.

- Ensuring accessible compliance demonstration for farmers is key, meaning that adherence to traceability systems is simple and financially viable, especially for small- and medium-sized producers.

- Beyond the "fixed" substantial elements regulated in the EUDR, there is still some space for the interpretation of specific definitions and operationalizations. For example, a less rigid definition of the notion of "negligible risk" (Article 2(26)) in the initial years could smoothen the process of adaptation to the regulation in producer countries and avert disruption of supply chains.

- Article 30 of the EUDR provides a mechanism for supporting traceability solutions and technical assistance which can work to promote the distribution of costs of adaptation to the regulation throughout agricultural commodity chains, and thereby help to avert negative sentiments and pushback in producer countries.

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