JCMS JOURNAL OF COMMON MARKET STUDIES
UACES
JCMS 2026 Volume 64. Number 2. pp. 811–834
DOI: 10.1111/jcms.70031

Environmental Supply Chain Regulations in a Changing Market Environment: Exploring the EU's Regulatory Power in the Cocoa Sector in Ghana

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Abstract

The article explores the European Union's (EU) regulatory power through supply chain initiatives, in the context of shifting market dynamics towards China and Association of Southeast Asian Nations (ASEAN). Focusing on the EU Regulation on Deforestation-free products (EUDR) and the cocoa sector in Ghana as a most likely case study, the article employs qualitative data from semi-structured interviews to analyse the presence and potential of a Brussels effect. The findings suggest that whilst the EUDR could serve as a catalyst for ongoing sustainability and transparency efforts, emerging compliance structures contribute to the fragmentation of supply chains, reinforcing market segmentation. Moreover, the article argues that unilateral market access requirements tend to prioritise formal compliance over addressing substantive issues. The article highlights the complexities of externalising EU regulations, critically discussing the lack of normativity in the theoretical framework of the Brussels effect and raising questions about North–South relations in global regulatory power dynamics.

Keywords: Brussels effect; due diligence; environmental governance; EUDR; Ghana; regulatory power

Introduction

Growing awareness of environmental and human rights issues has led to a notable surge in the adoption of supply chain laws on the European Union (EU) level (Gustafsson et al., 2023; Mueller et al., 2023), such as the EU Renewable Energy Directive, the European Union Timber Regulation (EUTR) and the Corporate Sustainability Due Diligence Directive (CSDDD). Supply chain laws prescribe access conditionalities to the European market by setting certain standards for production and harvesting. They aim to induce change outside the EU's jurisdiction by leveraging the attractiveness of the European market – a phenomenon captured in the concept of extraterritorial regulatory power (Hadjiyianni, 2019; Scott, 2019). If this change is achieved beyond the EU's supply chain either on an industry or country level, this is commonly referred to as the Brussels effect (Bradford, 2020). However, amidst this trend of supply chain regulations, there is a growing recognition of a shift in market powers, with China and Association of Southeast Asian Nations (ASEAN) countries gaining prominence (Schleifer, 2023). Such shifts in consumer markets may limit the effectiveness of supply chain laws (Bastos Lima and Schilling-Vacaflor, 2024).

One of the most recent supply chain initiatives is the EU Regulation on Deforestation-free products (EUDR). It is aimed at minimising the Union's contribution to deforestation and forest degradation worldwide and thereby contributing to a reduction

in global deforestation. Deforestation mainly takes place outside the EU's borders (Mauser, 2021). Nevertheless, the EU market is indirectly responsible for deforestation on the demand side. The EU is a major importer of commodities such as soy, beef, palm oil and timber, which are often linked to deforestation in producer countries. In fact, agricultural expansion to produce these commodities has been identified as the main driver of deforestation. Overall agricultural expansion was responsible for almost 90% of deforestation worldwide from 2000 to 2018 (FAO, 2022, p. 47). Consumption contributes to the demand for these commodities, thereby indirectly driving deforestation. Studies attempting to determine the EU's deforestation footprint estimated that the EU contributed to 16% of deforestation embodied in international trade in 2017, which is only second to China with 24% (Wedeux and Schulmeister-Oldenhove, 2021).

The EUDR was passed in June 2023 as a response to several NGOs and business associations calling for more stringent regulations for forest-risk commodities (Together4Forests, 2021). The regulation introduces two fundamental due diligence criteria – legality and freedom from deforestation, which also encompasses forest degradation. Operators and traders must provide a due diligence statement with each relevant product placed on or exported from the EU market to show compliance with these two main criteria. These statements must include the geolocation of all plots of land where the relevant commodities were grown. Any deforestation or forest degradation on a plot of land after 31 December 2020 automatically disqualifies all products originating from that plot from entering the EU market. If traders or operators do not fulfil their obligations, competent authorities designated by the EU member states can confiscate non-compliant products and apply penalties.

Whilst this regulation addresses agricultural-driven deforestation, there are concerns that forest-risk commodities may simply shift to other markets, as observed by Schleifer (2023). China has become the primary importer of soybeans, with the EU following behind at only one-fifth of the quantity in 2020 (IDH, 2022). The changing dynamics in the market are evident when looking at Brazil, the world's top soybean exporter. From 2007 onwards, the EU's share of Brazilian soy exports has significantly decreased to just a small fraction compared to China (Schleifer, 2023).

Thus, the central question this article explores is to which extent the EU can exert regulatory power in third countries[1] through its supply chains, in an environment of shifting market powers. Addressing this question empirically requires assessing both the necessary conditions for such regulatory influence and whether there is evidence of its actual exercise. Accordingly, the analysis is guided by two sub-questions: first, to what extent are the conditions for EU regulatory power fulfilled? And second, is there evidence that the EU is indeed exerting such power?

A recent study on sustainability standards in Brazilian soy found that EU supply chain laws had limited policy impact due to the segmentation of exports (Bastos Lima and Schilling-Vacaflor, 2024). Brazilian soy has experienced the strongest shift of trade flows away from the European market of the seven commodities covered by the EUDR. The resulting minor market share limits the possibilities for the externalisation of internal standards.

[1] *Third countries* as a term refers to all countries outside the EU's jurisdiction.

In contrast, this article aims to explore a most likely case of a potential Brussels effect, despite the evolving market environment. A most likely case supports the argument that if the effect is not evident in this context, it is unlikely to occur under less favourable conditions.

From the seven commodities that the EUDR covers, cocoa is the crop where the EU has the highest market share. In the case of Ghana, 59% of its exports go to the EU[2] (Trase, 2020). Ghana is thus heavily reliant on the EU as a consumer market for cocoa and is expected to adapt to market access requirements set by the EU.

The EUDR is already in force but will only enter into application on 31 December 2025, allowing a transition period for relevant actors to prepare for implementation. In fact, the implementation of the EUDR was postponed by one year because several key actors raised legitimate concerns that they were not ready to comply. This analysis thus offers a first view on the developments and dynamics that can be observed so far. As a regulation that allows for penalties and sanctions, actors can be expected to complete adaptations and preparations for compliance before the regulation officially enters into application to mitigate such risks. Nevertheless, insights should be taken under the consideration that the regulation is still a moving target. Since literature on the EUDR and its effects is still scarce (Bastos Lima and Schilling-Vacaflor, 2024; Berning and Sotirov, 2024; Verhaeghe and Ramcilovic-Suominen, 2024), this article can offer novel insights on the matter. However, it should be noted that the article is not aimed at evaluating the effectiveness of the EUDR, for which it is still too early. Rather, the article provides an account of whether and how the EUDR is an instrument through which the EU exerts regulatory power.

The article proceeds with the relevant literature on global regulatory power, focusing on environmental governance and the EUDR more specifically (Section I). Sections II and III outline the theoretical framework and research methods. The empirical analysis then explores the policy landscape of cocoa-driven deforestation (Section IV), examines evidence of regulatory power exerted through supply chains for the case of the EUDR in Ghana (Section V) and discusses the extent and limitations of this power (Section VI).

I. EU External Environmental Action and Global Regulatory Power

Regulating supply chains comes with the intention to pursue certain environmental or social objectives. Additionally, supply chains mostly span several jurisdictions from the point of production to consumption. Supply chain laws thus touch upon social or environmental issues that occur beyond the borders of the own jurisdiction, hence falling in the realm of external governance. At the same time, such laws are only applicable within the own jurisdiction, making them an unconventional form of foreign policy. The next section first outlines how supply chain regulations fall in the wider EU environmental foreign policy, then explains the specific mechanisms of global regulatory power and finally reviews the current state of knowledge on effects and shortcomings of human rights and environmental due diligence laws and the EUDR specifically.

[2]Data on Trase are only available for 2019.

Positioning Supply Chain Laws in EU External Environmental Action

Environmental goals form an integral part of the EU's external action. The strategies employed in promoting environmental standards encompass various approaches, such as participation in Multilateral Environmental Agreements (Delreux, 2018; Vogler, 2011) or incorporating environmental chapters and clauses in bilateral or regional agreements (Kulovesi and Cremona, 2014). Additionally, trade provides a tool to diffuse norms on environmental protection, labour standards or good governance in more general terms (Jinnah and Morin, 2020; Wouters et al., 2015).

In the early 2000s, private sustainability certification was seen as a market-driven solution for solving environmental and social issues in supply chains (Bray et al., 2002; Poynton, 2015; Rametsteiner and Simula, 2003). However, after the effectiveness of such voluntary market measures turned out to be rather limited (DeFries et al., 2017; Dietz et al., 2022; Oya et al., 2017), there was a shift towards regulatory approaches with the idea to re-centre the state and harden foreign corporate accountability through a due diligence approach (Bartley, 2014; Lenschow et al., 2016; Moser and Leipold, 2021; Partzsch and Vlaskamp, 2016). Europe has been a leading player in driving demand-side supply chain due diligence policies, especially around human rights and environmental issues (Mueller et al., 2023). The EU's dominant role in such initiatives ties in with its self-image and identity as a normative power (Manners, 2008) as well as its idea of leading by example (Oberthür, 2009). This self-image of a leader to set the norms on the international stage is conducive to unilateral behaviour.

Indeed, recently, some have attested to a unilateral turn in EU external action, especially in its trade instruments (De Ville et al., 2023). Supply chain laws, and the EUDR specifically, are a manifestation of the unilateral turn. In essence, these laws provide market access requirements to the European market based on environmental regulatory restrictions taking place partly in third countries – requirements that are unilaterally determined by the EU (Hadjiyianni, 2021, p. 22). This trend contrasts the EU's longstanding commitment to effective multilateralism (Council of the European Union, 2003), more recently termed renewed multilateralism (European Commission, 2022), emphasising collaborative action and legally binding agreements in multilateral fora (Christiansen and Tsui, 2017, p. 2; Renard, 2016; Smith and Elgström, 2013, p. 298) and the pursuit of trade liberalisation through the World Trade Organisation and preferential trade agreements (Freudlsperger and Meunier, 2023).

Internal Measures With External Effects

Regulatory power in the context of this article refers to the global power the EU is exercising through internal regulations, allowing the EU to 'externalise its laws and regulations outside its borders' (Bradford, 2020, p. 3). This unilateral globalisation of standards is to be differentiated from political globalisation through negotiated standards such as international treaties (Bradford, 2015).

Previous literature in the field of international relations and political sciences focused on regulatory convergence between countries (Drezner, 2005) and whether environmental regulation leads to a 'race to the top' or a 'race to the bottom' (Clark, 1995; Holzinger and Sommerer, 2011; Vogel, 2000). The concepts of regulatory global power through internal measures with extraterritorial implications (Hadjiyianni, 2019) were then mainly

developed within the legal literature, comprising extraterritoriality, territorial extension (Scott, 2019) and the Brussels effect (Bradford, 2012). Amongst the three concepts, the Brussels effect offers a framework that incorporates market mechanisms as a key explanatory factor, making it the most relevant for the focus of this article.

The Brussels effect occurs if operators change their business practices to match EU regulatory standards across their entire production, not only for the products going to the European market (*de facto* Brussels effect). It may also lead to third governments adopting similar regulatory standards as those present in the EU, thus leading to formal changes in domestic law (*de jure* Brussels effect) (Bradford, 2020).

One mechanism through which internal measures exert external effects is through market access requirements (Davies, 2012). Such requirements may include environmental or human rights due diligence obligations, as manifested in supply chain legislation. Formally, the nature of market access conditionality is seen as voluntary, as it does not encompass the EU enforcing sanctions abroad for non-compliance. It is each trader's free choice whether it wants to comply with these standards or not export to the market. In that way, market access conditionalities can be understood as an incentive to adhere to certain standards rather than coercion. However, in reality, in competitive markets and economic power differences, this choice is often illusory (Davies, 2012, p. 1205). Not to comply, and thus abandoning a market, may lead to severe economic consequences, resulting in decreased revenue and profit or even the failure of the company.

Criticism and caution regarding such unilateral measures are raised from a post-colonial perspective (Alcazar et al., 2023), suggesting that receiving states may perceive these policies as neo-imperial interventions (Carodenuto et al., 2024). Such policies risk perpetuating historical Western domination over production areas in the Global South as well as undermining those states' authority (Verhaeghe and Ramcilovic-Suominen, 2024).

Advantages and Short Comings of Supply Chain Laws

Support for supply chain initiatives emerged in the academic literature and a wider coalition of politicians, civil society organisations (CSOs) and companies after the effectiveness of company pledges and other voluntary standards had been called into question (Evans, 2020). Advocates for stricter due diligence requirements emphasise the advantage of holding companies legally liable for non-compliance (Schilling-Vacaflor and Lenschow, 2021).

Originally, scholars hoped that such public policies would help overcome challenges observed in private sustainability commitments, including leakage, the selective adoption of such standards and unintended negative consequences for smallholders (Lambin et al., 2018). However, as research progresses on mandatory human rights due diligence laws, these still show up as the main issues undermining effectiveness (Dupont et al., 2024). Other negative side effects include disadvantaging smaller companies as compared to larger companies, due to a lack of expertise and resources, both for companies within the EU and in producer countries (Maryudi et al., 2020).

Lessons from the EUTR, which the EUDR replaces, further highlight these challenges. Empirical studies showcase limited effects in hardening accountability (Moser and Leipold, 2021), inconclusive results on reducing illegal logging (Villanueva et al., 2023) and negative side effects such as prioritising international actors over local

access to forest resources (McDermott et al., 2020). However, voluntary partnership agreements (VPAs), bilateral trade agreements accompanying the EUTR, have led to important policy dialogues and established participatory policy-making (Cerutti et al., 2021; Overdevest and Zeitlin, 2018) as well as facilitated information transparency in the timber sector (Adams et al., 2021; Cerutti et al., 2021).

Turning to more specific literature on the EUDR, studies are still scarce and focus mainly on analyses of the development of the regulation and similar initiatives in due diligence laws (Berning and Sotirov, 2023; Perram and Jiwan, 2023; Schilling-Vacaflor and Lenschow, 2021). Pertinent themes in the discussion around the EUDR are the underlying normative conflict of sustainability concerns and market competition (Berning and Sotirov, 2024), concerns about the effects for smallholders (Perram and Jiwan, 2023) and its effectiveness in terms of hardened accountability (Berning and Sotirov, 2023; Schilling-Vacaflor and Lenschow, 2021) and transformation on the ground. Verhaeghe and Ramcilovic-Suominen (2024, p. 158) see 'promises of transformative change, which may pave the way for counter-hegemonic (re)interpretations' in the EUDR, whilst also warning of 'window dressing in defence of the status quo'.

Finally, this article is a direct response to Bastos Lima and Schilling-Vacaflor's (2024) analysis of the Brussels effect for Brazilian soy. They find that for Brazilian soy, the two preconditions for a Brussels effect to occur – non-divisibility of production and relative market size – are not fulfilled. Instead, exports are tailored to the requirements of the respective markets – with certified soy flowing to the more demanding consumers, and the rest being used internally or shipped to less discerning markets (Bastos Lima and Schilling-Vacaflor, 2024, p. 11). They also hypothesise that this may be different for commodities, where Europe is a dominant market player, such as in the case of West African cocoa – which is exactly the starting point of this analysis.

II. Theoretical Framework: The Brussels Effect in a Changing Market Environment

The EUDR exemplifies a regulation that governs the EU internal market whilst primarily aiming to impact forest protection beyond the EU's borders. The Brussels effect provides a useful tool to analyse the extent of the EU's regulatory power abroad, focusing both on the scope conditions and manifestation of such power.

Five main elements underlie the Brussels effect – regulatory capacity, stringent standards, inelastic targets, market size and non-divisibility (Bradford, 2020). Regulatory capacity refers to the EU's willingness to build institutions and vest them with regulatory power. This variable is independent of the market environment and will therefore not be analysed in more depth here. Existing literature attests to the EU's ability to be a regulator with global reach, especially in areas linked to the single market – the policy domain that is prone to externalisation (Meunier and Nicolaïdis, 2006; Zielonka, 2008). Stringent regulation describes the will to set standards and enforce them on the government level rather than leaving it to the market to generate an outcome. Such stringent regulation will only lead to new global standards if aimed at inelastic, as opposed to elastic targets (Bradford, 2020, p. 48). Elasticity is an inherent feature of a product, with consumer goods such as cocoa, by nature being an inelastic target (Bradford, 2020, p. 49).

Market size and non-divisibility are the two elements of main interest for this analysis. Market size counts as a proxy for economic power (Damro, 2012; Drezner, 2005). Chad Damro (2012) has coined the term 'Market Power Europe', a concept attesting the EU's ability to use both persuasive and coercive means and tools to influence international affairs. Market size and power are relative terms. The extent of any state's market power depends on the attractiveness of its consumer market compared to the alternative markets available (Bradford, 2020, p. 26). In 2024, the EU had a GDP of 19.4 trillion USD, making it the world's second-largest economy after the United States (29.2 trillion USD) and just ahead of China (18.7 trillion USD) (World Bank, 2025). With a population of approximately 450 million people, the EU also remains the third largest consumer market after India and China, with 1.4 billion people each, and the second strongest economy (World Bank, 2025). Nevertheless, as a trend for agricultural trade, the markets of China and India have grown significantly, whilst the market size of the EU is relatively declining (Schleifer, 2023, pp. 51–52).

Bradford (2020) already predicted the relative decline of the EU's market size as a potential challenge to undermine the Brussels effect. The rise of alternative export markets provides multinational companies with the opportunity to choose alternatives for the EU market, if the market access conditions do not suit them. Yet, not only the shift in export patterns influences the potential impact, stronger economies within producer countries also provide lucrative domestic markets. This is particularly evident in agricultural commodities, which are increasingly used for domestic products like biofuels, reducing their reliance on the global market (Bastos Lima, 2021).

Finally, the non-divisibility of supply chains is crucial to determine whether a Brussels effect will occur or not. Divisibility describes whether standards are customised or standardised across different jurisdictions. This usually depends on how easily elements in a supply chain can be separated or isolated without affecting the production system. Whilst the other elements merely determine whether a jurisdiction has the capacity to regulate extraterritorially, the non-divisibility of supply chains is the element that leads to new global standards. In instances where division is technically, legally or economically not viable, companies are expected to adopt a uniform global standard rather than adhering to multiple regulatory standards.

The theoretical framework of the Brussels effect has certain blind spots, relevant for the following analysis. First, it focuses heavily on outcomes, rather than the process by which norms and policies travel. However, overlooking this process makes it difficult to distinguish the influence of EU regulation from other economic and political factors (Hadjiyianni, 2021, p. 250). Broadly speaking, policy diffusion typically follows three pathways – competition, learning and emulation (Maggetti and Gilardi, 2016). These differences suggest that norm diffusion through market access requirements is shaped by more than the EU's relative market size and regulatory capacity (Lavenex, 2014, p. 898). Other co-operative mechanisms, such as technocratic outreach and shared (epistemic) views, play a crucial role (Lavenex, 2014). They may lead to impact through lesson-drawing (Schimmelfennig and Sedelmeier, 2005) and unilateral policy emulation (Sandra and UçArer Emek, 2004, p. 421). Emulation refers to the adoption of policies because they are considered normatively desirable (Hadjiyianni, 2021, p. 249).

Building on the theory of the Brussels effect, this article focuses on analysing the market environment of cocoa to understand the EU's economic power in this realm.

Further, whether a Brussels effect occurs or not is determined by the extent to which the sustainability standards of non-deforestation embedded in the EUDR are taken up by other standard-setting authorities or the Ghanaian government. As there is almost no manufacturing industry for cocoa within Ghana, the analysis is mainly limited to a *de jure* Brussels effect. Such adoption of, or harmonisation with, EU legislation by a third country represents the most expansive form of regulatory power (Young, 2015, pp. 1236–1238). Analysing the EUDR from this perspective therefore may not only showcase the extent of its reach but also help to clarify the outer limits of its influence.

III. Research Methods

The analysis adopts a qualitative research approach with semi-structured interviews to explore the extent to which regulatory power is exerted through the EUDR. Ghana and the cocoa sector are chosen as a most likely case (Gerring, 2001).

A total of 51 semi-structured interviews were conducted with stakeholders representing CSOs in both Ghana and the EU, the public sector in Ghana and the EU, governmental bodies in Ghana, the cocoa industry (throughout the supply chain from the farmers to the operators on the EU market), international organisations, different certification standard bodies and research institutions. These interviews were conducted during a research stay in Brussels in September and October 2023 and in Ghana in May 2024 and lasted between 30 minutes and 2 hours. A complete list of the interviews conducted can be found in Appendix A. Additionally, participatory observations are included from the Annual General Meeting of the Ghana Civil Society Cocoa Platform (GCCP) and a stakeholder event organised by the Delegation of the European Union to Ghana and the European Forestry Institute on the EUDR, both held in May 2024 in Accra. Coding for the interviews was done manually. The analysis follows an abductive approach, being developed in an iterative process between theoretical and empirical work. Notably, the empirical data revealed blind spots in the theoretical framework of the Brussels effect, prompting refinements in both the outset of the theory and the broader theoretical argument.

IV. The Policy Landscape of Cocoa-Driven Deforestation in Ghana

Thirty-five percent of Ghana's land area is covered in forest (FAO, 2020). About a quarter of tree cover has been lost since 2000 (Global Forest Watch, n.d.). Cocoa production is a significant driver of deforestation, alongside illegal logging and illegal mining (Appiah et al., 2009; Carodenuto, 2019; Kyere-Boateng and Marek, 2021). Benefoh et al. (2018) found cocoa farming responsible for 54.7% of total forest loss between 1986 and 2015. Underlying issues of cocoa-driven deforestation are land scarcity and land tenure insecurity. As most of the off-reserve areas in Ghana have been cultivated, farmers encroach into forest reserves to 'make more money to take care of our families' (Ashiagbor et al., 2022, p. 7). Additionally, the decline of productivity levels of cocoa farms due to age and climate change developments and the perceived high soil fertility in forest reserves makes encroachment tempting. A lack of funds to alternatively buy farm inputs like fertilisers or pesticides drives the expansion into forest areas.

There are a few specificities to the cocoa industry in Ghana. In contrast to other crops, cocoa is mainly produced by smallholders. Estimations account that 50 to 60 million small-scale farmers grow over 90% of the cocoa worldwide (Brack, 2019). The cocoa supply chain of Ghana is characterised by a market arrangement that combines elements of privatisation with a strong government presence (Tuffour et al., 2023). All cocoa produced in Ghana goes through the Ghana Cocoa Board (COCOBOD), a government organisation that is the sole seller of Ghana's cocoa on the local and foreign markets.

The policy landscape on fighting cocoa-driven deforestation in Ghana is wide. The following captures only the most notable initiatives. On the multinational level, amongst a myriad of initiatives, Ghana is implementing the United Nations Programme on Reducing Emissions from Deforestation and Forest Degradation (REDD+), with a special focus on cocoa, supports the Cocoa and Forest Initiative and participated in the EU Cocoa Talks. Several private certification schemes attest that their cocoa beans come from deforestation-free land. Additionally, leading cocoa and chocolate companies have made zero-deforestation commitments publicly for years (Acheampong and Marfo, 2011; Carodenuto, 2019). Nevertheless, most of these global voluntary measures have proven ineffective in halting or slowing deforestation (Oya et al., 2017).

The EUDR is the first regulatory instrument limiting access to a market if the standard of deforestation or forest degradation-free is not met, rather than working through the incentive of a premium. Before the EUDR, the EUTR was implemented to combat illegal logging and a VPA concluded, though it did not specifically target the cocoa sector. As a result of this VPA, a traceability system for timber was set up, the Ghana Timber Legality Assurance System (Overdevest and Zeitlin, 2018).

Notably, on a regional level, a new sustainability standard is being developed, aiming for the economic, social and environmental sustainability of cocoa in West Africa – the ARS-1000. The African Regional Standard for Sustainable Cocoa was developed in response to the ISO standard 34101 on sustainable and traceable cocoa. 'African countries felt that the requirements of the standard were not suitable or crafted to suit our farmers. So there was a need to develop an African version of the standard' (interviewee from the Ghana Standards Authority, May 29, 2024). The ARS-1000 is broader in its sustainability goals than the EUDR, covering environmental, social, ethical and economic elements. It is envisioned to be implemented by all standard authorities for West African cocoa producers, thus becoming the new baseline for cocoa production. An implementation plan for Ghana exists, yet the process is still underway.

Finally, a note on how deforestation is defined in the Ghanaian policy context. Land-use policies distinguish between on- and off-reserve deforestation. Within forest reserves and national parks, as established under the Forest Act 1927 (Cap 157) and the Forest Protection (amendment 2002) Act 624, all forms of agricultural activities are prohibited. Apart from some admitted farms, these forests are highly protected, and reserve encroachment is strictly banned as deforestation. On the other hand, in all other areas classified as 'off-reserve' forest, conversions are allowed. According to the Land Use and Spatial Planning Act 2016 (Act 925), these lands may be utilised for agriculture, settlement and other development interventions (Ashiagbor et al., 2022). This division in land balances the need for strict protection of primary forests and the need to allow for economic development. Deforestation in the Ghanaian context is thus only understood for illegal activities and not for forest clearing in off-reserve areas (Ashiagbor et al., 2022).

However, definitions of forest and deforestation remain a contested domain. Some CSOs advocate for recognising wooded areas outside of protected areas as forest. Others, on the contrary, call for a better alignment of zero-deforestation commitments with the Ghanaian legislative context 'in order not to unfairly disadvantage poor farmers who are already impoverished' (Ashiagbor et al., 2022, p. 10). They also question the estimations of deforestation rates in Ghana currently found in the literature considering deforestation and logging on all landscapes. Ashiagbor et al. (2022) is one of the only studies considering the Ghanaian land-use context. They find that only 9.29% of deforestation takes place as forest reserve encroachments, whilst the other 90.71% are found on admitted farms and off-reserve areas. The issue of definitions emerged as one of the most contentious aspects of the EUDR, highlighted in nearly all the interviews conducted. It creates a sentiment of not respecting the local context and imposing standards without understanding the national regulatory context.

V. Assessing EU Regulatory Power: Evidence From Ghana's Cocoa Sector

This section presents the empirical findings, structured around the two sub-research questions. First, it examines whether the necessary conditions for the EU to exert regulatory power are met (Conditions for the Exercise of Regulatory Power sub-section). Second, it explores whether there is evidence of such power being exercised through the EUDR in Ghana's cocoa sector (Evidence of Regulatory Power? sub-section).

Conditions for the Exercise of Regulatory Power

As developed in the theoretical framework, market size and non-divisibility are the two central elements of interest for this case study. This section first examines the market environment for Ghanaian cocoa before assessing the divisibility of cocoa supply chains to determine whether the conditions for EU regulatory influence are in place.

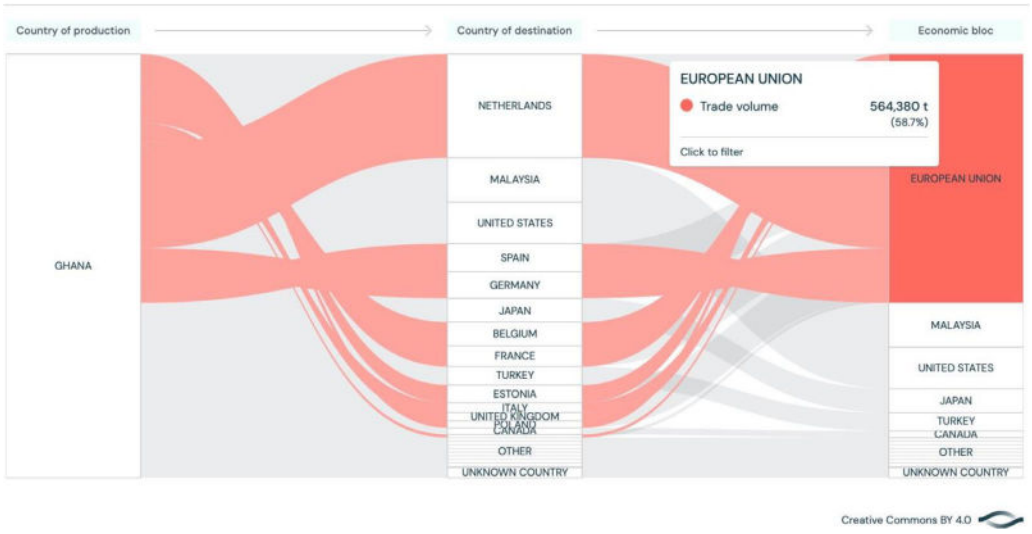
The Market Environment for Ghanaian Cocoa

Cocoa is a major contributor to Ghana's GDP, generating about 2 billion USD in foreign exchange annually and employing approximately 800,000 farm families over six of the 16 regions of Ghana (Tuffour et al., 2023). These two figures underline how in reality market access requirements are not as voluntary as often proclaimed. The livelihood of millions of people depends on cocoa exports to the international market.

The greater the ratio of exports to the jurisdiction relative to sales in the home and third country markets, the more likely the Brussels effect will occur (Bradford, 2020, p. 27). Most of Ghanaian cocoa is exported, and only a fraction is used internally. In terms of wider trade flows, Ghana and Côte d'Ivoire produce around 54% of global cocoa and supply about 60% of the EU's cocoa imports (European Commission, 2021). Cocoa is also the main commodity imported by the EU from Ghana, making up 97% of import value (European Commission, 2021). On the other side, for Ghana, the EU market makes up around 59% of exports (Figure 1). The EU market is thus still the main market for cocoa, underlining that the case of Ghanaian cocoa fulfils one of the central elements for a Brussels effect to occur.

A broader trend to consider is the development of farmers moving away from cocoa production. 'Because already there are farmers who believe that they are not getting value

Figure 1: Flow of cocoa exports from Ghana in 2019. [Colour figure can be viewed at wileyonlinelibrary.com]



Source: Trase, 2020.

for the effort they put into cocoa production. So, some already have decided to abandon cocoa farming. With this extra cost coming in, if the farmers believe that it's going to be more costly to produce the cocoa, there's a likelihood that they may opt out' (interviewee from COCOBOD, May 27, 2024). This is further emphasised in the fact that most farmers do not wish for their children to stay in cocoa farming because of the lack of economic outlook (survey referenced at the GCCP AGM, Accra 2024).

The Issue of Leakage – How Divisible Are Cocoa Supply Chains?

The primary concern regarding the effectiveness of the EUDR from an EU perspective is the risk of market segmentation, also known as leakage. This refers to the possibility that the EUDR may result in the division of production standards within supply chains and a reorganisation of trade flows to different markets, rather than driving meaningful changes in on-the-ground practices. Leakage hinders the occurrence of a Brussels effect and challenges the intended outcomes of the EUDR more specifically. The likelihood of leakage is closely tied to the divisibility of supply chains. This raises the question: how divisible are the cocoa supply chains?

The Ghana Cocoa Traceability System (GCTS) provides a clear example of how supply chains can easily be segregated for different markets. Established by COCOBOD as part of the broader Cocoa Management System, the GCTS predates the EUDR and was originally developed to improve sector management and support evidence-based decision-making. However, it has since been expanded to meet the requirements of the EUDR and the African Regional Standard ARS-1000: 'We started with the Cocoa Management System and realising the demands then decided to onboard the traceability system as a way of being able to trace the cocoa to the farmer' (interviewee from COCOBOD,

May 27, 2024). Accordingly, the traceability system shall provide the necessary data for the required due diligence statements by operators and traders. COCOBOD will sell the data at a price per kilogram of cocoa (Presentation given by COCOBOD at the EU stakeholder event, Accra 2024).

Within this system, cocoa is either identified as 'sustainable' or 'conventional'. 'Sustainable' in this context means EUDR-compliant, and 'conventional' covers the rest. In that sense, the division of supply chains is being cemented in the roll-out of the traceability system, and the formalisation thereof reinforces rather than mitigates the issue of leakage. Sustainable-categorised cocoa is designated for the EU market, whilst conventional cocoa is directed to other markets. In other words, as long as European market demand does not exceed the supply of EUDR-compliant cocoa, the regulation provides no additional incentive to curb deforestation. This means that a key scope condition for the Brussels effect is not met for the case of Ghanaian cocoa, demonstrating that supply chains are easily divisible.

Finally, the element of leakage also leads back to the phenomenon of a changing market environment, as discussed above. It should be noted that the EUDR itself contributes to the trend of trade shifting away from the EU. Other markets may not pose requirements that are as resource intensive and still pay the same price. Several interviewees have therefore stated that traders and operators are already scouting new markets as a response to the EUDR. If sustainability standards do not come with a premium but only as regulation, the already visible trend of shifting markets can be expected to increase.

Evidence of Regulatory Power?

Despite the lack of one of the conditions underlying the Brussels effect, evidence for the exertion of regulatory power seems probable for three cases: the establishment of the mentioned GCTS, the development and implementation of the African Regional Standard for cocoa (ARS-1000) and the impact of the EUDR on national legislation, particularly regarding the definition of forest and deforestation in Ghana.

It is interesting to note that the Ghanaian government is actively involved in preparing the market for compliance even though the EUDR is aimed at the private sector, specifically European operators and traders – not the public sector or third governments. However, the specific set-up of the cocoa market in Ghana, consisting of a government organisation – COCOBOD – as the sole seller on both the national and international markets, logically leads to significant government involvement.

The GCTS is one of the most prevalent structural responses to the EUDR. Even though the intention is to serve the requirements of several international regulatory initiatives – including the EUDR, the CSDDD, the ARS-1000 and other initiatives from the United Kingdom and the United States – it is important to note that it was not developed in direct response to the EUDR. The call for greater traceability in the cocoa sector predates the EUDR and originates from multiple markets and stakeholders. The GCTS should thus not be understood as a Brussels effect driven by the EUDR.

Not only is it important to recognise that the GCTS is not a result of the EUDR, the likeliness of it being misperceived as such makes the issue politically very sensitive. As an EU member state official explains, 'they [*COCOBOD*] were already planning to implement something like this but before they can arrange it on their own terms, we [*the EU*]

are forcing them to do it. That makes it sensitive'. This sentiment reflects a broader tension of internal policies reaching beyond the own borders: even when local actors have existing plans for regulatory reforms, external pressure can be seen as an imposition and encroachment on national sovereignty, potentially undermining ownership and trust in the process.

Nonetheless, the EUDR put a lot of pressure on COCOBOD to accelerate the development and implementation of the system. The pilot for the GCTS has been completed, and COCOBOD intends to finish the roll-out in time for the 2025/2026 cocoa season starting in September 2025, to be ready as soon as the EUDR enters into application. Several interviewees have attested that without the EUDR the roll-out would have been significantly slower. At the same time, they have also lamented the strain this accelerated implementation has put on the resources of the involved actors.

Overall, the EUDR appears to be catalysing transparency as an industry standard in agricultural supply chains. Whilst earlier calls for more traceability in the cocoa sector were met with huge resistance and tracing cocoa beans to their exact origin was even deemed impossible just a few years ago, it is now becoming the norm for European suppliers. Although transparency as such is not a direct goal of the EUDR, it is a necessary precondition for compliance. As a result, the regulation has contributed further to cementing this industry norm and contributes to diffusing it. The roll-out of a national – rather than private – traceability system and the related comprehensive mapping of farm polygons in Ghana is a response visible even before the regulation enters into application at the end of 2025.

Similarly, interviewees have argued that the national implementation plan for the ARS-1000 was also catalysed by the EUDR. 'The ARS wasn't developed for EUDR. It goes beyond EUDR. (…) But then the timeline of the EUDR should force us to run faster than we were expecting' (interviewee from COCOBOD, May 27, 2024). The intention is that all farms certified as ARS-1000 should count as EUDR compliant in the future. Whilst it is yet to be determined whether the required standards will match, and how the ARS will be received on the international market, the EUDR has strengthened the sentiment within Western African countries to set their own sustainability standards rather than having the rest of the world impose theirs on them. 'We need to harmonise the ARS-1000 and the EUDR (…) They see the ARS-1000 as more of this is us, this is our standard' (anonymous expert). This push for self-determined standards reflects a broader pattern of regulatory contestation in North–South relations. Rather than passively adopting external rules, West-African actors seek to shape sustainability governance on their own terms. The ARS-1000 is not only a market response to traceability and sustainability concerns but also a political statement – an assertion of regulatory agency in a space dominated by Global North standards.

Finally, the mismatch in forest definitions could invite a *de jure* Brussels effect if what was understood as deforestation would be changed on a national regulatory level in Ghana. However, no such endeavours are visible. On the contrary, the disregard for local legislation within the EUDR ignites push-back from producer-country stakeholders. Rather than adapting the national legislation, the focus lies on how the EUDR can be interpreted as to be most compatible with the domestic regulatory context. Producers and exporters from Ghana are therefore likely to push for all cocoa grown on off-reserve land to be considered EUDR-compliant, even if such land would meet all forest

requirements under the EUDR (i.e., minimum 0.5 ha with trees higher than 5 m and a canopy cover of more than 10%). Since off-reserve forests are earmarked for agricultural use, stakeholders are expected to advocate for this interpretation of the EUDR rather than adapting the national definition of forests, as one interviewee, a lawyer also advising the government, explained (May 29, 2024). It is too early to determine how this conflict will be solved. Yet it provides a clear example of the tensions surrounding the topic of forest protection and the competition of different norms and understandings.

VI. Discussion: The Extent of Regulatory Power Over Agricultural-Driven Deforestation

A key limitation of the Brussels effect framework is the tendency to conceptualise regulatory diffusion primarily as a technical process based mainly on market power, overlooking normative considerations, interests and political antagonism (see also Lavenex, 2014). However, the local context fundamentally shapes the extent to which regulations are adopted or contested. Overemphasising the mechanism of coercion through market power overlooks crucial other factors determining the depth of compliance. This section argues that where a regulation faces significant contestation and lacks normative buy-in, adaptation tends to be superficial, resulting in formal compliance measures that fail to address the regulation's core objectives.

A key difficulty for analysing the extent of the EU's regulatory power and the following argument is the ambiguity in the EUDR's proclaimed intention. The legislative text states that the regulation is aimed at 'minimising the Union's contribution to deforestation and forest degradation worldwide, and thereby contributing to a reduction in global deforestation' (Article 1a). However, cleaning up European supply chains and aiming to curb deforestation are two distinct ambitions. If the EUDR's primary goal is the former, then the problem of leakage – where products from deforested land simply shift to non-EU markets – is arguably less relevant. However, if the regulation aims to achieve the latter, leakage becomes a major concern. The analysis has so far implied an understanding of the EU trying to contribute to curbing global deforestation, an interpretation which is also supported by the Commission's communication on the regulation and CSOs' narratives on the topic. Nevertheless, it should be noted that even amongst interviewees from EU institutions interpretations of the EUDR's main purpose vary significantly.

The case of the EUDR illustrates how regulatory power operates in contested spaces. Whilst interviewees unanimously support the overarching goals of forest protection and the reduction of deforestation and forest degradation as a common norm, significant disagreement ranges from the very definition of a forest to appropriate policy instruments of how to reach that goal. Ultimately, the theory behind the Brussels effect stipulates that it is a mechanism to trigger change even for cases where international agreements are difficult to achieve due to normative or ideational divergence. In practice, however, the EUDR shows that such divergence constrains regulatory uptake, provoking either direct contestation or adaptations that prioritise formal compliance over meaningful change.

Economic concerns, the neglect of local rules and the constantly shifting unilateral requirements to access the EU market are the major drivers of contestation. The EUDR is often perceived solely as an additional financial and bureaucratic burden. As a market access conditionality, the EUDR comes without a premium. This is different to other

sustainability endeavours, such as certification schemes, which aim to take effect through an increased market price. The lack of a premium is met with frustration and contestation in producer countries. Elements like a functional traceability system and collecting relevant data require considerable investments. A sentiment prevails that these additional costs should be compensated for. 'What will be the price of sustainably produced? What will the West pay for this?' (interviewee from the Ghana Standards Authorit, May 29, 2024y). Many interviewees appealed to the fact that sustainability is not limited to the ecological perspective, but that economic sustainability is a key issue too.

The point also shows that normative buy-in is lacking because producer countries were not involved in defining essential terms of the EUDR or finding approaches for common concerns. 'And this was one key issue that cocoa producing countries were not happy with because you [*meaning Europeans*] are writing standards that address things that are of concern to you. Granted, those things concern Africans too. Issues around child labour concern us too, issues around environmental pollution, deforestation, pesticides. They do matter to us – but so do the financial commitments' (interviewee from the Ghana Standards Authority, May 29, 2024). In other words, the combination of not being able to influence the terms of the regulation and at the same time having to carry the full financial burden fuels resistance to a policy whose fundamental goals are supported by most Ghanaian stakeholders.

Additionally, the constant change in requirements from the EU market leads to resistance in producer countries. One interviewee from the Forestry Commission (May 19, 2024) phrased it as follows: 'And then I feel, for how long will the EU continue to change their goal post? Today they start with EUTR. Tomorrow is EUDR. Who knows what they are going to bring next?' This perception of a constant change in requirements triggers a response of focusing more on compliance, rather than the substantive aims. With ever-changing requirements, the question most actors think about is not how to tackle the underlying issue but how to comply with the latest conditions. The broader issues such requirements are aimed at, such as deforestation, fade to the background.

In other words, the focus on compliance may result in losing sight of the underlying problem the regulation is aimed at. 'Indeed, we are ready to meet the EUDR. And for me, I feel very proud as a Ghanaian. I don't know, maybe the Europeans themselves never thought that we can finish it fast' (interviewee from COCOBOD, May 27, 2024). Of course, it may be argued that supply chain initiatives can only be aimed at achieving compliance by the targeted actors. However, formal compliance and meaningful compliance are often two very different things. As outlined above, COCOBOD is implementing the GCTS to map all cocoa farms and provide the required geodata for cocoa beans. Formally, full traceability in combination with the information that cocoa comes from non-deforested land fulfils the requirements that traders and operators need to comply with if they want to place cocoa or chocolate on the European market. However, meaningful structures to prevent deforestation would look very different.

Several interviewees from Ghanaian and EU CSOs, business representatives and EU officials identify poverty as a key structural problem behind deforestation in Ghana. Due diligence approaches, or for that matter the GCTS, however, do not aim to address this issue. As an interviewee explained (May 28, 2024), 'the problem is farmer poverty and if you do not address that, you can impose a lot of paperwork but it's still not going to change'. Structures to truly combat deforestation require a deeper understanding of the

national context and national drivers. It builds on a similar problem framing and understanding and requires collaboration that invites action beyond formal compliance. The EUDR on the other hand is not designed to address the current key drivers of tropical deforestation in the local context (Muradian et al., 2025). In that sense instead of fostering shared problem-solving, the unilateral nature of the EUDR encourages procedural compliance over a holistic sustainability strategy – a criticism that has also already been extended towards the previous EUTR (Hansen et al., 2018).

The GCTS illustrates this point well. Due to the separation between 'sustainable' and 'conventional' cocoa, the compliance structures that emerge are purely aimed at formal compliance, not at reducing deforestation for cocoa production. As discussed before, these structures reinforce the problem of leakage. The EU market will likely absorb the EUDR compliant cocoa, whilst the demand of other markets will be met through the 'conventional' cocoa, for which new land may still be deforested. This should not read as a criticism of the compliance structures emerging in Ghana. It rather illustrates how ever-changing unilateral market access requirements prompt quick formal compliance systems, rather than meaningful on-the-ground measures for change.

Conclusion

This article set out to explore the extent to which the EU can exert regulatory power in third countries through its supply chains in an environment of shifting market powers. Addressing this question empirically required assessing both the necessary conditions for such regulatory influence and whether there is evidence of its actual exercise. Ghana's cocoa sector – where the EU remains a dominant market – offered a most likely case for EU regulatory power to take effect.

Overall, the findings align with other research pointing towards a limited impact of regulatory power through supply chains. Whilst Ghanaian stakeholders recognise the importance of the EU market and have undertaken adaptation efforts to meet requirements of the EUDR, this does not translate into full normative alignment. The regulation's unilateral design coupled with the lack of economic incentives has fostered contestation and the development of formal compliance structures rather than deep regulatory buy-in.

The analysis finds that in terms of the underlying requirements, cocoa misses an important attribute – the non-divisibility of supply chains. In fact, the emerging GCTS intentionally divides cocoa into EUDR-compliant and 'conventional' cocoa, contributing to the segmentation of markets and the phenomenon of leakage. The increased requirements without benefits like a market premium are likely to contribute to the shifting trade patterns. Exporters are already scouting new markets for non-compliant cocoa.

With respect to the second sub-question – whether the EU is indeed exerting regulatory power – the evidence indicates a mixed picture. Neither the establishment of the GCTS, the development of the African Regional Standard for cocoa (ARS-1000) nor the impact of the EUDR on the national definition of forest and deforestation in Ghana constitutes a *de jure* Brussels effect. Yet, the EUDR has functioned as a catalyst for the development and implementation of both the GCTS and the national implementation plan for the ARS-1000. Additionally, it was influential in manifesting the norm of supply chain transparency across the industry. These developments indicate a moderate degree of EU regulatory influence.

Overall, the analysis suggests that supply chain instruments such as the EUDR are useful to accelerate sustainability and traceability efforts already in progress but are less suitable to fundamentally reshape production practices. Naturally, the EUDR is only one puzzle piece in the broader deforestation regime complex and the Ghanaian cocoa policy landscape, and expectations for its effects should be reasonably limited to this context. Nevertheless, the phenomenon of supply chain segmentation raises serious doubts about its effectiveness to tackle environmental concerns in a multipolar trade environment. Whilst it is too early to assess the EUDR's full impact, this should be addressed by future research.

The findings carry broader implications for the debate on EU external environmental action through internal regulations. First, the findings highlight the limits of the EU's capacity to regulate beyond its own borders, even in sectors where it holds significant market leverage. The EU's ability to shape environmental governance depends not only on market leverage but also on political buy-in, economic feasibility and the capacity to align regulatory goals across different contexts.

Second, designing market access requirements around compliance capacity rather than structural change risks narrowing the focus to bureaucratic box-ticking rather than substantive progress. This can lead to superficial adjustments without addressing broader systemic issues, as relevant actors focus on meeting formal criteria rather than tackling the root causes of social and environmental matters.

Finally, externalising the EU's rules beyond its borders is deeply entangled in the complexities of North–South relations. Navigating these dynamics requires nuance and deep engagement – qualities that unilateral policy instruments inherently lack. There is a fine line between catalysing ongoing initiatives and appearing to co-opt them, thereby undermining the regulatory agency of the Global South in a policy domain already largely shaped by the Global North. This triggers perceptions of regulatory overreach and fuels contestation rather than fostering collaboration on shared concerns. These tensions represent only a fraction of conflicts embedded in North–South relations in the context of externalising EU regulations, and future work should aim to deepen our understanding on this point.

Acknowledgements

I thank Jonathan Zeitlin, Philip Schleifer, Thomas Christiansen, Jan Orbie, Vera Săvulescu, Alva Guzzini, Steven Pemberton and two anonymous reviewers for valuable comments on earlier drafts, as well as Evgeny Postnikov for helpful input as a discussant.

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Appendix A: Interviews Conducted

	Organisation	*Category*	*Number of interviewees*	*Date*
1	Anonymous CSO, EU	CSO	1	06.09.2023
2	Rainforest Alliance	CSO	1	18.10.2023
3	VOICE Network	CSO	1	18.10.2023
4	Client Earth	CSO	1	23.10.2023
5	Milieu Defensie	CSO	1	07.12.2023
6	Friends of the Earth Ghana	CSO	1	02.05.2024
7	Nature and Development Foundation	CSO	1	08.05.2024
8	Ecocare Ghana	CSO	1	10.05.2024
9	Tropenbos	CSO	1	11.05.2024
10	Knowledge for World Conservation Ghana	CSO	1	21.05.2024
11	Rainforest Alliance Ghana	CSO	1	23.05.2024
12	Fairtrade Ghana	CSO	2	05.06.2024
13	GIZ Ghana	Development agency	3	11.06.2024
14	Anonymous embassy	EFTA	1	11.06.2024
15	DG AGRI	EU (Commission)	1	12.09.2023
16	DG ENV	EU (Commission)	1	02.10.2023
17	DG Trade	EU (Commission)	2	11.10.2023
18	DG INTPA	EU (Commission)	1	18.10.2023
19	Anonymous expert	EU (Commission)	1	31.10.2023
20	Dutch Permanent Representation	EU (Council and Member States)	1	11.10.2023
21	Anonymous MS representation	EU (Council and Member States)	1	26.10.2023
22	Anonymous MS representation	EU (Council and Member States)	1	30.10.2023
23	Council Presidency	EU (Council and Member States)	1	08.12.2023
24	Anonymous embassy	EU (Council and Member States)	3	27.05.2024
25	Delegation of the EU to Ghana	EU (EEAS)	1	26.05.2024
26	Parliament Representative	EU (Parliament)	1	13.09.2023
27	Parliament Representative	EU (Parliament)	1	27.09.2023
28	Independent Expert (Brussels)	Experts and Research	1	30.10.2023
29	European Forest Institute	Experts and Research	1	31.10.2023
30	Anonymous consultancy	Experts and Research	1	15.12.2023
31	Forestry Research Institute of Ghana (FORIG)	Experts and Research	1	13.05.2024
32	Anonymous expert	Experts and Research	1	28.05.2024
33	Anonymous expert	Experts and Research	1	29.05.2024
34	CCLG	Experts and Research	1	31.05.2024
35	Ghana Ministry of Lands and Natural Resources	Ghana Government	1	24.05.2024
36	Ghana Standards Authority	Ghana Government Agency	1	29.05.2024
37	Ghana Forestry Commission	Ghana Government Agency	1	19.05.2024
38	Ghana Forestry Commission	Ghana Government Agency	2	20.05.2024

	Organisation	*Category*	*Number of interviewees*	*Date*
39	COCOBOD	Ghana Government Agency	1	27.05.2024
40	COCOBOD	Ghana Government Agency	1	27.05.2024
41	Anonymous expert	Ghana Government Agency	1	30.05.2024
42	Nestlé	Industry	1	21.09.2023
43	Anonymous industry association, Brussels	Industry	1	28.09.2023
44	Anonymous multi-stakeholder association	Industry	1	31.10.2023
45	Tony's Chocolonely	Industry	1	01.11.2023
46	World Cocoa Farmers Association	Industry	1	11.05.2024
47	Anonymous timber producer, Ghana	Industry	1	12.05.2024
48	Ghana National Cocoa Farmers Association	Industry	1	13.05.2024
49	Cocoa Abrabopa Association	Industry	2	23.05.2024
50	GNBCC	Industry	1	07.06.2024
51	Three Mountain Coffee	Industry	1	07.06.2024