

# **Mandating transparency on deforestation and ecosystem conversion**

Assessing the European Sustainability Reporting Standards' potential to incentivize reductions of imported deforestation and ecosystem conversion

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## **Abstract**

The production of eggs, meat, and dairy products in the EU indirectly contributes to deforestation and ecosystem conversion (DEC) in Latin America due to extensive imports of soy for animal feed. This thesis explores under which preconditions the mandatory European Sustainability Reporting Standards for the agriculture and farming sector can increase transparency in the opaque soy supply chains and incentivize reductions of imported DEC. An ex-ante intervention theory framework is used to establish the intended impact mechanism. Then, weaknesses in the mechanism are identified and complemented with recommendations for disclosure requirements that mitigate those weaknesses. Ten expert interviews, policy documents and evaluations, multi-stakeholder publications, and applicable scientific literature are the data sources for the qualitative thematic analysis. The identified impact mechanism for EU farming companies moves through increased awareness, strengthened due diligence processes, policies, and targets against DEC, and a shift in demand towards traceable soy. Increased transparency and reduced imported DEC can be achieved if soy traders are faced with a spillover of reporting requirements and incentivized to upscale exports of traceable and DEC-free soy to the EU. Weaknesses in the causal chain include uncertainty connected to behavior changes, a power asymmetry in favor of large soy traders, and a high risk of regulatory leakage. The main recommendation is the inclusion of quantitative disclosure requirements on supply chain traceability, ecosystem conversion, and scope three greenhouse gas emissions from land-use change. This allows for benchmarking by NGOs and financial institutions, increasing the pressure on laggard farming companies to adopt behavior changes. To avoid leakage, the scope of demand-side regulation must consistently not only include tropical forests but also other vulnerable ecosystems such as savannahs and grasslands. Further, policymakers are urged to strengthen diplomatic efforts aiming to spread the coverage of demand-side regulation to more consumer countries, most importantly China.

**Keywords:** sustainability reporting, mandatory disclosure, deforestation, ecosystem conversion

## Executive Summary

The animal husbandry of the EU farming sector is responsible for 90% of the total demand for soy products in the EU and drastically relies on imports originating primarily from Brazil, Argentina, and the United States. Soy is a commodity whose expanding production is linked to extensive deforestation and ecosystem conversion (DEC) in Latin America. Consequently, the production of eggs, meat, and dairy products in the EU indirectly contributes to DEC due to extensive imports of soy for animal feed. The complexity and opaqueness of global soy supply chains result in low traceability rates and complicate the path toward sustainable supply chain governance. The existing scientific literature on DEC thus calls for public policies that enforce supply chain transparency, including mandatory disclosure in consuming regions.

Due to its wide scope, the EU Corporate Sustainability Reporting Directive (CSRD) will cause an unprecedented upscale in mandatory sustainability disclosure in the EU. The correlating European Sustainability Reporting Standards (ESRS) will include sector-specific reporting guidelines that contain disclosure requirements on the upstream value chain in their scope. This thesis explores the mechanism through which mandatory disclosure in consuming regions of forest-risk commodities can contribute to increasing supply chain transparency and reducing imported DEC. For this purpose, the draft ESRS for the agriculture and farming sector are used as a case study.

The academic **research aim** is to explore under which conditions mandatory disclosure is most likely to decrease information asymmetries, incentivize corporate behavioral changes, and achieve environmentally and socially relevant outcomes. On the practical level, the thesis aims to recommend specific disclosure requirements related to DEC to the policymakers of the ESRS for agriculture and farming. The policy evaluation is performed by applying an ex-ante intervention theory framework. It serves to establish the preconditions for effectiveness by making the assumptions and expected causal chains that underlie the intervention explicit. The following **research questions** are posed:

- RQ 1: To what extent do the draft standards of the ESRS incorporate disclosure requirements that address DEC caused by the EU farming sector?
- RQ 2: What is the **intended impact mechanism** through which the ESRS for agriculture and farming reduce imported DEC?
- RQ 3: How can the identified **weaknesses in the impact mechanism be mitigated by the disclosure requirements** of the ESRS for agriculture and farming?

The **research design** follows a case study approach due to its ability to generate highly specific, context-dependent knowledge of high utility for practitioners. It further allows for the extensive triangulation of data sources, in line with the intervention theory framework. In total, 10 semi-structured expert interviews, 11 draft ESRS policy documents, 16 documents from multi-stakeholder initiatives, three webinars, and two extensive ex-ante policy evaluations of the ESRS were analyzed. These sources were complemented by the relevant scientific literature on comparable existing policies and fitting scientific theory. Thematic analysis was used to analyze the gathered data, allowing for rich descriptions suited to inform policy development.

The **first research question** investigated to what extent the draft ESRS incorporate disclosure requirements that address DEC caused by the EU farming sector. The draft ESRS feature qualitative disclosure requirements on corporate policies, targets, and actions against DEC. Quantifiable indicators that estimate the actual contribution of individual EU farming

companies to DEC are insufficiently integrated into the standard, especially when compared to the disclosure recommendations of existing multi-stakeholder initiatives against DEC.

The **second research question** established the intended impact mechanism through which the ESRS for agriculture and farming can contribute to reducing imported DEC. There are four preconditions that need to be fulfilled. First, the policy must increase awareness that DEC is a material impact for EU farming companies. Second, the ensuing mandatory disclosure must motivate behavior changes in disclosing companies including a revision and strengthening of due diligence processes, as well as corporate policies, targets, and commitments against DEC. Third, soy traders must be faced with a spillover of reporting requirements and a shift in demand from EU farming companies towards traceable soy volumes. Lastly, a reduction in imported DEC can be achieved by incentivizing suppliers to segregate trade flows and prioritize traceable and DEC-free soy for export to the EU market. Figure A illustrates the impact mechanism, where M1-4 are contextual moderators that affect the strength of relationship between interlinked steps.

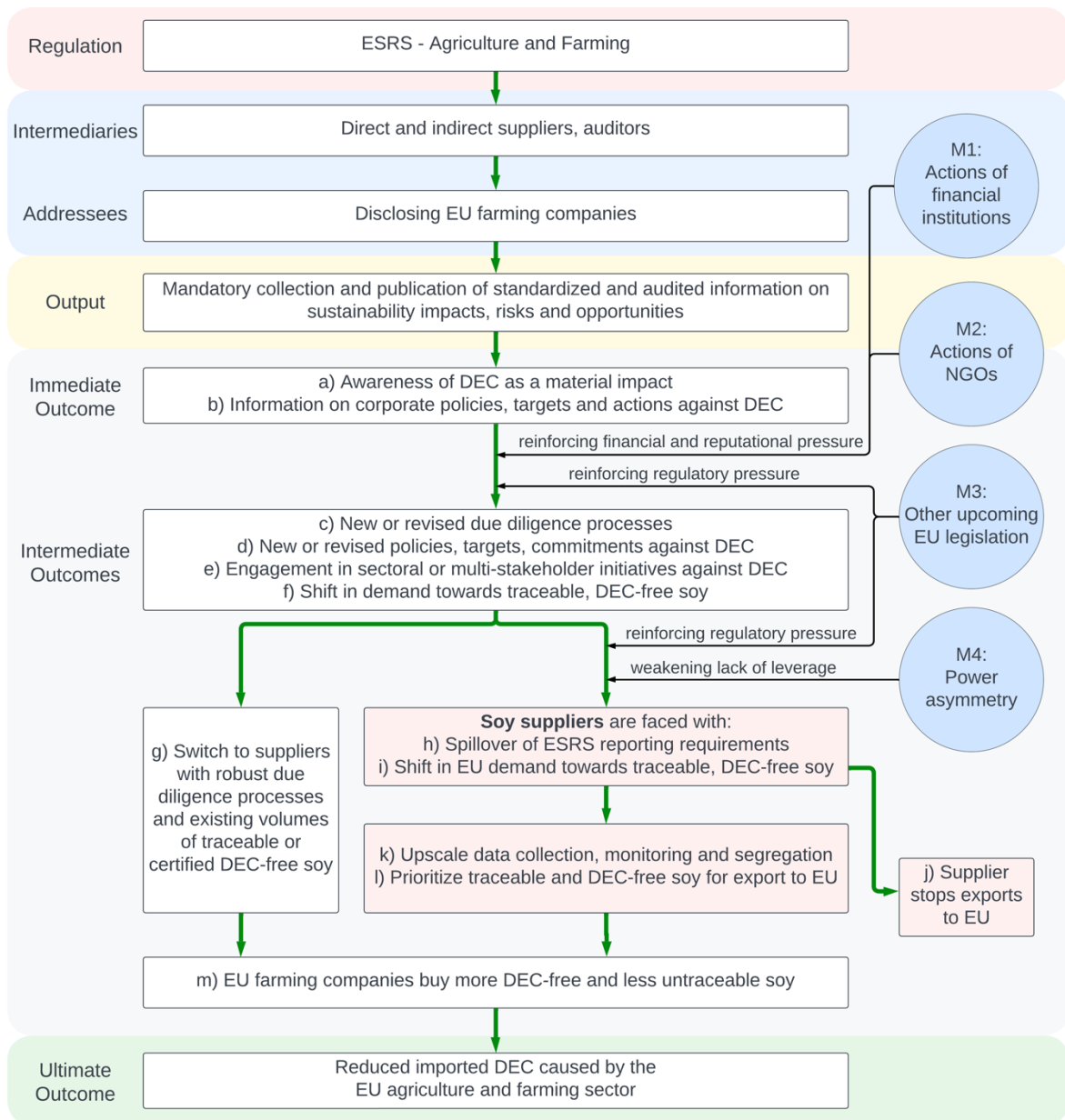


Figure A: Intervention theory for disclosing companies.

The **third research question** identified five weaknesses in the described impact mechanism. First, the disclosure requirements on DEC are only mandatory if the disclosing company itself deems the impact material. Second, there is uncertainty connected to whether disclosing companies adopt behavior changes because of mandatory disclosure. Third, the structure of the soy supply chain is characterized by a power asymmetry that benefits large soy traders and limits the leverage of EU farming companies over their suppliers. Fourth, there is a disconnect between EU farming companies and the social impacts and drivers of DEC in producer countries. Lastly, there is a high risk of unintended consequences because of regulatory, geographical, and cross-commodity leakage.

The following **recommendations to the policymakers of the ESRS** are made to mitigate the identified weaknesses. Aligning the ESRS with the Global Reporting Initiative's approach to materiality assessments would aid disclosing companies by providing a granular list of likely material impacts for the agriculture and farming sector, reducing the chance of incomplete disclosure. Further, the capacity of future auditors of sustainability reports to detect incomplete materiality assessments must be ensured.

The inclusion of quantitative disclosure requirements on supply chain traceability, ecosystem conversion, and scope three greenhouse gas (GHG) emissions from land use change allows for benchmarking by NGOs and financial institutions and may increase the pressure to act, especially for laggard disclosing companies. Guidance for such disclosure requirements exists through the Accountability Framework initiative and the GHG Protocol.

The disclosure requirement on actions against DEC should be extended to include whether the disclosing company is a member of a sectoral initiative. Such initiatives institutionalize a communication framework and counteract the power asymmetry in favor of soy traders by creating a common ask from traders by downstream companies.

Disclosure of supplier policies for land tenure studies and the process to ensure free, prior, and informed consent from local communities for new projects aid in weakening the disconnect of EU farming companies to the social impact drivers in producing countries. A disclosure requirement on the percentage of locally verified DEC-free soy volume may create an alternative business model for rural populations in the future.

Incentivizing continued engagement in high-risk producing areas may decrease the likelihood of regulatory leakage. Transparency on engagement can be created via disclosure requirements on supplier processes in case of detected non-compliance with zero-deforestation commitments and qualitative descriptions of the engagement with jurisdictional approaches in producing countries.

In **conclusion**, the observed hesitancy of policymakers to include quantitative disclosure requirements and prescribe the use of established methodologies threatens to reinforce the frequently perceived disconnect between corporate disclosure and the required urgency of mitigating environmental change. Under the preconditions of the intervention theory, the ESRS contribute to reducing imported DEC, but more forcing regulatory tools are needed to complement the information-based policy instrument.

Due to the threat of regulatory leakage, policymakers are urged to strengthen diplomatic efforts aiming to spread the coverage of demand-side regulation to more consumer countries, most importantly China. Geographical leakage can be minimized if the scope of demand-side regulation consistently includes not only tropical forests but also other vulnerable ecosystems such as savannahs and grasslands. Lastly, increased cooperation between consumer and



producer countries is needed. Without extensive investments in rural livelihoods, as well as monitoring and enforcement capacities in producer countries, the individual and systemic economic incentives in favor of DEC for commodity production will continue to persist and outweigh associated risks.



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## **Abbreviations**

AR – Application requirement

DEC – Deforestation and ecosystem conversion

EFRAG – European Financial Reporting Advisory Group

GHG – Greenhouse gas

GRI – Global Reporting Initiative

NGO – Non-governmental organization

SBTi – Science-Based Targets initiative

SMEs – Small and medium-sized enterprises









# 1 Introduction

Since the industrial revolution, the impact of anthropogenic activity on the Earth's system has grown rapidly (Rockström et al., 2009). There is a widely accepted notion that thresholds exist within that system that will cause irreversible damage if they get crossed. This acknowledgement of planetary boundaries implies that humanity needs to ensure staying within a 'safe operating space' that avoids crossing such thresholds (Rockström et al., 2009). More recent analyses conclude that thresholds could exist at an average temperature increase as low as 2°C and would cause devastating consequences on ecosystems, society, and economies (Steffen et al., 2018). Climate change, land system change, and the loss of biodiversity are three of the nine planetary boundaries identified by Rockström et al. (2009). Notably, commodity-driven deforestation and ecosystem conversion (DEC)<sup>1</sup> lies at the interface of these three boundaries by contributing to land system change, climate change, and biodiversity loss simultaneously (FAO, 2022c). Forests host approximately 80% of terrestrial biodiversity and play a critical role in water cycling and climate regulation (FAO, 2022c; West et al., 2019). Scientific evidence hinting at a sixth mass extinction and increasing regional biodiversity collapses caused by human behavior is mounting (Ceballos et al., 2020). The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES, 2019) estimates that one million species are facing extinction and emphasizes the importance of reducing the conversion of vulnerable ecosystems. Especially in biodiversity hotspots, land use change has caused biodiversity intactness to decline significantly past the proposed safe boundary (Newbold et al., 2016). Halting the highly interrelated crises of deforestation and biodiversity loss is critical to ensure the continued provision of the ecosystem services<sup>2</sup> that society and the economy depend on (FAO, 2022c)

In recent years, high-level political action combating deforestation has reached new dimensions, spearheaded by the 2014 New York Declaration on Forests aiming to halve the rate of deforestation until 2020, and to end deforestation by 2030 (UN Climate Summit, 2014). In addition, the United Nation's Sustainable Development Goals aim to "promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally" (UN General Assembly, 2015: 24). Lastly, the fifteenth UN Convention on Biological Diversity (2022) in Montreal ended with a landmark agreement to protect global biodiversity.

Yet, deforestation<sup>3</sup> continues with alarming speed, with global tree cover already having decreased by 11% in this millennium (Global Forest Watch, 2022). Agriculture is by far the strongest driver of deforestation globally, as cropland and livestock grazing caused close to 90% of global deforestation since 2000 (FAO, 2022a). Most of it occurs in the tropical biome and is caused by the production of a few commodities, most prevalently cattle, palm oil, soy, and cocoa (Goldman et al., 2020; Pendrill et al., 2022).

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<sup>1</sup> Commodity-driven deforestation is "defined by the long-term, permanent conversion of forest and shrubland to a nonforest land use such as agriculture" (Curtis et al., 2018: 1108). Commodities are classified as forest-risk commodities if their production or cultivation has been linked to deforestation and vegetation clearing (Henders et al., 2015).

<sup>2</sup> Ecosystem services are divided into provisioning, supporting and cultural services. Provisioning services include benefits that can be extracted or harvested. Supporting services refer to the ability to regulate biological processes that maintain environmental conditions favorable for society. Cultural services refer to intangible attributes, such as the recreational value of forests (IPBES, 2019).

<sup>3</sup> This thesis follows the Accountability Framework's definition of deforestation, comprising the "loss of natural forest as a result of: i) conversion to agriculture or other non-forest land use; ii) conversion to a tree plantation; or iii) severe and sustained degradation." (Accountability Framework Initiative, 2022, p. 8).

The international trade of forest risk commodities is responsible for up to two-fifths of deforestation-related emissions (Pendrill et al., 2019). Europe is a considerable importer and consumer of agricultural forest risk commodities, and several member states’ imported emissions from deforestation exceed those of domestic agriculture (Pendrill et al., 2019). In total, EU consumption is estimated to be responsible for 16 percent of the deforestation linked to international trade, ranking second only to China (WWF, 2021).

## 1.1 Problem definition

The supply chains that connect the production and consumption of forest-risk commodities are highly complex and opaque, making it difficult to track the impact and origin of food products (Skidmore et al., 2021). Many trading companies source large amounts of commodities indirectly from intermediaries, resulting in highly limited transparency and traceability of forest risk commodities (zu Ermgassen et al., 2022). Corporate zero-deforestation commitments are increasingly adopted, but their credibility and effectiveness remain questionable and hard to confirm due to low monitoring and reporting efforts (Austin et al., 2021). Various scholars point to public policy as an important tool to upscale supply chain transparency and combat commodity-driven DEC (Godar et al., 2016; Grabs et al., 2021; Lambin et al., 2018). Among the policy recommendations are mandatory disclosure regulations in consuming countries, which are urged to take on more responsibility for their consumption footprints (Bager et al., 2021; Grabs et al., 2021; zu Ermgassen et al., 2022). Despite this recommendation, no research has been conducted on how exactly enforced disclosure in consuming countries can contribute to transparent and sustainable forest-risk supply chains.

There will be an unprecedented upscale of mandatory sustainability disclosure in the EU with the creation of the European Sustainability Reporting Standards (ESRS) (Primec & Belak, 2022). The ESRS will be mandatory for those companies that fall under the scope of the EU Corporate Sustainability Reporting Directive (Directive 2022/2464, Bossut et al., 2021). Table 1-1 gives an overview of the widening scope of mandatory sustainability disclosure in the EU. While it is only mandatory for EU companies, the scope of reporting requirements under the ESRS covers the entire value chain and will thus indirectly include the supply chains of forest-risk commodities (EFRAG, 2022e).

Table 1-1: Scope of mandatory sustainability reporting in the EU.

	<b>Non-Financial Reporting Directive</b>	<b>Corporate Sustainability Reporting Directive</b>
<b>Scope</b>	EU companies with over 500 employees	EU companies with over 250 employees and capital market-listed small and medium-sized enterprises (SMEs)
<b>Affected companies</b>	~ 11.000 companies	~ 50.000 companies
<b>Timeline</b>	Since fiscal year of 2018	from fiscal year 2024 for >= 500 employees from fiscal year 2025 for 250 – 499 employees from fiscal year 2026 for listed SMEs
<b>Content</b>	No prescribed reporting framework	Mandatory use of ESRS
<b>Assurance</b>	no assurance mechanism	limited assurance mechanism

Source: Author’s illustration, based on Directive 2022/2464 and Bossut et al. (2021).

The EU Commission has tasked the European Financial Reporting Advisory Group (EFRAG) with developing the ESRS (European Commission, 2021b). Whereas draft standards that apply to all sectors, notably including a topical standard on biodiversity and ecosystems have been published in 2022, an additional set of sector-specific standards are currently being developed (EFRAG, 2022e). Such a sector-specific approach to sustainability reporting allows for more precise disclosure requirements that granularly address sector-typical impacts (Christensen et al., 2021).

The animal husbandry of the EU farming sector is responsible for 90% of the total demand for soy products in the EU and drastically relies on imports originating primarily from Brazil, Argentina, and the United States (Kuepper & Stravens, 2022). Soy is a commodity whose expanding production is linked to extensive deforestation and ecosystem conversion (DEC) in Latin America (Goldman et al., 2020). Consequently, the production of eggs, meat, and dairy products in the EU indirectly contributes to DEC due to extensive imports of soy for animal feed (Karlsson et al., 2020). At approximately 65.000 hectares per year, soy imports are responsible for roughly one-third of the deforestation imported to the EU between 2008 and 2017 (European Commission, 2021d; Kuepper & Stravens, 2022). This thesis explores the mechanism through which mandatory disclosure in consuming countries of forest-risk commodities can contribute to increasing supply chain transparency and reducing imported DEC. For this purpose, the draft ESRS for the agriculture and farming sector are used as a case study. The study is supervised by an employee of the German sustainable finance think tank Climate & Company who is also a member of the EFRAG secretariat that is developing the ESRS for the agriculture and farming sector.

## 1.2 Aim and research questions

Academically, the thesis aims to explore under which conditions mandatory disclosure is most likely to decrease information asymmetries, incentivize corporate behavioral changes, and achieve environmentally and socially relevant outcomes. On the practical level, the thesis aims to recommend specific disclosure requirements related to DEC to the policymakers of the ESRS for agriculture and farming. The research questions are linked sequentially and organized into a case narrative that corresponds to the use of ex-ante intervention theory:

Background: How does the EU farming sector contribute to DEC?

1. To what extent do the draft standards of the ESRS incorporate disclosure requirements that address DEC caused by the EU farming sector?
2. What is the **intended impact mechanism** through which the ESRS for agriculture and farming reduce imported DEC?
3. How can the identified **weaknesses in the impact mechanism be mitigated by the disclosure requirements** of the ESRS for agriculture and farming?

## 1.3 Scope and Delimitations

The scope of covered EU farming and agricultural companies is determined by the eligibility criteria of the upcoming CSRD and its methodology for assigning companies to sectors. The agriculture and farming sector includes, *inter alia*, the production of raw and processed food for human and animal consumption (EFRAG, 2022a). A full list of economic activities covered by the sector is provided in Appendix I. A company must adhere to a sector standard if the annual revenues generated in the sector account for more than ten percent of total revenue (EFRAG,

2022a). It is thus possible for one company to be assigned to multiple sectors. Those EU companies with 250 or more employees, as well as those capital-market listed SMEs, that belong to the farming and agriculture sector comprise the scope of disclosing companies.

To allow for a sufficient depth of the case study, the food and beverages sector was omitted from the scope of the thesis. It is, however, important to note the similarity to the agriculture and farming sector. Land use change for agriculture is the underlying mechanism causing DEC in both sectors (Goldman et al., 2020). Moreover, they complement each other in covering the globally leading forest risk commodities. While the agriculture and farming sector relies on animal feed from **soybeans**, the food and beverages sector imports large amounts of **beef, palm oil, and cocoa** (Goldman et al., 2020). Thus, there may be potential for transferability of findings from the farming and agriculture to the food and beverages sector. Other sectors with potentially material risks of DEC, such as the mining and forestry sectors, are omitted for two reasons. The first reason is that conversion to agriculture is the most common driver of DEC globally, which both sectors do not fall under (Pendrill et al., 2022). The second reason is that the economic activities of these sectors are substantially different from those of the covered sector, resulting in incomparable supply chain dynamics.

The geographical scope of the study is concentrated on Brazil, Argentina, and Paraguay as those soy exporting countries with the highest connected risks of DEC, and the EU as the soy importing region (Kuepper & Stravens, 2022). While the direct reporting requirements only apply to the EU companies fulfilling the attributes described above, a significant spillover of reporting obligations up the value chains of disclosing companies is expected (De Groen et al., 2022). For disclosure requirements related to DEC, this implies a ripple effect of disclosure requirements that reaches traders and producers on the frontiers of DEC.

The research addresses only the embodied DEC of products imported by the EU agriculture and farming sector. Deforestation driven by the consumption and trade of forest risk commodities in other sectors, outside of the EU and driven by the domestic use of commodities in the producer countries are not covered by the scope of this thesis.

## 1.4 Ethical considerations

The research topic was generated in cooperation between the author and two employees of the German sustainable finance think tank Climate & Company, one of which is the corporate supervisor of the thesis. Communications with the academic supervisor involved a focus on research integrity and avoiding any influence on the research process that might be connected to fulfilling the think tank's principles, values, or beliefs.

A list of potential interviewees from the corporate supervisor's network was provided to the author, allowing access to high-level experts who themselves are not directly affiliated with Climate & Company. To reduce the likelihood and extent of selection bias, half of the interviewees were found via independent desk research by the author.

Full confidentiality of interviewees' names and associated organizations is granted. To uphold researcher honesty, the research topic and aim and collaboration with the think tank are disclosed to all interviewees beforehand. Participation in interviews for the thesis is voluntary, with informed consent being obtained after stating that the interviews will be recorded and transcribed for analysis. Participants were further informed of their right to opt out at any later stage. The data collection and storage followed Lund University's ethical guidelines. There is no reason to believe that participants might suffer any disadvantage or damage because of their participation. The research design has been reviewed against the criteria for research requiring

an ethics board review at Lund University and has been found to not require a statement from the ethics committee.

## **1.5 Audience**

This thesis primarily addresses the policymakers in the EFRAG who have been tasked with designing the ESRS, more specifically those that are developing the sector standard for agriculture and farming. For this audience, the thesis aims to investigate how the DEC imported by the EU agriculture and farming sector can be best incorporated into the disclosure requirements of the ESRS.

Further, the research aims to reach academics interested in the emerging research area that studies the real effects of mandatory sustainability reporting. This study aspires to contribute to the field by investigating under which preconditions disclosure is most likely to remove information asymmetries, incentivize behavior changes by affected corporate actors, and lead to environmentally and socially relevant outcomes.

For academics and research institutions that perform environmental policy evaluations, the study serves as an example of the ex-ante use of intervention theory. The thesis intends to encourage more widespread adoption of the framework, as it aids in identifying crucial mechanisms in the policy design by explicitly stating the envisioned theory of change (Linnér et al., 2012).

## **1.6 Outline**

Chapter 2 presents relevant scientific literature on the DEC embodied in international trade before moving on to existing research on mandatory sustainability reporting and introducing intervention theory as the framework used for the analysis. Chapter 3 presents and justifies the case study research design; lists collected data sources and specifies the method of data analysis. Chapter 4 comprises the analysis and findings of the study, answering the research questions. Then, Chapter 5 explains the implications of the findings and places them in the context of existing literature, before discussing methodological choices and limitations of the study. Chapter 6 briefly summarizes the main takeaways and recommendations and outlines avenues for further research.

## 2 Literature Review

The literature review starts by briefly analyzing ongoing attempts to reduce the deforestation embodied in international trade. The literature on the successes and shortcomings of such initiatives is complemented by scholarly policy recommendations, which include mandatory transparency regulations. Then, successes and failures of existing mandatory disclosure regulations are pointed out, from which policy design implications for the ESRS are extracted. Then, relevant scientific theories and frameworks are introduced that help interpret the research problem and clarify its position at the interface of DEC and sustainability reporting. Lastly, ex-ante intervention theory is identified as the framework for the ensuing analysis of the ESRS for the agriculture and farming sector.

### 2.1 Responses to deforestation embodied in international trade

Due to its qualities as a wicked problem, commodity-driven deforestation has been persistent in the last decades while contributing to climate change, biodiversity loss, and land system change (Lambin et al., 2018; Rockström et al., 2009). International trade causes up to two-fifths of deforestation-related emissions worldwide, highlighting its large role in driving deforestation (Pendrill et al., 2019). The impact is concentrated in the trade of relatively few commodities, such as palm oil, soy, cattle, cocoa, and coffee (Goldman et al., 2020). For example, the EU farming sector is heavily reliant on imported soybeans as a feed source for pigs and poultry, a commodity that is associated with deforestation in South America (Karlsson et al., 2020).

Governing the deforestation embodied in international trade is significantly complicated by the complexity and opaqueness of forest-risk commodities' supply chains. These are characterized by the frequent aggregation of products from multiple producers, indirect sourcing, and resulting low traceability rates (Renier et al., 2023; Skidmore et al., 2021; zu Ermgassen et al., 2022). For example, a recent study found that 56% of the deforestation caused by cocoa imports from the Ivory Coast into the EU arises from untraced sourcing (Renier et al., 2023).

To increase the governability of forest-risk supply chains, a scale-up of transparency and traceability is needed (Godar et al., 2016; Renier et al., 2023; Skidmore et al., 2021). With additional data, the origin of agricultural products and whether they were grown on recently converted land can more easily be identified (T. A. Gardner et al., 2019).

#### 2.1.1 Zero-deforestation commitments

Zero deforestation commitments are private sector pledges to remove deforestation from supply chains, and a tool that potentially incentivizes an increase in data availability (Lambin et al., 2018). While their adoption is rising steeply, questions about their effectiveness remain. The main reasons behind this are missing monitoring and verification systems, as well as limited public disclosure of progress (Lambin et al., 2018). Common shortcomings include loopholes in the design of the commitment, and adverse effects on smallholder farmers (Lambin et al., 2018). Especially the indirect supply chain is a source of concern, as most zero-deforestation commitments only include direct suppliers, thus allowing the circulation of imported deforestation through intermediaries (Renier et al., 2023; zu Ermgassen et al., 2022).

Another drawback is leakage due to insufficient geographical coverage, which motivates an expansion of the scope of the research problem. A common example is the Amazon Soy Moratorium, an agreement by traders to stop buying soy from recently converted rainforest (Heilmayr et al., 2020). On the one hand, it was effective in reducing the direct conversion of the Amazon rainforest to soy plantations (Heilmayr et al., 2020). On the other hand, it caused

a massive expansion of soy plantations onto less controlled but equally vulnerable ecosystems, such as the Cerrado savannah (Soterroni et al., 2019). Such empirical cases are why this thesis refers not only to deforestation but instead uses the term deforestation and ecosystem conversion (DEC), which captures such dynamics. The term is also used by leading multi-stakeholder initiatives that work on the issue (Accountability Framework Initiative, 2022).

Well-designed zero-deforestation commitments have inclusive definitions that cover forests and other vulnerable ecosystems and include responsibility along the indirect supply chain, with specific plans for monitoring and traceability systems to the farm level (Garrett et al., 2019). Moreover, cut-off dates after which deforestation is deemed uncompliant should not be in the future, as this incentivizes speculative clearing (Garrett et al., 2019). Sanction-based mechanisms combined with supplier engagement strengthen implementation (Garrett et al., 2019). Net-zero targets weaken commitments, as they leave room for deforestation to be compensated by restorative measures, while gross zero-deforestation commitments are considered more ambitious (Garrett et al., 2019). Those zero-deforestation commitments that follow the recommendations for effective criteria have been able to achieve success in reducing deforestation risks, and sporadic cases exist where major traders of forest risk commodities have achieved full traceability to the farm level (Zu Ermgassen et al., 2020).

However, the literature indicates a trade-off between ambition and accountability, as well as low levels of comparability and thus significant room for improvement among existing zero-deforestation commitments (Garrett et al., 2019; Renier et al., 2023; Zu Ermgassen et al., 2020). Two studies explicitly mention the Accountability Framework initiative as a promising actor in increasing ambition and standardizing concepts and commitments (Garrett et al., 2019; zu Ermgassen et al., 2022). A second notable suspected trade-off for zero-deforestation commitments lies between stringency and adoption rate (Garrett et al., 2019).

### **2.1.2 Role of demand-side intervention**

While pointing out the value of zero-deforestation commitments and hesitant successes in supply chains and targeted regions, Lambin et al. (2018) conclude that corporate policies need to be adequately mixed with complementary public policy interventions that ensure compatibility and avoid fragmented efforts against DEC. Garrett et al. (2019: 146) call private sector zero-deforestation commitments a “testing ground for identifying mechanisms that can successfully control deforestation and be ratcheted up to legally binding behaviors”. An important finding is that a key for the effectiveness of private-sector sustainability engagement is the quality of government regulations (Lambin et al., 2014).

These dynamics result in the conclusion that existing and strengthened regulations in producer countries need to be complemented by demand-side policy measures in consumer regions that span back into international supply chains (Pendrill et al., 2019). The EU and China are the leading importers of deforestation-related emissions and can thus be interpreted as the primary recipients of the scholarly call for demand-side intervention (Pendrill et al., 2019).

For Godar et al. (2016: 10), the biggest challenge to overcome “is the poor state of supply chain transparency with the actors that make up complex supply chains remaining hidden”, which is in line with the notion that wicked problems suffer from incomplete information (Rittel & Webber, 1973). This disconnect between producer and consumer systems could partially be overcome by connecting public agendas on land use and incentivizing increased transparency with regulatory intervention (Godar et al., 2016). Increases in transparency promise to foster a deeper conceptual understanding of the production systems of forest-risk commodities, distributive effects among actors, and reveal trade-offs (Godar et al., 2016). In attempts to shed

light on the opaque supply chains that connect deforestation and increased demand for forest-risk commodities, “governments can play a key role in facilitating an even playing field by either mandating company disclosure or facilitating access to key datasets on supply chains to help reveal direct and indirect sourcing patterns” (zu Ermgassen et al., 2022).

Bager et al. (2021) categorize 86 EU policy options to counter imported deforestation. The measures span market-based, regulatory, and information-based policy options and include incentivizing dietary changes, awareness raising, and capacity building, as well as mandatory reporting requirements and due diligence. In the analysis, the authors point out a trade-off, as those policies most feasible to be implemented tend to have a weak theory of change. Mandatory disclosure and other transparency policies are said to increase the demand for deforestation-free forest-risk commodities by providing information to supply chain actors and consumers, thus reducing the demand and need to convert forests into productive agricultural land (Bager et al., 2021). The multi-layered theory of change aiming at reduced imported deforestation has a coarse resolution due to the high number of policy options explored in the study.

To summarize, supply chain transparency is a key barrier to effectively addressing embodied deforestation in the trade of forest-risk commodities. A multitude of studies point to government measures in consuming countries as a missing tool in the policy mix, with two studies specifically recommending mandatory disclosure in consumer regions (Bager et al., 2021; zu Ermgassen et al., 2022). This thesis intends to provide a fine resolution of the specific intended impact mechanism of mandatory disclosure on imported deforestation in an intervention theory by using the ESRS for agriculture and farming as a case study. This allows for a more in-depth identification of crucial interlinkages and external factors that dictate the strength of relationship between policy and intended outcome than in the existing literature.

## 2.2 Effects of mandatory sustainability reporting

This subchapter identifies a trend from voluntary to mandatory sustainability reporting and establishes its intended purpose. The following sections highlight to what extent sustainability reporting empirically fulfilled this purpose. Then, learnings and implications for policymakers of mandatory disclosure policies are compiled and applied to the context of the ESRS.

Since the mid-2010s, mandatory disclosure is becoming more widespread, indicated by various mandatory carbon emission disclosure regulations and the initiation of the Non-Financial Reporting Directive in the EU in 2014 (Chen et al., 2018; Downar et al., 2021; Hummel & Jobst, 2022). The shift from voluntary towards mandatory sustainability reporting will be further manifested in the EU with the upcoming Corporate Sustainability Reporting Directive, which debuts the mandatory use of specifically developed reporting guidelines, the ESRS (Hummel & Jobst, 2022). Moreover, a less restricted interpretation of materiality in the CSRD extends what is expected to be included in sustainability reports (Baumüller & Sopp, 2022).

The primary function of sustainability reporting is for the disclosing company to share relevant, or material, information on environmental, social and governance matters with its stakeholders (Xiao & Shailer, 2022). The purpose is to reduce information asymmetry between actors and thus allow for better-informed decision-making by interested parties, such as potential investors and consumers (Cuadrado-Ballesteros et al., 2017; Xiao & Shailer, 2022). More anticipated effects of mandatory sustainability reporting include “behavioral changes of reporting companies” and an “increase of investment flows to more sustainable companies” caused by “improved usability of reported information” (EU Commission, 2021a: 36). Behavioral changes include a more sophisticated integration of sustainability risks and opportunity into corporate strategies, better cooperation within the value chain and a higher likelihood of adopting



extensive due diligence processes (de Groen et al., 2022). Moreover, reporting is expected to allow civil society organizations to more easily enforce corporate accountability (de Groen et al., 2022). The scientific literature on sustainability reporting reveals ambiguity on the extent to which the practice has empirically achieved the previously depicted purposes.

### **2.2.1.1 Reduction of information asymmetry**

The first intended purpose of sustainability reporting is the reduction of information asymmetry between the disclosing company and its stakeholders (Xiao & Shailer, 2022). Several studies analyze the quality of voluntarily reported information, and to what extent the introduction of mandatory sustainability reporting increases the quantity and quality of disclosed information.

For two prevalent reasons, there is consensus that the quality of voluntarily disclosed information is typically low. Firstly, there is a lack of comparability between companies due to differing methodologies and reported metrics, which results in patchy data with incomparable units (Beske et al., 2020; Haji et al., 2023; Steinhofel et al., 2019). The inconsistent use of guidelines, as well as the existence of various competing guidelines for sustainability reporting, are identified as the driving force behind the issue (Beske et al., 2020; Haji et al., 2023). The second reason is an often-opportunistic approach of selectively disclosing information and leaving out important impacts and risks that is regularly labelled greenwashing (Bingler et al., 2022; Hąbek & Wolniak, 2016; Steinhofel et al., 2019). Hence, the usability of data for stakeholders, especially investors, is typically impaired and threatens the reduction of information asymmetries (Hąbek & Wolniak, 2016; Jonsdottir et al., 2022; Mion & Loza Aduai, 2020). This is further magnified when no external assurance of information is provided, as the perceived credibility of data decreases (Cuadrado-Ballesteros et al., 2017).

There is contradicting evidence on whether the introduction of mandatory disclosure regulations decreases information asymmetries between disclosing companies and their stakeholders. Ioannou and Serafeim (2017) use statistical analyses to find increased disclosure quantity and quality following the introduction of mandatory corporate sustainability reporting policies in China, Denmark, Malaysia, and South Africa. Mion and Aduai's (2019) content analysis finds that the sustainability reports published by large Italian and German corporations significantly increased in quality and intercountry comparability after the mandatory Non-Financial Disclosure Regulation came into effect. On the contrary, a case study of 184 Italian sustainability reports finds no significant difference in the disclosure quality after reporting became mandatory (Carungu et al., 2020). Another meta-analysis finds that despite mandatory regulation, sustainability reporting "continues to be ceremonial rather than substantive" while admitting that the issue is largely under-researched, and no studies exist on long-term effects. (Haji et al., 2023: 1). A potential explaining factor for the ambiguous results of such studies is that existing mandatory disclosure regulations do not prescribe the use of specific guidelines (Hąbek & Wolniak, 2016). Primec and Belak (2022) expect that the often-criticized weakness of lacking comparability and incomplete disclosure of information can be mitigated with the introduction of prescribed guidelines and mandatory assurance in the CSRD.

### **2.2.1.2 Behavior changes in disclosing companies**

The second intended purpose of mandatory sustainability reporting is the motivation of behavioral changes in disclosing companies that enable a better integration of sustainability risks and impacts into corporate decision-making (de Groen et al., 2022). Weil et al. (2006: 155) argue that transparency policy achieves its purpose only if the generated information becomes "embedded in the everyday decision-making routines of information users and information disclosers". A large-scale literature review by Traxler et al. (2020) finds that there are several

impact routes of how sustainability reporting can affect internal management control systems. Empirically, sustainability reporting is frequently identified as a tool to integrate sustainability issues into organizational planning and aid in setting environmental objectives (Traxler et al., 2020). Importantly, internal measuring and monitoring capacity is a prerequisite for sustainability reporting (Traxler et al., 2020). An in-depth case study of seven multinational corporations finds that although corporations disclose primarily for business rather than ethical reasons, the external reporting practice gets translated into key performance indicators, affecting operational and strategic decision-making (Adams & Frost, 2008). Though the extent and degree of incorporation differ and are highly contextual, this finding further indicates a connection between disclosure and organizational change (Adams & Frost, 2008). A recent study by Fiechter et al. (2022) found robust evidence that the sustainability-related activities of companies subject to the EU Non-Financial Reporting Directive have increased because of the mandatory disclosure regulation. It can thus be reasonably inferred that the introduction of specific, mandatory disclosure requirements creates a common baseline for the internal data collection capacity of regulated companies.

### **2.2.1.3 Environmental and social outcomes**

The third dimension that the literature review analyses is the extent to which measurable environmental and social outcomes have been empirically observed as a consequence of sustainability reporting. In the UK, a significant reduction in greenhouse gas (GHG) emissions was observed after the introduction of mandatory disclosure (Downar et al., 2021). Similarly, Chinese municipalities experienced decreased industrial wastewater and sulfur oxide emission levels after the implementation of a mandatory disclosure regulation (Chen et al., 2018). Another study found that merely increasing the accessibility of already available information can have real effects (Christensen et al., 2017). The enforced inclusion of previously elsewhere published mine-safety records in the financial statements of US companies led to an observable decrease in mining accidents (Christensen et al., 2017). These findings support the hypothesis that the inclusion of disclosure requirements on DEC in the ESRS may increase supply chain transparency and potentially reduce imported DEC. However, it is unclear to what extent the presented findings are transferable from the broad case of corporate sustainability reporting to the specific case of deforestation-related disclosure.

Other authors perceive a disconnect between ecological systems and sustainability reporting and show skepticism about the concept of corporate disclosure (Milne & Gray, 2013). It is argued that disclosure initiatives are an attempt to preempt more stringent regulation which could force larger-scale behavior changes that collide with shareholder wealth maximization (Kinderman, 2020). Dingwerth and Eichinger (2010) postulate that sustainability reporting fails to empower civil society, as the corporate sector can and historically has diluted disclosure requirements which led to decreased comprehensiveness, comparability, and usability of information. It is thus inferred that transparency policies struggle to be impactful, especially when the topic of disclosure is complex and requires high literacy by the reader, as is the case in sustainability reporting (Dingwerth & Eichinger, 2010).

### **2.2.1.4 Policy implications**

The review of academic literature on sustainability reporting shows a highly mixed, partially contested, and thus inconclusive picture of the likelihood of achieving the specified targets of the CSRD and ESRS. This subchapter identifies scholarly recommendations for the design of mandatory disclosure that aim to increase the likelihood of reduced information asymmetries, behavioral changes in disclosing companies, and measurable environmental and social outcomes.

Three attributes were identified as helpful. First, the existence of an assurance mechanism is deemed by users of disclosed information to increase the credibility of data and thus promote the reduction of information asymmetries (Misiuda & Lachmann, 2022). Second, the double materiality principle includes disclosure of both environmental externalities that address all stakeholders and relevant risk-related elements that primarily address investors (Christensen et al., 2021). It is thus deemed to better incentivize behavioral changes than the one-dimensional financial materiality (Christensen et al., 2021). Third, legislators are urged to aim for precise disclosure requirements with clearly defined scopes to promote comparability, perceived credibility, and the likelihood of incentivizing organizational changes (Leong & Hazelton, 2019; Misiuda & Lachmann, 2022). A key balance to strike is achieving sufficient specificity in the disclosure requirements to avoid greenwashing while ensuring that the standards fit the circumstances of disclosing companies, which is tied to the recommendation of a sector-specific approach (Christensen et al., 2021).

Whereas the first two attributes are met in the CSRD, the precision of disclosure requirements in the ESRS has not yet been investigated. The literature review infers that if transparency on pressing sector-specific impacts is enforced through precise disclosure requirements, the likelihood of behavioral change and ensuing positive social and environmental outcomes is increased (Leong & Hazelton, 2019). This study aims to generate new insights into the specificity of disclosure requirements by using the ESRS for farming and agriculture and the sector-specific impact of imported DEC as a case study. In this endeavor, the thesis contributes to the limited body of research on mandatory sustainability reporting (Haji et al., 2023; Traxler et al., 2020).

## **2.3 Concepts and theories of relevance to sustainability reporting**

This subchapter synthesizes concepts and theories that aid in framing the research problem. From these theories and their underlying views, different interpretations of the actions and motivations of corporate behavior can be derived, which will feed into the analysis chapter of the thesis.

### **2.3.1 Information asymmetry**

The motivation behind mandatory disclosure interventions is to reduce existing information asymmetry that prevents progress toward political targets (Weil et al., 2006). Information asymmetry between market participants leads to market failure, as first investigated by Akerlof (1978). The premise is that quality differences in goods and asymmetrically distributed information between seller and buyer lead to adverse selection and thus market failure (Akerlof, 1978). Since stakeholders dealing with companies in the value chain of forest-risk commodities commonly lack access to information about the exact geographic origin of the raw materials, business and consumption decisions are made based on incomplete information (Skidmore et al., 2021). This opaqueness leads a subset of consumers, investors, and corporate buyers to unknowingly contribute to deforestation. Government intervention is required to resolve market failure caused by information asymmetry (Akerlof, 1978). In the context of commodity-driven DEC embedded in international trade, the European Commission explicitly acknowledges social and environmental externalities, as well as information asymmetries caused by a lack of transparency (European Commission, 2021d). The ESRS constitute an information-based policy tool that aims to decrease information asymmetry and thus provide a broader information base for the decision-making of stakeholders that makes social and environmental externalities visible.

### 2.3.2 Signaling and institutional theory

Hahn & Kühnen's (2013) literature review of 178 articles finds that frameworks and theories are rarely used or developed in academic articles about sustainability reporting. Those articles that consider theory loosely mention signaling theory, institutional theory, stakeholder theory, legitimacy theory, and agency theory (Hahn & Kühnen, 2013).

Signaling theory emerged from economics and uses information asymmetry between actors as a starting point (Spence, 1973). It suggests that one actor attempts to convey information about itself to other actors in a credible manner to reduce the information gap (Hahn & Kühnen, 2013). Signaling theory is based on the premise that signaling certain kinds of information to stakeholders aids them in decision-making, reduces the perceived risk, and increases the disclosing company's reputation (Vesal et al., 2021). Sustainability information constitutes such a case of information asymmetry (Vesal et al., 2021). In this case, it can be in a company's interest to signal its sustainability performance proactively by publishing an audited sustainability report addressed to relevant stakeholders (Vesal et al., 2021).

While signaling theory focuses on the intrinsic motivations for the disclosing company, another common perception is that the motivation behind publishing a sustainability report is largely driven by outside factors. This view claims that corporate sustainability activities are highly reactive to societal and regulatory pressures (Martínez-Ferrero & García-Sánchez, 2017). Institutional theory identifies three drivers behind the disclosure of sustainability data (Martínez-Ferrero & García-Sánchez, 2017). Coercive, normative, and mimetic isomorphism describe how converging outside expectations lead to a homogenization of organizational practices (DiMaggio & Powell, 1983). Coercive isomorphism results from formal and informal pressures on companies stemming from the legal framework within which a company operates (DiMaggio & Powell, 1983). In the case of sustainability reporting, such pressures are exerted by mandatory disclosure regulations (Martínez-Ferrero & García-Sánchez, 2017). Normative isomorphism describes the adoption of organizational behaviors that are seen as socially or ethically desirable (DiMaggio & Powell, 1983). Thus, it is a strategy of aligning with stakeholder expectations. In the context of sustainability reporting, normative isomorphism includes the fulfillment of information demands along the value chain and the assurance of information if requested (Martínez-Ferrero & García-Sánchez, 2017). Consequently, it would play an important role in the context of scaling up disclosure related to DEC, as its implementation requires a spillover of reporting requirements upstream (zu Ermgassen et al., 2022). Lastly, mimetic isomorphism takes place when companies imitate the behavior of other organizations with the intention to improve performance or increase the legitimacy of their own operation (DiMaggio & Powell, 1983). Especially in uncertain settings, as is the case in the opaque supply chains of forest risk commodities, mimetic isomorphism is practiced commonly as it offers a reference point for the imitating organization (Martínez-Ferrero & García-Sánchez, 2017). Coercive, normative, and mimetic isomorphism has been observed in the spread of sustainability reporting (Martínez-Ferrero & García-Sánchez, 2017) and likely contributes to the ongoing spread of corporate zero-deforestation commitments.

## 2.4 Intervention Theory

As a framework for the ensuing analysis that explores the impact mechanism through which the ESRS may contribute to increasing supply chain transparency and reducing imported DEC, the thesis makes use of ex-ante intervention theory. The purpose of intervention theory is to understand how an intervention is expected to work, which components are necessary to achieve the intended outcomes, and what contextual factors may affect the intervention's effectiveness (Mickwitz, 2003). Intervention theory intends to increase understanding, sharpen

predictions, and aid decision-making and actions rather than to exactly depict an underlying, highly complex truth (Rogers, 2000). In simple terms, it describes how an intervention is intended to work, not how it actually works (Mickwitz, 2003).

Rogers et al. (2000: 10) view intervention theory as the process of “creating a model of the microsteps or linkages in the causal path from program to ultimate outcome.”. Typically, an intervention theory makes assumptions that include at least four dimensions (Mickwitz, 2003). First, it identifies the relevant **actors** in the intervention, including those that carry out, and those that are affected by the instrument (Mickwitz, 2003). Second, the **inputs** that are utilized to create outputs are defined (Mickwitz, 2003). Third, the theory outlines the expected **outputs** of the intervention that the parties affected by the policy are faced with (Mickwitz, 2003). Lastly, the **outcomes** are comprised of behavior changes by the affected parties, as well as the consequences of these changes. Those outcomes can be distinguished into “immediate, intermediate and ultimate outcomes” (Mickwitz, 2003: 424).

### **2.4.1 Information sources, mediators, and moderators**

As a simplification of reality, intervention theory is inherently subject to inaccuracies (Rogers, 2000), motivating the need for it to be based on scientific theory to justify underlying hypotheses and assumptions (Mickwitz, 2003). Environmental problems are typically complex and involve varying degrees of uncertainty, which is why the impact logic of an intervention is regularly not straightforward, but controversial (Mickwitz, 2003). It is thus advisable to practice triangulation of sources to account for this complexity (Mickwitz, 2003).

Donaldson (2001) outlines four preferred sources of information for the construction of intervention theories:

1. Previous theories and research in the domain of the intervention,
2. beliefs held by the program operators,
3. observations of the intervention once it is implemented,
4. and exploratory research testing key assumptions about the intervention (Donaldson, 2001).

For ex-ante intervention theories, where empirical materials of a policy in action do not exist yet, a different set of assessment criteria and information sources needs to be established. Linnér et al. (2012) point out that in that case, assumptions can be generated and tested in three ways. First, they can be established by logical inferences and assessed for plausibility. Second, assumptions can be based on relevant scientific theory. Lastly, the identification and analysis of already implemented, comparable interventions can be utilized to generate and assess assumptions (Linnér et al., 2012). Thus, intervention theory frequently makes use of “both conceptual and empirical components” (Linnér et al., 2012: 178).

Next to the triangulation of sources, the establishment of multiple causal paths is commonly practiced in intervention theories to reflect the complexity of the research problem (Rogers, 2000). However, “there is no contraction between a linear intervention theory and a complex, non-linear world”, as the intervention theory depicts not the practice, but the assumptions underlying an intervention – which may be linear (Mickwitz, 2005: 71). Donaldson (2001) introduces complexity to intervention theory analysis by introducing multiple variables. **Mediator variables** are affected by the intervention and then go on to affect an outcome. Alternatively, mediators can already be interpreted as outcomes by being termed immediate or intermediate outcomes, which lead to a desired ultimate outcome (Mickwitz, 2003). Of

particular importance, both in the analysis and the effectiveness of an intervention, is the strength of relationship that exists between a mediator and an outcome (Donaldson, 2001).

While the strength of relationships between intervention, mediators, and outcomes has inherent qualities, it can also be affected from the outside through **moderating variables** (Donaldson, 2001). Moderating variables are relevant contextual attributes or characteristics surrounding the intervention that affect the strength of relationship between either intervention and mediator, or mediator and outcome. It is, in short, advisable to analyze an intervention in its relevant context to improve the conceptualization, as this context directly affects the strength of causality of the intended intervention (Donaldson, 2001). Two key takeaways for the construction of the intervention theory can be derived from this. Firstly, the thesis should aim to granularly assess which in-between steps lead to the ultimate outcome of reduced imported DEC. Secondly, the intervention theory must observe the ESRS in their relevant context to identify key moderating variables that are expected to significantly affect the causal chain. Thus, the data collection will consider other related policy instruments and pertinent external factors.

A template for an intervention theory that incorporates the previous elaborations is illustrated in Figure 2-1. Notably, the green arrows representing the causal chain have an initial, inherent strength of relationship, which in turn can be affected by relevant contextual variables – the moderators. The relevant actors are broken up into intermediary actors and addressees to distinguish between complementary and main actors. This follows the approach of Mickwitz (2005), whose intervention theory for the labelling of tobacco in Finland served as an inspiration for this study’s use of the framework.

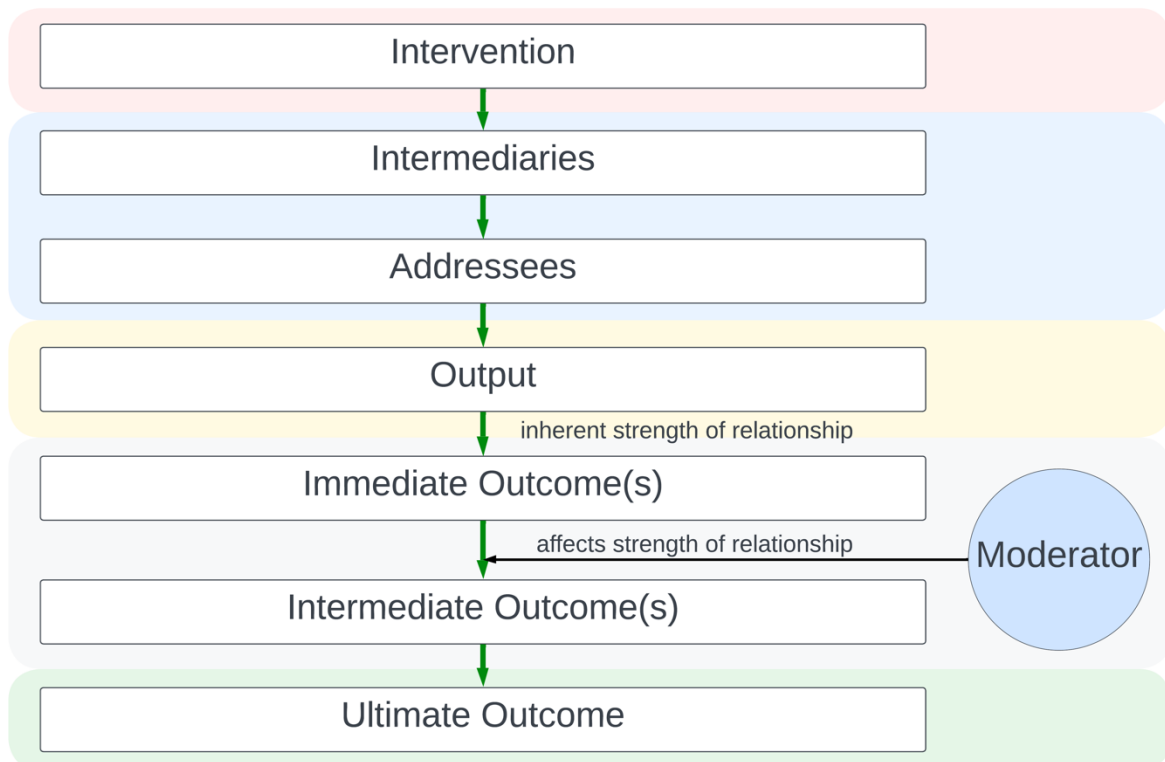


Figure 2-1: Intervention theory template.

Source: Author’s illustration, adapted from Donaldson (2001), Mickwitz (2003), and Linnér et al. (2012).

## **2.4.2 Strengths and use in the EU**

In the EU context, policy evaluation is typically used ex-post to compare the intended effects of a policy against its actual outcomes, often with a strong focus on effectiveness, cost-effectiveness, and efficiency rather than side effects (European Commission, 2017; Mickwitz, 2021). Impact assessments are the most frequently used form of ex-ante evaluations in the EU and are mandatory for policies requiring large expenditures (European Commission, 2017). While intervention theory had been neglected until 2017, it has recently been integrated into the EU evaluation practice. It is, however, still not frequently used in environmental policy evaluations (Mickwitz, 2021). The intervention logic is moreover merely mentioned as a starting point for ex-post analyses, as it is pointed out exclusively as a tool to “compare critically what has actually happened to what was expected to happen” (European Commission, 2017: 58).

This thesis argues for the utility of additional ex-ante policy evaluations. Such evaluations may follow the approach of an intervention theory, with the purpose of establishing a clear framing by explicitly stating the envisioned theory of change and identifying critical mechanisms in the policy design (Linnér et al., 2012). This is especially important, as the framing of an issue is expected to affect how it is treated (Hoffmaister & Román, 2012; Linnér et al., 2012). Moreover, explicitly stating underlying assumptions and expected causal chains that underlie an intervention can facilitate learning intrinsically (Mickwitz, 2003). These assumptions and learnings can then serve to provide reflexivity on the initial policy design by identifying the preconditions for effectiveness (Mickwitz, 2003). Moreover, the use of ex-ante intervention theory can determine which outcomes to gather information on for a future ex-post evaluation of the policy (Mickwitz, 2003).

## **2.4.3 Limitations**

The formulation of an intended impact mechanism before the implementation of a policy is perceived by some as overly ambitious and overstepping the boundaries of the policy evaluator (Scriven, 1998). This argumentation is founded in the claim that predictive assessments are inherently uncertain and thus restricted in their ability to guide policy development (Herrick & Sarewitz, 2000). By anticipating how an intervention is expected to work, the attention of the policy evaluator is actively directed which can lead to a biased focus. Van der Knaap elects a sterner way to convey this message by stating that “tunnel vision and rigidity are never too far away from theories and beliefs” (van der Knaap, 2004: 24). This tunnel vision is especially damaging when the opinions of certain stakeholders or marginalized groups are omitted from consideration in an evaluation (van der Knaap, 2004). In this way, theory-based evaluation can suffer from power distortions and restrain inclusivity (van der Knaap, 2004). In intervention theories, these challenges can be partially mitigated by creating multiple intervention theories for the evaluation of a single policy (Mickwitz, 2021). This is advisable because stakeholders typically have a variety of different assumptions and views on the causalities of novel policies (Mickwitz, 2021).

While theory-based evaluation easily provokes learning on the superficial level of policy design, it can struggle to initiate deeper, innovative learning on the level of implicit norms and underlying truisms and assumptions that are often irrevocably interwoven with practical goals (van der Knaap, 2004). Such deeper learning that questions the values and decision-making processes underlying the incumbent political and economic arrangements could have been generated by a less narrow framework such as actor-network theory as recommended by Barter & Bebbington (2013). Making normative underlying assumptions explicit, for example in separate situational, causal, and normative models as suggested by Hansen and Vedung (2010) may potentially enable innovative learning within the framework of intervention theory.

A relevant research frontier remains how the use of theory-based evaluations can be adjusted to inform radical, transformative system-level change of the kind that is needed for sustainable development, as opposed to merely focusing on iterative improvements on the operative level, with Mickwitz et al. (2021) highlighting the utility of a transdisciplinary approach. As disruptive innovation and learning are required in the face of wicked problems such as climate change, ensuring the compatibility of theory-based evaluation with this necessity is likely to receive increased attention in the future, not least to ensure that policymaking is not guided toward deepening path dependencies (Mickwitz et al., 2021).

## **2.5 Takeaways**

Three main takeaways can be generated from the literature review. First, a scholarly call for increased transparency in the supply chains of forest-risk commodities has been identified, with two studies explicitly recommending mandatory disclosure regulation in consuming countries (Bager et al., 2021; zu Ermgassen et al., 2022). Second, the analysis of empirical mandatory disclosure regulations revealed an ambiguous picture on the effectiveness of such policies in decreasing information asymmetries, affecting the behavior of relevant actors, and achieving environmentally and socially relevant outcomes. Third, intervention theory was identified as a fitting framework to granularly investigate the pre-conditions that the ESRS for agriculture and farming must fulfill to increase supply chain transparency and decrease the DEC imported to the EU.



### **3 Research design, materials, and methods**

This chapter provides an in-depth description of the research design and presents its underlying rationale. It further elaborates on the methods used for data collection, clearly identifies the analyzed materials, and outlines the methods used for data analysis.

#### **3.1 Research design**

The research design is affected by three qualities of the research problem. Firstly, the sector-specific ESRS are under development at the time of the research, limiting the mass of publicly available documents connected to the policy. Public draft documents of the ESRS, as well as ex-ante analyses and stakeholder inputs, are available. Secondly, the literature review showed that academic research on sustainability disclosure typically tends to focus on climate change mitigation and corporate social responsibility in a broader sense, rather than zooming in on specific environmental and social problems like DEC. Both aspects strengthen the need for primary data collection related specifically to the research problem. Lastly, a variety of multi-stakeholder initiatives and frameworks exist and have reached at least moderate levels of adoption and legitimacy, implying that utilizing the grey literature and resulting corporate practices as entry points increases the practical relevance of the research output.

The scarcity of previous research and the complexity of the research problem suggests that a case study design is appropriate (Verschuren, 2003). Such designs are commonly used in policy evaluation (Creswell & Creswell, 2018). Yin (2018: p.114) defines a case study as “an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used”. Flyvbjerg (2006) points out the value of case studies in generating practically relevant, context-dependent knowledge, and highlights the utility of their high specificity for practitioners, compared to abstract generalizations. In line with the research problem’s novelty and contextual orientation on the sector-specific ESRS, as well as its aim of generating specific recommendations on disclosure requirements for policymakers, this thesis employs a case study approach.

This choice, as well as Flyvbjerg’s (2006) reasoning on case studies, is aligned with the author’s pragmatic worldview underlying the research (Creswell & Creswell, 2018). It moreover justifies the use of multiple data collection methods, which will be elaborated on in the following subchapter.

Case studies are commonly criticized for having inherently limited reliability and validity (Yin, 2018). Additionally, they are said to offer weaker potential for abstraction and generalization compared to other qualitative research designs, though other scholars argue that generalizing from case studies is feasible (Flyvbjerg, 2006; Yin, 2018). Case studies are advantageous over alternative methods in achieving a holistic analysis of specific phenomena by considering a wide range of contextual factors and using multiple sources of data (Yin, 2018). This thesis aims for an in-depth understanding of the potential impact routes of the ESRS that lead to reduced DEC caused by the EU farming sector. The research design thus consciously accepts the potential drawback of reduced generalizability of results in favor of achieving a high depth of analysis and relevance for practitioners.

Table 3-1: Research plan.

<i>Research aim</i>	<p><b>Academic:</b> explore under which conditions mandatory disclosure is most likely to decrease information asymmetries, incentivize corporate behavioral changes, and achieve environmentally and socially relevant outcomes.</p> <p><b>Practical:</b> Recommend specific disclosure requirements related to DEC to the policymakers of the <b>ESRS for agriculture and farming</b>.</p>
<i>Research questions</i>	<p>Background: How does the EU farming sector contribute to DEC?</p> <ol style="list-style-type: none"> <li>1. To what extent do the draft standards of the ESRS incorporate disclosure requirements that address DEC caused by the EU farming sector?</li> <li>2. What is the <b>intended impact mechanism</b> through which the ESRS for agriculture and farming reduce imported DEC?</li> <li>3. How can the identified <b>weaknesses in the impact mechanism be mitigated by the disclosure requirements</b> of the ESRS for agriculture and farming?</li> </ol>
<i>Research design classification</i>	<p><b>Case study</b></p>
<i>Data sources</i>	<ol style="list-style-type: none"> <li>1. Scientific articles</li> <li>2. Policy documents</li> <li>3. Grey literature from multi-stakeholder initiatives</li> <li>4. Expert interviews</li> </ol>
<i>Data analysis</i>	<p><b>Thematic analysis</b> following the case narrative and framework of the intervention theory</p>

Source: Author's illustration.

### 3.2 Data collection

The thesis draws on various sources of qualitative data, including semi-structured expert interviews, policy documents and evaluations, as well as grey and academic literature. In total, 10 expert interviews, 11 draft ESRS policy documents, 16 documents from multi-stakeholder initiatives, three webinars, and two extensive ex-ante policy evaluations were analyzed. These sources were additionally complemented by relevant scientific literature on comparable existing policies and fitting scientific theory as presented in the literature review. The triangulation of sources aims to reduce bias and strengthen the validity of the findings (Verschuren, 2003).

The sequentially linked research questions follow the case narrative and are answered using a different mix of sources for each question, due to their diverging qualities. The following first explains and justifies the choice of sources for each research question and then elaborates on the choice of interviewees and the content of the interviews.

The first part of the analysis frames the research problem by clearly identifying how the EU farming sector contributes to DEC. For this purpose, the economic activities in the ESRS sector classification standard are crosschecked with the academic literature on commodity-driven DEC. Further, market analyses from multi-stakeholder initiatives and data from Trase, a leading data-driven initiative against DEC are used (Kuepper & Stravens, 2022; Trase, 2023). Lastly, expert interview data allows for a more pointed presentation of the impact.

The **first research question** aims to investigate how imported deforestation is addressed in the already published draft cross-cutting and topical ESRS and was answered using draft ESRS materials. The draft ESRS consist of twelve documents, of which two are cross-cutting standards that include general requirements and disclosures, and ten are topical standards (EFRAG, 2022f). The topical standards consist of five standards on environmental (E), four standards on social (S), and one standard on governance (G) issues (EFRAG, 2022f). The standards are interconnected and refer to each other. Thus, a holistic analysis of these interrelationships and key concepts is necessary to understand how the standards address complex issues such as materiality analysis and value chain considerations, which ultimately impact the way in which they address the specific issue of DEC. The most relevant identified documents are the draft ESRS E4 on biodiversity and ecosystems, as well as the draft sector standard for agriculture and farming. Additionally, a publicly available EFRAG webcast and discussion on the agriculture and farming standard was analyzed. Lastly, other documents made available by the EFRAG that justify the design of the draft standard and compare disclosure requirements to other established guidelines were consulted.

The **second research question** aims to depict the intended impact mechanism through which the sector-specific ESRS can reduce the DEC imported by the EU farming sector. In this endeavor, the ex-ante intervention theory framework was applied, using those sources specified by Donaldson, (2001) and Linnér et al. (2012) to be fitting for this purpose. First, the impact assessment of the CSRD and cost-benefit analysis of the ESRS were used to extract the expectations of future program operators, as well as disclosing companies and other relevant stakeholder surveys (De Groen et al., 2022; European Commission, 2021a). Second, scientific theory on corporate behavior and sustainability reporting, as well as empirical studies of similar interventions, were transferred from the literature review. Third, expert interview data was used to generate inferences about the impact logic and discover relevant contextual factors.

The **third research question**, in the first step, identifies weaknesses in the created explicit impact mechanism. The weaknesses emerged partially from the previously performed policy document analysis, and partially from expert interview data. In the second step, disclosure requirements and policy design features that contribute to mitigating the identified weaknesses are recommended. To generate recommendations, two primary sources were used. First, expert interviewees partially contributed to generating recommendations for those weaknesses identified in interviews. Second, publications from voluntary, science-based, multi-stakeholder initiatives were consulted. The use of reports from multi-stakeholder initiatives is justified by the track record of such initiatives in contributing to the solution of wicked problems in the agri-food sector (Dentoni & Ross, 2013).

The most frequently used and widely accepted disclosure initiatives on DEC are the Accountability Framework and CDP Forest (Anthony & Morrison-Saunders, 2023; Garrett et al., 2019; Weber & Partzsch, 2018). Both are recommended by the Science-Based Targets initiative (SBTi) and have reached a critical mass of users and legitimacy (Science-Based Targets Initiative, 2022). Further, the Science-Based Target initiative's own guidance for forest, land, and agriculture target setting, and the thirteenth sector standard of the Global Reporting Initiative (GRI) on agriculture were consulted (Global Reporting Initiative, 2022a; Science-Based Targets Initiative, 2022). Together, consulted documents from multi-stakeholder initiatives deliver a comprehensive picture of both the status quo, trends, successes, failures, and best practices of DEC-related disclosure, and were thus deemed fitting for the generation of policy recommendations.

### 3.2.1 Expert interviews

Expert interviews serve to capture insights stemming from the expert's role and professional expertise, rather than collecting personal opinions (Flick et al., 2004). The document and literature analysis was performed before the expert interviews to ensure that the author compiled sufficient background knowledge and an adequately deep understanding of the research problem to enable effective and focused interviews.

Due to the nature of the research problem at the interface of sustainability reporting and DEC, five experts for each topic were consulted. Overlaps existed where experts on DEC were familiar with connected reporting practices. Five interviewees were identified through the network of this study's external supervisor, which enabled access to high-level experts. The other five were identified via desk research. Interviewed experts on sustainability reporting were selected due to familiarity with the ESRS and extensive topical knowledge of materiality, assurance, consequences of mandatory disclosure, and nature-related disclosure. Experts on DEC had decade-long field-work experience in deforestation frontiers, extensive knowledge of international forest-risk supply chain dynamics and trends, as well as considerable expertise concerning ongoing approaches to counter DEC.

The interviewed experts are active in academia, research institutions, multi-stakeholder initiatives on DEC, and NGOs – with eight experts being able to provide both an academic and practitioner perspective of the research problem. Table 3-2 presents an overview of the interviewed experts and indicates their identifiers (A-J) in the ensuing analysis.

Table 3-2: Interviewees.

ID	Category	Role
A	Sustainability Reporting	Ph.D. researching materiality in sustainability disclosure
B	Sustainability Reporting	Ph.D. researching real effects of mandatory disclosure
C	DEC	Senior advisor on forests and rural development
D	DEC	Senior scientist at multi-stakeholder initiative against DEC
E	Sustainability Reporting	Disclosure expert at German environmental NGO
F	DEC	Policy director at multi-stakeholder initiative against DEC
G	DEC	Corporate transparency lead at multi-stakeholder initiative against DEC
H	DEC	Leading researcher on data-driven approaches to land use governance
I	Sustainability Reporting	Senior advisor on sustainable finance
J	Sustainability Reporting	University professor researching mandatory sustainability reporting

Source: Author's illustration.

The interviews lasted between 40 and 65 minutes and were conducted via Microsoft Teams. For shorter interviews, more time was spent prioritizing questions to ensure an effective generation of results. All interviews followed a semi-structured design to provide comparability between interviews while allowing adequate levels of flexibility (Gorman & Clayton, 2004). The approach to interviews was reviewed by the external supervisor and tested to ensure adequate complexity. An example list of frequently asked interview questions is provided in Appendix II. The questions were slightly adjusted based on the expert's background and in which subtopics of the research problem they could be expected to make the best contribution. Especially the

formulation of follow-up questions was identified as crucial by the author in generating valuable interview data that would have otherwise not been obtained.

### **3.3 Data analysis**

All data sources were compiled and analyzed using thematic analysis. Thematic analysis is a commonly used tool to identify and categorize patterns and themes within qualitative datasets (Braun & Clarke, 2006). It was chosen for this study because it offers the researcher slightly more flexibility than content analysis, which can be advantageous in generating qualitative analyses with rich descriptions that are suited to inform policy development (Braun & Clarke, 2006). Further, the nature of the case study fits thematic analysis, due to its iterative approach that allows for emerging themes to be integrated seamlessly. A six-step guide proposes performing the following steps to ensure scientific rigor in the thematic analysis:

1. “Familiarizing yourself with the data,
2. Generating initial codes,
3. Searching for themes,
4. Reviewing themes,
5. Defining and naming themes,
6. Producing the report.” (Braun & Clarke, 2006: p. 87).

This approach is followed in an iterative manner which partially involved returning to previous steps to revise already performed coding and jumping ahead when deemed necessary. The initial coding structure arises from the literature review and is then adjusted in anticipation of the ensuing analysis. Particular attention is paid to the compatibility of the coding structure with both the case narrative and the generated intervention theory that provides an organizing lens to the analysis. In this manner, it is ensured that the thematic analysis stays closely connected to the research questions and identifies all relevant data to answer each of them as granularly as possible.

The analysis follows a mixed approach of deductive and inductive elements. The deductive element is using the case narrative and preliminary intervention theory as starting points for the thematic analysis. The inductive element is comprised of adding new codes and themes to the coding structure as they appear in the analysis. It is particularly important to continually revise the coding structure when the document analysis is finished and the generation of primary data from semi-structured interviews starts, as this enables new inputs from the experts to be adequately incorporated into the analysis. Special attention was paid to following a systemic approach in identifying common themes in the qualitative data, as otherwise the mere collection and quotation of interview data would not constitute analysis, but rather merely represent a description (Mickwitz, 2021). Slight revisions were iteratively made throughout the research process, which led to the final coding structure, whose main themes are provided in Appendix III.

## 4 Findings

This chapter starts out by identifying and clearly describing the mechanism through which the EU farming sector contributes to DEC. Building on this required background knowledge, the case narrative is followed to answer the research questions. First, the draft ESRS are systematically scanned for its consideration of DEC as a social and environmental corporate impact. Second, the intervention theory framework is applied to depict the intended impact mechanism through which the ESRS can contribute to reducing imported DEC by the EU farming sector. Third, weaknesses in the impact mechanism are identified, and supplemented with recommendations for disclosure requirements that aim to mitigate the identified weaknesses.

### 4.1 Deforestation and ecosystem conversion caused by EU farming

With the aim of identifying where the DEC risks of the EU farming and agriculture sector lie, the list of associated economic activities in the ESRS sector classification standard is cross-checked with the academic literature on commodity-driven deforestation (EFRAG, 2022a). As the global hotspots of agriculturally driven DEC are in Southeast Asia for palm oil, Africa for cocoa and coffee, and South America for soybeans, cattle, and coffee, the list of activities must be scanned for indirect relationships that connect these forest risk commodities to the EU farming and agriculture sector (Goldman et al., 2020).

While palm oil, cocoa, coffee, and beef cattle are commodities that are imported to Europe in considerable quantities, they show no relationship to agricultural or farming activities on EU territory (EFRAG, 2022a; Pendrill et al., 2019). Instead, those commodities fall into the food and beverages sector under the ESRS classification (EFRAG, 2022a). Therefore, the DEC caused by EU consumption of these commodities lies outside of the thesis' scope. Instead, the import of soybeans as feed for EU farm animals emerges as the only significant DEC risk for the EU farming and agricultural sector when following the ESRS sector classification (EFRAG, 2022a; Goldman et al., 2020; Karlsson et al., 2020).

#### 4.1.1 The EU as a consumer country of soy

The production of animal products is responsible for 90% of total EU soy demand, with broilers for chicken meat production, pigs, dairy cows, and laying hens the most common recipients (Kuepper & Stravens, 2022). Due to their high protein content and constant availability, soybeans have emerged as the most demanded animal feed globally (Kuepper & Stravens, 2022). In the EU, domestic soy production can only cover 3% of total demand, indicating a drastic reliance on imports (Kuepper & Stravens, 2022). In 2020, soy imports into the EU had a volume of close to 34 million tonnes, with Brazil (48%), Argentina (22%) and the United States (16%) being the top three origins (Kuepper & Stravens, 2022). While certain large producer countries of soy, such as the United States, do not have significant DEC risks attached to soybean production, ecosystems in Brazil, Argentina, and Paraguay continue to be converted to upscale soy production to meet the large international demand for soybeans (Goldman et al., 2020; Trase, 2023).

China is the biggest importer of soybeans worldwide, but supply chain and satellite data show that EU soy imports from Brazil cause double the amount of deforestation per ton compared to China's imports (Reis & Prada Moro, 2022). In total, the EU demand for soy products is estimated to be responsible for 25% of the deforestation embedded in the international trade of soy products (European Commission, 2021d; Pendrill et al., 2019). Being responsible for one-third of all embedded deforestation in EU consumption at around 65.000 hectares per year,

soy is the second largest cause of imported deforestation in the EU (European Commission, 2021d). Such estimations are made by using the finest resolution of data available on the trade flows and the origin of soy – typically down to the municipal, subnational, or national level (Trase, 2022). In the next step, the deforestation exposure for each origin is determined by calculating a ratio of documented or estimated deforestation for soy plantations and total produced soy volume (Trase, 2022). Hence, deforestation exposure is higher for soy sourced in areas with high conversion and lower produced volumes (Trase, 2022). The phenomenon of embodied deforestation in EU soy imports will not change without intervention, as demand is expected to stay stable over the next decade (European Commission, 2021d).

Expert interview data and applicable scientific literature generate insights that explain why the DEC embodied in the international trade of soy is a persistent problem. Soy is a cheap, substitutable product that does not offer room for adding value through increased quality, significantly complicating potential product differentiation and ensuing market mechanisms (D, F). Instead, the price dictates the market, and the supply chain is characterized by large trading corporations that buy from a large number of producers and distribute the product worldwide (D, F). Therefore, soy is a commodity that gets aggregated on a higher level than most forest risk commodities, significantly complicating efforts to upscale traceability (D, F). Figure 4-2 shows a highly simplified model illustrating the supply chain of soy based on interview data and zu Ermgassen et al. (2022). It omits large parts of the complexity of actual soy supply chains such as cooperatives and other aggregators to point out two key aspects. First, the figure makes the connection between DEC in producer countries and the EU farming and agriculture sector and the ensuing consumption of meat and dairy products explicit. Second, it shows that the breaking point of traceability lies in the second step, as most trading corporations do not segregate the flows of traceable and DEC-free soy from untraceable soy (D, F).

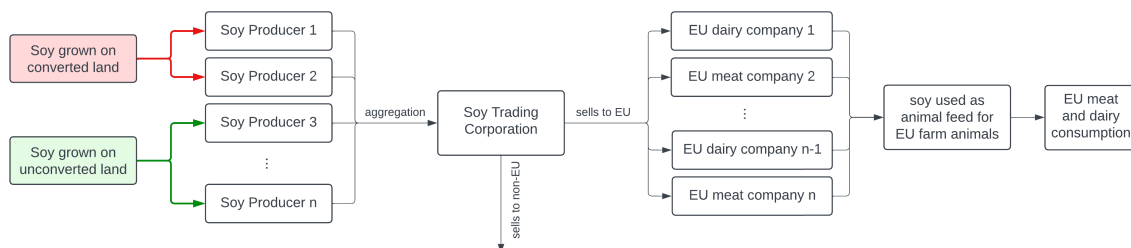


Figure 4-1: Simplified model of the soy supply chain.

Source: Author's illustration, adjusted from zu Ermgassen et al. (2022).

Other forest-risk commodities, including cocoa and cattle, are characterized by over 90% indirect sourcing mainly from smallholder farmers (zu Ermgassen et al., 2022). On the other hand, soy sourcing is made up of 12 to 42% indirect sourcing and is characterized by more large farms rather than smallholders (zu Ermgassen et al., 2022). Despite lower percentages of indirect sourcing, certifications for deforestation-free soy that use sufficiently credible mechanisms are not at a scale that could contribute to decreasing DEC risks (D, F; CDP & Accountability Framework, 2022).

### 4.1.2 Brazil as an example for a high-risk exporting country of soy

This subchapter provides the necessary background and complexity to DEC by focusing on Brazil as the most important soy exporter to the EU. Similar dynamics as the ones elaborated on here can be observed in Argentina and Paraguay (Kuepper & Stravens, 2022).

Figure 4-1 shows the amount of soy production and connected DEC in Brazil from 2013 to 2020 (Reis & Prada Moro, 2022). It shows the continued expansion of soy production in Brazil, as well as continuing yet recently slightly declining ecosystem conversion for soy expansion (Reis & Prada Moro, 2022). In 2021, \$48 billion in revenues were created from exporting 100 million tons of soybeans – with the amount more than doubling since 2013 (Reis & Prada Moro, 2022).

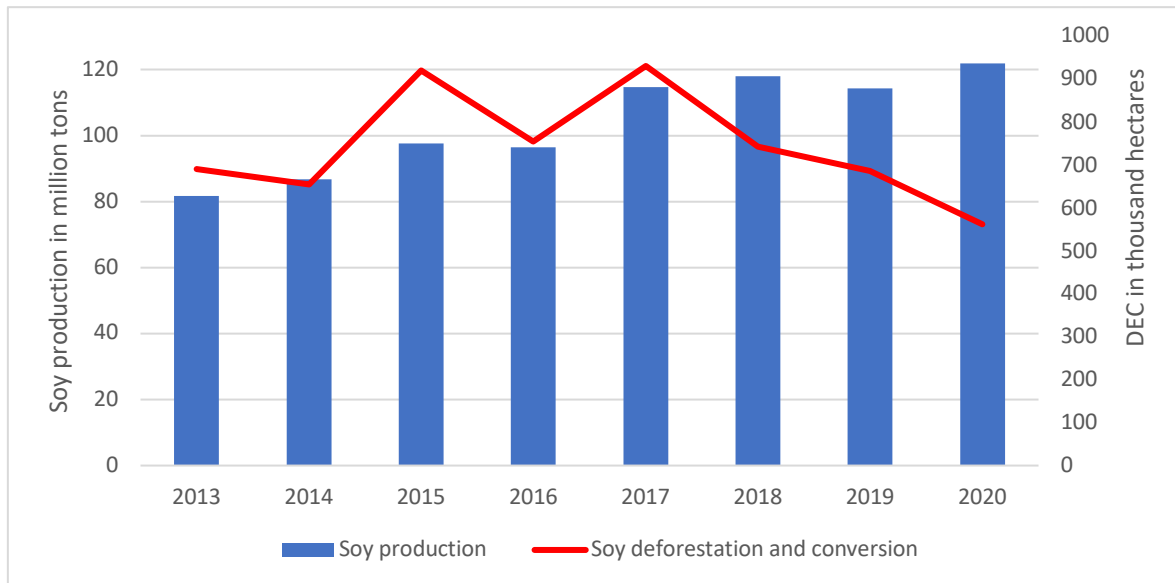


Figure 4-2: Soy production and associated DEC in Brazil from 2013 – 2020.

Source: Author’s illustration, data retrieved from Reis & Prada Moro (2022).

The deforestation dynamics of soy in Brazil are further affected by sectoral initiatives such as the Amazon Soy Moratorium, under which large traders of soy agreed to stop purchasing soy from land that was deforested after a cutoff date of 2008 (Heilmayr et al., 2020). It is a prevalent example of a jurisdictional strategy to halting deforestation with an area-based approach to control and a collective agreement on zero deforestation and monitoring (F). Heilmayr et al. (2020) quantified an 84% decrease in the speed of deforestation in the Amazon between 2004 and 2012 because of the Moratorium. However, non-compliance persists despite the agreement, and deforestation for soy plantations in the Amazon has increased again since 2014 (Reis & Prada Moro, 2022). Less than half of soy traders apply the Moratorium’s cutoff dates for their indirect supply chain, and indirect soy sourcing has been proven to contribute to deforestation in the Amazon despite the Moratorium (zu Ermgassen et al., 2022). While the agreement successfully decreased the deforestation rate in the Brazilian Amazon, its main flaw is leakage to areas outside of the Amazon (zu Ermgassen et al., 2022).

In an example of the dynamic and fluid qualities of deforestation frontiers, DEC for soy in Brazil has moved away from the more heavily monitored Amazon to other vulnerable ecosystems that are less protected (D, F; Reis & Prada Moro, 2022). From 2013 to 2020, the Cerrado savannah and Pampa grasslands were the primary biomes converted for soy production, far ahead of the Amazon rainforest (Reis & Prada Moro, 2022). Plans are in place



for further expansion into the Cerrado savannah and Pampa grasslands (D, F). Figure 4-3 shows the total hectares of ecosystem conversion for soy production in the three mentioned biomes from 2013 to 2020 (Reis & Prada Moro, 2022).

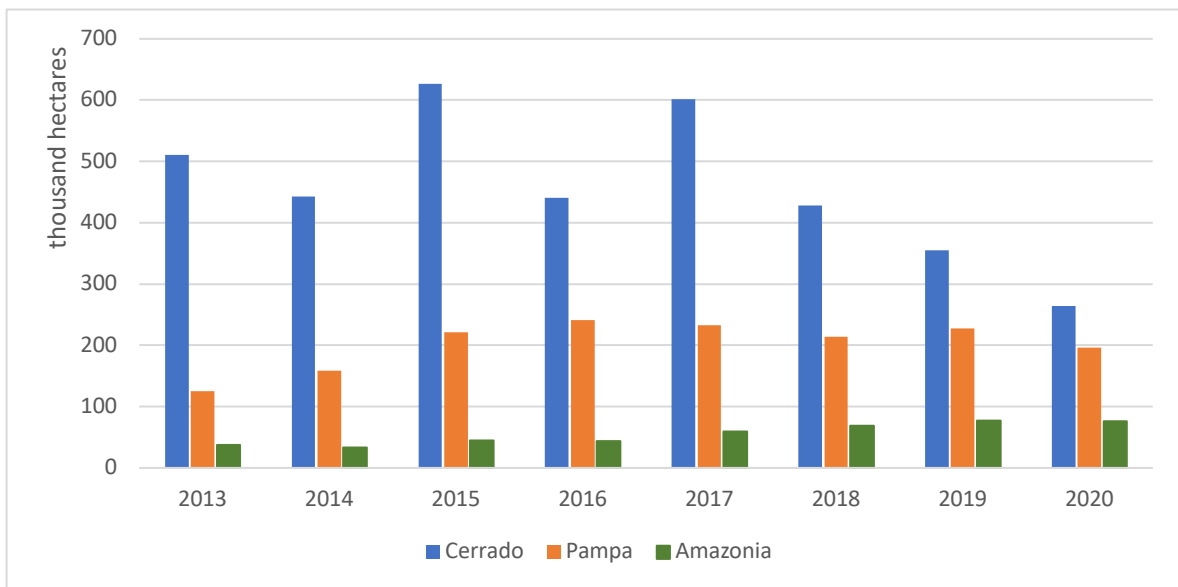


Figure 4-3: Ecosystem conversion for soy production in Brazil, by ecosystem.

Source: Author's illustration, data retrieved from Reis & Prada Moro (2022).

The urgency with which all three types of ecosystem conversion for the expansion of soy production needs to be cut back becomes obvious when looking at the annual carbon emissions caused. In 2020, the conversion of native Cerrado savannah to soy plantations caused 42 million tons of carbon emissions (Reis & Prada Moro, 2022). The conversion of the Amazon rainforest caused 39 million tons, and the conversion of the Pampa grasslands 16 million tons of carbon emissions (Reis & Prada Moro, 2022). Additionally, all three covered ecosystems are important biodiversity hotspots but become increasingly threatened in their integrity due to land use change for commodity production (Oliveira et al., 2017; Soterroni et al., 2019).

Such dynamics underscore the importance of a forward-thinking policy design that anticipates unintended consequences, such as leakage to other vulnerable ecosystems (C, D, F, H). In this specific case, the extensive expansion of soy onto other ecosystems than forests emphasizes that deforestation needs to be thought of in conjunction with other types of ecosystem conversion (C, D, F, H).

To summarize, soy imports are the reason that the EU farming sector causes DEC. Poor supply chain traceability, high levels of product aggregation, and evasive frontiers of DEC in producing countries contribute to the persistence of the problem. Brazil is the most important exporter of soy to the EU (Kuepper & Stravens, 2022). In Brazil, the expansion of soy production is not only causing the loss of tropical forests but increasingly threatens other vulnerable and highly biodiverse ecosystems – mainly the Cerrado savannah and Pampa grasslands (Reis & Prada Moro, 2022; Soterroni et al., 2019). This dynamic implies that the scope of the study must not only include deforestation but also other types of ecosystem conversion.

## 4.2 Deforestation and ecosystem conversion in the ESRS

This subchapter answers **research question one** by investigating to what extent the draft ESRS include disclosure requirements that address DEC caused by the EU farming sector. The analysis comprises publicly available draft documents from the ESRS policymaking process. It moves from important general concepts underlying the reporting standard, such as the materiality assessment, to topical and sector-specific disclosure requirements that are relevant for DEC.

### 4.2.1 Materiality assessment and value chain coverage

The ESRS documents one and two comprise general requirements, concepts, and disclosures (EFRAG, 2022b, 2022c). They apply to all disclosing companies, irrespective of sector, and are thus termed ‘cross-cutting’ standards (EFRAG, 2022d). Undertakings that are subject to the CSRD are mandated to publish an annual sustainability report which must be integrated into the management report to increase exposure (EFRAG, 2022d).

The ESRS follow an established approach of sustainability reporting, in which a company first determines those impacts, risks, and opportunities that are relevant to its business model in a materiality assessment (Baumüller & Sopp, 2022; Beske et al., 2020; EFRAG, 2022b). An undertaking then must report on how the materiality assessment has been operationalized, and in the next step fulfill the disclosure requirements that are tied to the topics that were deemed material (EFRAG, 2022b). Those topics are complemented with further disclosure guidance and requirements in the topical and sector-specific standards (EFRAG, 2022b). As Figure 4-4 shows, the disclosure requirements of the cross-cutting ESRS, and the topical ESRS on climate change are mandatory for all disclosing companies and not subject to the materiality assessment. The disclosure requirements of the remaining nine topical standards must only be reported on if both their subject and the individual data points are deemed material (EFRAG, 2022b). For DEC, the most relevant topical standard is the ESRS E4 on biodiversity and ecosystems. In the ESRS E4, DEC falls under the subtopic “direct impact drivers of biodiversity loss” which covers the sub-subtopic “land-use change” (EFRAG, 2022b, 2022c: 31).

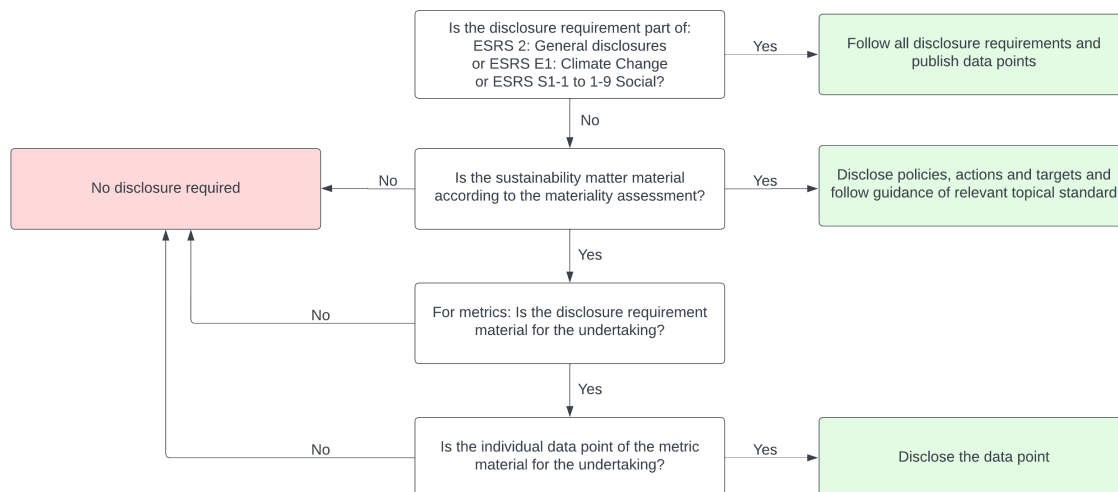


Figure 4-4: Decision tree for disclosure requirements in the ESRS.

Source: Recreated from EFRAG (2022b).

The double materiality principle of the CSRD prescribes undertakings to consider impact materiality and financial materiality (EFRAG, 2022b). Both concepts refer to the relationship between an undertaking and people and the environment but operate in different directions of causality (Baumüller & Sopp, 2022). Financial materiality refers to the impact of social and environmental issues on the business performance of the reporting company, such as the degree of dependence on natural and social capital (EFRAG, 2022b). Impact materiality refers to the disclosing company's impact on society and the environment (Baumüller & Sopp, 2022).

In the ESRS, the financial materiality of environmental risks is divided into physical, transition, and systemic risks (EFRAG, 2022e). Physical environmental risks represent direct consequences of changed environmental conditions, such as stress on food systems resulting from more extreme climatic conditions which in turn affect supply chain security (Pendrell et al., 2019). Transition risks include those that arise from changes in the business environment or government regulation that aim at a net-zero, nature-positive future (EFRAG, 2022e). They can also be caused by technological development or reputational threats (EFRAG, 2022e). In the case of DEC in the value chains of the European farming sector, such risks include changes in the future demand for meat and dairy products due to increased consumer awareness or the cost imposed by stricter due diligence requirements (Karlsson et al., 2020). Lastly, systemic risks include the risk of ecosystem collapses and the ripple effect that would cause on the global economic system, including the financial market (EFRAG, 2022e).

Impact materiality in the ESRS is defined as follows:

*“A sustainability matter is material from an impact perspective when it pertains to the undertaking’s material **actual or potential**, positive or negative impacts on people or the environment over the short-, medium- and long-term time horizons. Impacts include those caused or contributed to by the undertaking and those which are directly linked to the undertaking’s own operations, products, or services through its business relationships. Business relationships include the undertaking’s **upstream and downstream value chain and are not limited to direct contractual relationships.**” (EFRAG, 2022c: 11)*

The definition of impact materiality has two implications for the specific impact of DEC in the farming sector. Most importantly, impacts that an undertaking has through its direct and indirect upstream value chain fall under the ESRS and need to be considered in the materiality assessment. Secondly, the undertaking needs to investigate not only actual but also potential negative impacts associated with its activities. Impact materiality should be judged in a matrix of likelihood and severity of the impact, where severity is affected by the scope, scale, and irremediability of the impact (EFRAG, 2022b). When determining whether an impact, risk, or opportunity is material, the cross-cutting ESRS urge companies to use “appropriate thresholds” in the matrix comprised of likelihood and severity (EFRAG, 2022c: 29). Further guidance on threshold setting is not available in the cross-cutting ESRS (EFRAG, 2022b). While an undertaking is also obliged to report on how the materiality assessment was conducted, the final judgment on what thresholds are applied and thus whether an environmental issue is considered material lies with the undertaking itself (EFRAG, 2022c, 2022b).

It is impossible to achieve a strict distinction between financial and impact materiality in the case of natural ecosystem conversion hidden in the supply chain, as it can be simultaneously framed as both types of materiality. The more obvious impact materiality becomes evident through the emissions from clearing native forests and a decreased provision of ecosystem services because of commodity-driven deforestation resulting in habitat fragmentation, decreased biodiversity, and carbon sequestration on the resulting agricultural terrain (FAO,

2022c). However, an EU undertaking that identifies actual or potential deforestation in its supply chains also needs to account for the financial risks resulting from this circumstance (EFRAG, 2022b).

There are four additional qualities of the cross-cutting ESRS concerning the value chains that are highly relevant to DEC. First, disclosure on impacts, risks, and opportunities that are present in the upstream and downstream value chains should be informed by three sources – namely due diligence processes, the materiality assessment, and relevant requirements in the topical ESRS (EFRAG, 2022b). Second, the ESRS acknowledge that the ability of undertakings to exert influence over the entire value chain is limited and might inhibit data gathering (EFRAG, 2022b). In this case, companies are required to create estimations based on all available data, including sector averages and other proxies (EFRAG, 2022c). Further, undertakings must describe to what extent policies, actions, and targets involve the value chain (EFRAG, 2022c). Third, in the case of using estimations for information about the value chain, uncertainty arises. Such uncertainty should be addressed by “reasonable assumptions and estimates, including scenario or sensitivity analysis” (EFRAG, 2022c: 18). It is stressed that high uncertainty does not automatically imply low usefulness of information, meaning that potentially material topics may not be dismissed due to a lack of available data. Lastly, information about the value chain is subject to a three-year-long transitional provision allowing undertakings to omit information that is not yet available when the underlying reason and efforts made to obtain the information in the future are explained (EFRAG, 2022b).

The main takeaway is that disclosing EU farming companies are required to consider DEC in the indirect upstream value chain in their materiality assessment. However, there is a chance that the impact is wrongfully deemed not material, which would result in incomplete disclosure.

#### 4.2.2 Disclosure requirements relevant to DEC

The topical and sector standards feature impact-specific disclosure requirements, where those with relevance to DEC in the farming sector can be found in three standards:

- The topical standard E1 on climate change (EFRAG, 2022d),
- the topical standard E4 on biodiversity and ecosystems (EFRAG, 2022e),
- and the sector standard for agriculture and farming (EFRAG, 2023a).

The **topical standard on climate change** prescribes the creation of a greenhouse gas (GHG) inventory of scope one, two, and three emissions as mandatory for all undertakings (EFRAG, 2022d: E1-6 §41). It is mentioned that scope three emissions are commonly the largest component of a company’s GHG inventory and may thus significantly contribute to transition risks (EFRAG, 2022d: E1-6 §42c). However, the application requirements (ARs) specify that emissions from land use change should not be included in the GHG inventory (EFRAG, 2022d). Of the 201 arguments justifying the design of disclosure requirements under the topical standard on climate change, none address why scope one, two, and three emissions from land-use change should be excluded from the reported GHG inventory (EFRAG, 2023b).

The **topical standard on biodiversity and ecosystems** is the only standard that explicitly acknowledges environmental limits, by stating that the goal of the standard is to “enable users of the sustainability statements to understand [...] the plans and capacity of the undertaking to adapt its strategy and business model(s) in line with respecting the planetary boundaries of the biosphere integrity and land-system change” (EFRAG, 2022b: 4, §1(c)). In the opening paragraphs of the standard, land-use change is pointed out as a critical driver of biodiversity and

ecosystem change, referencing the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (EFRAG, 2022e).

As an exception to the decision tree depicted in Figure 4-4, undertakings in the agriculture and farming sector must report on a **transition plan on biodiversity and ecosystems**, due to a list of priority sectors created by the Taskforce on Nature-related Financial Disclosures (EFRAG, 2022e: E4-1, §15). The requirement aims to express how compatible the transition plan is with relevant public policy targets, such as the 2020 Global Biodiversity Framework and the EU Biodiversity Strategy. Eliminating agricultural commodity-driven deforestation is mentioned as an EU policy target manifested in the Amsterdam Declaration Partnership, acknowledging the need for cooperation between consumer and producer countries, as well as along supply chains (EFRAG, 2023c). However, the disclosure requirement that is meant to indicate progress on this goal is “hectares brought under restoration”, which does not resemble an appropriate indicator for tracking progress on the stated goal of ending commodity-driven deforestation caused by the EU (EFRAG, 2023c). Instead of measuring the extent of DEC driven by disclosing companies and progress on eliminating it, the indicator refers to limiting the damage already done by quantifying remediation efforts. The transition plan also needs to include how those impacts in the value chain that were identified as material are addressed by the undertaking, as well as how progress is tracked (EFRAG, 2022e: E4-1, §16b, h).

To summarize, the mandatory transition plan on biodiversity and ecosystems generates qualitative data on value chain engagement but does not include measures that quantify disclosing companies’ contributions to DEC.

#### **4.2.2.1 Policies, targets, and actions against DEC**

The remaining disclosure requirements of the biodiversity and ecosystems standard become clearer when analyzed in conjunction with the draft **sector standard for agriculture and farming**. The standard features a navigation table that lists common material topics for EU agriculture and farming companies. Reporting companies must consider these topics in their materiality assessment (EFRAG, 2023a: §§12, 15). However, the list of likely material topics lacks granularity, as DEC and land-use change are not mentioned explicitly but instead hidden under the broad heading of “direct impact drivers on biodiversity loss” (EFRAG, 2023a: §15). The abstract nature of the list of likely material topics may decrease the probability that soy-importing EU farming companies consider DEC in their materiality assessment. This strengthens the potential for incomplete disclosures which the ESRS aims to avoid (De Groen et al., 2022).

This finding becomes especially obvious when looking at the significantly more granular list of likely material topics for the agriculture and farming sector provided by the GRI. Connected to DEC, the list includes natural ecosystem conversion, local communities, land and resource rights, rights of Indigenous peoples, and supply chain traceability (Global Reporting Initiative, 2022a). When using the GRI’s granular list of material topics, the probability that disclosing companies omit DEC from consideration in the materiality assessment is likely significantly lower. The GRI standard further connects specific disclosure requirements directly to the list of likely material topics in a user-friendly manner – an approach that the ESRS did not follow (EFRAG, 2023a; Global Reporting Initiative, 2022a).

As explained earlier, all disclosure requirements addressing policies, targets, and actions against DEC are only mandatory if the topic and individual disclosure requirement have been identified as material by the disclosing company, as indicated in Figure 4-4.

In that case, a description of the ecosystems-related **policies** and how this policy enhances the traceability of products along the value chain must be disclosed (EFRAG, 2022b: E4-2, §§23, 26e). Furthermore, undertakings must disclose whether a policy that addresses deforestation has been adopted (EFRAG, 2022b: E4-2, §27d). The sector standards elaborate that this disclosure should include information on whether and to what extent the deforestation policy includes suppliers, and how deforestation and ecosystem conversion is identified (EFRAG, 2023a: §8a, i., iii.). Policies on the identification of violations that require remediation efforts must also be disclosed (EFRAG, 2023a: §8b). Further, the extent of supplier inclusion into a policy on respecting land and resource rights must be made transparent (EFRAG, 2023a: §8c). Lastly, the procedures to obtain informed consent from Indigenous peoples and local communities should they be affected by the disclosing company's activities need to be disclosed (EFRAG, 2023a: §8c, iii.). Should any of the previously mentioned aspects not be included in the policy, this must be made explicit in the sustainability report (EFRAG, 2023a).

The topical standard prescribes that if land use change has been identified as a material topic, undertakings must disclose whether **targets** related to land use change were set (EFRAG, 2022e: E4-4, §35a). Related to **actions**, the sector standard mandates companies to “disclose the measures taken to mitigate or prevent deforestation and forest degradation [...] in its upstream supply chain” (EFRAG, 2023a: §17b). Moreover, a life-cycle assessment of the undertaking's land use must be performed, and its results disclosed (EFRAG, 2022b: E4-5, §39). However, the recommended lifecycle analysis from the Joint Research Centre is heavily focused on land-use change in the direct operations of a business, largely omits value chain considerations, and does not explicitly refer to deforestation in its main body of text (Vidal-Legaz et al., 2016).

To summarize, qualitative disclosure requirements on policies, targets, and actions against DEC exist in the ESRS.

#### 4.2.2.2 Traceability, ecosystem conversion, and connected emissions

Disclosure requirements in the ESRS that express the actual contribution of individual companies to DEC are either unclear in their wording or missing. In leading multi-stakeholder initiatives on the topic, the primary indicators used for this purpose are the level of supply chain traceability, ecosystem conversion attributed to the company, and scope three land-use change emissions (SBTi, Accountability Framework & GHG Protocol, 2022). Extensive guidance for common methodologies exists (Accountability Framework Initiative, 2019a).

There is no clear disclosure requirement on the **supply chain traceability** of forest-risk commodities. The wording “the undertaking shall consider the following question” (EFRAG, 2023a: AR26) about traceability is weak and does not constitute a mandatory disclosure requirement. Further, in case a company decides to voluntarily disclose an indicator on supply chain traceability, it is free to choose a methodology and in the next step describe qualitatively “which methodologies and data sources were used” (EFRAG, 2023a: AR26). However, the comparability that users of sustainability reports demand gets undermined when quantitative indicators are calculated with diverging methodologies (Jonsdottir et al., 2022).

In terms of disclosing actual **ecosystem conversion** in terms of size and location, there are inconsistencies between the topical standard on biodiversity and ecosystems and the sector standard for agriculture and farming. The topical standard on biodiversity and ecosystems prescribes that only if undertakings directly contribute to land use change, detailed information on the conversion over time and its consequences must be disclosed (EFRAG, 2022b: E4-5, §42). As the EU farming sector contributes to deforestation indirectly through its value chain, this disclosure requirement does not help in tackling this core issue (Karlsson et al., 2020). In

contrast, the draft of the sector standard for agriculture and farming goes beyond the direct operations by stating:

*“The undertaking shall disclose the area – size in hectares, the location, and the type – of natural ecosystems converted since the cut-off date<sup>4</sup> by its own operations **and suppliers or in sourcing locations**, specifying (a) conversion of land or (b) deforestation and/ or forest degradation (risk), (c) restoration of land, (d) reforestation; and (e) draining or infilling to wetlands and aquatic habitats.” (EFRAG, 2023a: §13)*

Two shortcomings can be identified with the disclosure requirement. First, there is uncertainty connected to the scope of the disclosure requirement. It is not made explicit whether the term ‘supplier’ includes only direct or also indirect suppliers. As deforestation is typically hidden in the indirect supply chain, the inclusion of indirect suppliers would be crucial for increasing transparency on imported deforestation in the farming sector (Karlsson et al., 2020; T. A. Gardner et al., 2019; Renier et al., 2023; zu Ermgassen et al., 2022). Second, no mention is made of a methodology that should be applied by the disclosing company to estimate ecosystem conversion, which undermines comparability. Cut-off dates may vary between disclosing companies, further causing detriment to the usefulness of disclosed data. Moreover, there are companies that contribute to DEC that have no zero-deforestation commitment and connected cut-off date in place and would thus not have to disclose with the current wording (Global Canopy, 2023a). For these reasons, the requirement cannot be expected to produce comparable and complete disclosure.

Lastly, the disclosure of **land-use change emissions** is not included in the GHG inventory in the topical standard on climate change (EFRAG, 2022d). The sector standard suggests the separate disclosure of scope three GHG emissions caused by animal feed but does not prescribe it by only urging companies to consider such disclosure (EFRAG, 2023a: AR16).

To summarize, there is no sufficient consideration of quantitative disclosure requirements that provide transparency on the actual contribution of EU farming companies to DEC through their upstream supply chains. Existing disclosure requirements are not sufficiently specific and allow the use of multiple methodologies, undermining the intention to increase the comparability of disclosed data in the ESRS.

### 4.2.3 Implications for the research problem

The analysis of draft ESRS policy documents has three main implications for the research problem. First, disclosure requirements on DEC are only mandatory if the disclosing company itself deems the impact material. The lack of granular guidance on materiality assessments and likely material impacts for the agriculture and farming sector may offer room for incomplete or selective disclosure that wrongfully omits DEC from consideration. This, in turn, would inhibit the ESRS from increasing soy supply chain transparency and reducing imported DEC. Second, extensive qualitative disclosure requirements on value chain engagement, policies, targets, and actions against DEC exist and can be reasonably expected to broaden the information available to interested stakeholders. Third, quantitative disclosure requirements that indicate the contribution of individual EU farming companies to DEC are partially missing. When they exist, they suffer from unclear scopes, weak wording, and the possibility to freely elect data sources

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<sup>4</sup> In this context, a cut-off date refers to the date after which DEC is deemed non-compliant according to a company’s zero-deforestation policy (Accountability Framework Initiative, 2022).

and methodologies. The resulting impaired comparability of data may decrease the incentives for EU farming companies to improve supply chain traceability and reduce imported DEC.

### 4.3 Intended impact mechanism

This subchapter starts by compiling the problems that motivated the development of the CSRD and ESRS, making the need for change away from the status quo of sustainability reporting explicit. Then, the intervention theory framework is applied to the research problem of imported DEC by the EU farming sector.

#### 4.3.1 Status quo and need for change

The ex-ante impact assessment of the CSRD features an extensive analysis of the current shortcomings of sustainability reporting and its consequences (European Commission, 2021c). In conjunction with the cost-benefit analysis of the ESRS, the impact assessment is especially useful in identifying the **relevant actors** which are involved in the envisioned impact mechanism (De Groen et al., 2022; European Commission, 2021c). The primary users of corporate sustainability data from the EU perspective are **financial market participants** and **non-governmental organizations** (NGOs) (European Commission, 2021c). Next to the **disclosing companies** themselves, these two actors are thus deemed the primary addressees of the CSRD.

From the perspective of users of sustainability information, several problems with the status quo can be made explicit and verified. First, the scope of the existing NFRD legislation is criticized as too narrow, as only undertakings with 500 or more employees fall under the sustainability reporting mandate (European Commission, 2021c). Therefore, there is more demand than supply of sustainability information, as only a limited number of companies publish a sustainability report voluntarily (European Commission, 2021c). Second, those companies that publish sustainability information frequently omit information that NGOs or financial institutions would like them to report on (European Commission, 2021c). Third, the disclosed information is deemed insufficient in terms of reliability and comparability, limiting its decision-usefulness for stakeholders (European Commission, 2021c). This weakness is confirmed in the scientific literature on sustainability reporting which frequently identifies selective reporting and a variety of inconsistent methodologies (Dingwerth & Eichinger, 2010; Jonsdottir et al., 2022; Steinhofel et al., 2019). Lastly, four of five users of sustainability data struggle to find relevant information even if it is reported due to different places of publication, inconsistent formats, bloated reports, and unnecessary content (European Commission, 2021c).

Because of these shortcomings, stakeholders do not have sufficient information about the impacts of corporations on the environment and how environmental risks affect businesses (European Commission, 2021c). This implies that **NGOs** and other civil society organizations cannot “hold companies accountable” for these impacts, which in turn creates a lack of willingness to initiate action against negative corporate environmental impacts (European Commission, 2021: 166). Further, it hinders **financial institutions** from accurately estimating the risks and impacts connected to their investments (European Commission, 2021c). Formulated through the lens of economic theory, the described information asymmetry leads to suboptimal investment decisions and resource allocation, representing market failure (Akerlof, 1978).

The policy objectives that aim at changing the delineated status quo are made explicit in Figure 4-5. It provides an illustration of key expectations by program operators and primary addressees of the policy on the anticipated effects of the ESRS.



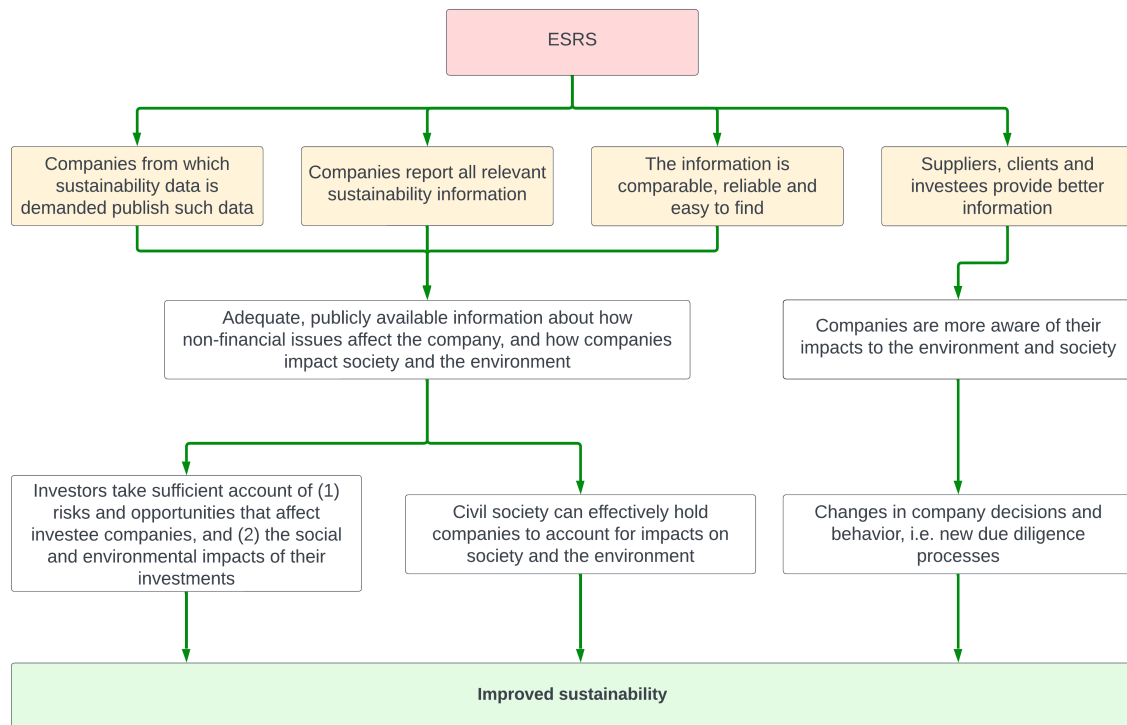


Figure 4-5: Policy objectives of the ESRs.

Source: Recreated and adapted from European Commission (2021c), with additional information from De Groen et al. (2022).

### 4.3.2 Intervention theory

In the next step of the analysis, the illustration of overarching policy objectives is translated into the specific research problem that concerns imported DEC caused by the agriculture and farming sector. The following subchapters create three interlinked intervention theories for the primary addressees of the CSRD: disclosing companies, financial institutions, and NGOs. The separation of primary addressees between disclosing companies, financial institutions, and NGOs helps in keeping the intervention theory's complexity manageable. These intervention theories aim to answer research question two by depicting the intended impact mechanism through which the ESRs can contribute to reducing imported DEC and are constructed as follows.

A necessary starting point is to make the main components of the intervention theory explicit. These are comprised of actors, inputs, outputs, and outcomes, where outcomes can be separated into immediate, intermediate, and ultimate outcomes (Mickwitz, 2003). Each intervention theory is then built on assumptions that are subject to uncertainty and should not be interpreted as a prediction of outcomes but as **prerequisites** to achieving the positive environmental outcome of reduced imported deforestation caused by the EU farming and agriculture sector (Mickwitz, 2003). Each assumption that is made explicit is followed by the underlying evidence and rationale that justifies it.

The analysis makes use of five sources for generating assumptions that are frequently used for this purpose (Donaldson, 2001; Linnér et al., 2012). First, the beliefs held by the future program operators are extracted from the impact assessment of the CSRD and the cost-benefit analysis

of the ESRS (De Groen et al., 2022; Donaldson, 2001; European Commission, 2021c). Second, the same documents feature exploratory stakeholder surveys which test key assumptions about the intervention. Third, scientific theory and existing research in the domain of sustainability reporting and deforestation are used to supplement hypotheses (Donaldson, 2001; Linnér et al., 2012). Fourth, assumptions are made by referring to comparable existing interventions and their effects (Linnér et al., 2012). Fifth, logical inferences are extracted from expert interviews, where multiple mentions from different experts serve as a mechanism to increase confidence and validate plausibility (Linnér et al., 2012). Lastly, the contextual moderating variables affecting the strength of the relationship between interlinked steps of the intervention theory emerged from expert interviews (Donaldson, 2001).

#### 4.3.2.1 Disclosing companies

The intervention theory for disclosing companies is the centerpiece of the analysis, as only disclosing EU farming companies can directly affect the relevant environmental outcome of reduced imported DEC onto the EU market; NGOs and financial institutions can merely indirectly influence this outcome by affecting disclosing companies' behavior.

For this intervention theory, the **addressees** of the ESRS are those EU undertakings that have 250 or more employees and are classified as belonging to the agriculture and farming sector. The **output** of an intervention can be defined as what the addressees of the policy are faced with (Mickwitz, 2003). Disclosing companies will be faced with the mandatory collection and publication of standardized information on sustainability impacts, risks, and opportunities (EFRAG, 2022b). Further, this information is subject to third-party verification due to the policy's limited assurance mandate, identifying auditors as **intermediary actors** (EFRAG, 2022b). As the ESRS feature disclosure requirements about the upstream value chain, suppliers are also considered intermediary actors in obtaining this data (EFRAG, 2022b).

As a transparency tool, the policy generates information as an **immediate outcome** (A, B, I). As research question one synthesized, the information relevant to the research problem is comprised of corporate commitments, policies, targets, and actions against deforestation, as well as further data points which are determined by the exact and final disclosure requirements (EFRAG, 2023a). Figure 4-6 shows the template intervention theory before assumptions are introduced. It can be understood as a visual illustration of research question two with all certain parameters filled out.

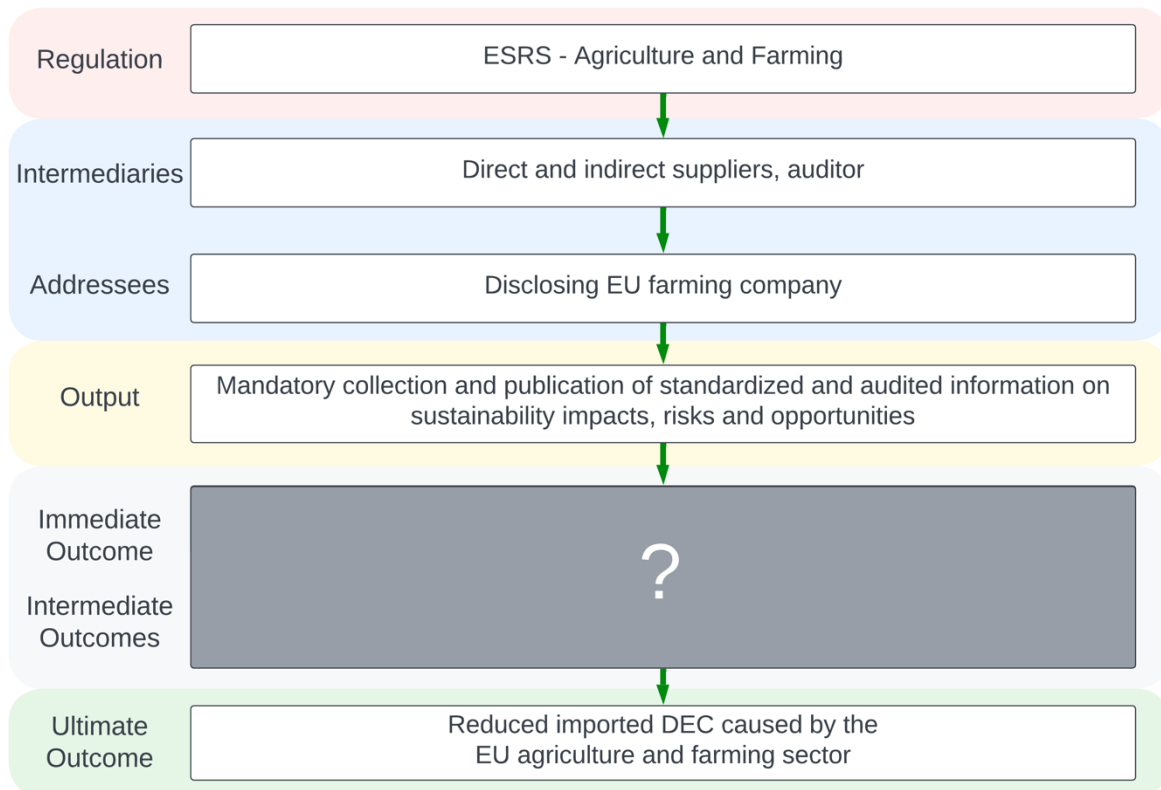


Figure 4-6: Intervention theory for disclosing companies before assumptions.

Source: Author's illustration.

In the following, key assumptions underlying the intervention logic of the ESRS are made explicit and are then translated into the intervention theory to fill out the black box in Figure 4-6 and identify relevant moderators that affect the strength of the relationship between the interlinked steps (Donaldson, 2001).

The **first assumption** is that the ESRS cause increased awareness by EU farming companies of DEC as a material impact. It is backed by the expectation of program operators and disclosing companies, who expect the profile of sustainability reporting in organizations to rise because of the CSRD (De Groen et al., 2022; European Commission, 2021c). This is accompanied by an increase in the disclosing companies' awareness of their own direct and indirect environmental impacts, including DEC in the upstream value chain (De Groen et al., 2022; European Commission, 2021c). Future preparers of sustainability reports expect the regulation to cause increased inter-departmental cooperation, resulting in a more holistic understanding of corporate impacts (De Groen et al., 2022). The expected spillover of reporting requirements up the value chain is expected to lead to a better overview of supply chains (De Groen et al., 2022; European Commission, 2021c).

The empirics from previous comparable policies further strengthen the assumption, as Fiechter et al. (2022) find a robust increase in internal sustainability reporting infrastructure for those companies subject to the NFRD compared to a control group. Such infrastructure includes upscaling data collection and analysis, setting up responsible committees, and including sustainability considerations in top-management bonus schemes (Fiechter et al., 2022). Interviewees state that the introduction of mandatory assurance in the ESRS implies higher risks

connected to incomplete materiality assessments, as auditors will control their comprehensiveness (A, B, E, I, J).

The **second assumption** is that the ESRS motivate changes to EU farming companies' environmental and human rights due diligence processes. Three out of four disclosing companies expect such changes, while only 14% think that no changes will occur (De Groen et al., 2022). Internal measuring and monitoring capacity is a prerequisite for sustainability reporting (Traxler et al., 2020). It can thus be reasonably inferred that the introduction of specific, mandatory disclosure requirements creates a common baseline for the internal data collection capacity of regulated companies, enforcing the build-up of connected infrastructures.

The **third assumption** is that the mandatory disclosure of policies, targets, and actions against DEC leads to an upscale in corporate commitments against DEC. More than two-thirds of disclosing companies expect the ESRS to cause new policies or a revision of existing policies; this is believed to be primarily incentivized by transparency creating increased pressure from investors, customers, staff, and other stakeholders (De Groen et al., 2022). Further strengthening the assumption is existing literature on sustainability reporting. An in-depth case study of seven multinational corporations finds that external reporting practice gets translated into key performance indicators in internal management systems, affecting operational and strategic decision-making (Adams & Frost, 2008). Though the extent and degree of incorporation differ and are highly contextual, this finding indicates a connection between disclosure and organizational change (Adams & Frost, 2008). Empirically, sustainability reporting is frequently identified as a tool to integrate sustainability issues into organizational planning and aid in setting environmental objectives (Traxler et al., 2020).

Institutional and economic theory on corporate behavior further strengthen assumptions two and three. Economic theory expects companies to make decisions based on risk and return (Tobin, 1958). Since the mandatory publication of policies, targets, and actions against deforestation allows for benchmarking among competitors, companies can reasonably be expected to wish to avoid a status as laggards due to connected reputational risks (Leong & Hazelton, 2019). Institutional theory states that especially large companies react to regulatory and societal pressures, resulting in converging corporate behavior – a phenomenon that is termed coercive and normative isomorphism (DiMaggio & Powell, 1983). Lastly, mimetic isomorphism describes the act of imitating the behavior of successful competitors (DiMaggio & Powell, 1983). All three types of isomorphism have been observed in the fast diffusion of sustainability reporting (Martínez-Ferrero & García-Sánchez, 2017). These elaborations imply that the mandatory disclosure of policies against DEC may accelerate their adoption due to converging expectations and corporate behavior.

The **fourth assumption** is that mandatory reporting increases the likelihood that companies engage in multi-stakeholder or sectoral initiatives against DEC or collaborate with NGOs. Interviewees mentioned such collaborations as a likely outcome of the ESRS (E, G). Especially sectoral initiatives that create a common ask from suppliers by downstream companies were mentioned as promising routes to impact (F, G, H). Signaling theory supports the assumption, as it explicitly states that companies indicating such engagements to their stakeholders in sustainability reports reap a reputational benefit (Spence, 1973). Increased awareness and the reputational benefit may be sufficient to motivate participation in the first place (E, F, G).

Three moderators which affect the strength of relationship between increased corporate awareness and the previously described changes in company behavior emerged from the interviews. The **first and second moderators** that emerged from expert interviews are reputational and financial risks and opportunities that are put on EU farming companies by

NGOs and financial institutions - the primary users of sustainability information under the ESRS (European Commission, 2021; A, B, D, E, F, G). The actions of these stakeholders are, however, partially influenced by the ESRS, and will be addressed in two separate partial intervention theories as stated in the subchapter's introduction. Both moderators reinforce the likelihood of the assumed behavior changes by disclosing companies (A, B, D, E, F, G).

The **third moderator** is other upcoming EU legislation that targets non-EU value chains. The regulations are expected to increase the regulatory risk for companies, implying first-mover advantages for companies that engage earlier (C, D, F, G). The two most mentioned policies are the Corporate Sustainability Due Diligence Directive and the Deforestation-free Product Regulation (C, D, F, G). The former will mandate affected companies to identify, mitigate and account for negative environmental and human rights risks in their supply chain (European Commission, 2022a). The latter is a sharp regulation that will prohibit EU market access for forest risk commodities starting in 2024 if they cannot be proven to entail only negligible risks of deforestation with a cutoff date of 2020 (European Commission, 2022b). However, as of April 2023, the regulation will not expand to other wooded lands and ecosystems with high biodiversity value and thus exclude the two primary frontiers of ecosystem conversion for soy in Brazil (European Commission, 2022b). Three interviewees state that this regulation will turn the existing market structure of extreme aggregation of soybeans on its head and stress the many question marks attached to its implementation (C, D, F). The comments were motivated by the Deforestation-free Product Regulation's requirement of traceability to the farm level through geolocations and remote monitoring (European Commission, 2022b). However, as these policies require the build-up of new internal capacities, the Corporate Sustainability Due Diligence Directive and the Deforestation-free Product Regulation reinforce the likelihood of assumed behavior changes by both disclosing companies and soy traders (C, D, F, G).

The **fifth assumption** is that EU farming companies engage more proactively with their soy suppliers and shift their demand towards traceable and DEC-free soy – in line with strengthened commitments. Disclosing companies predict the additionally collected information to initiate the inclusion of sustainability aspects in the selection of suppliers that are likely to be backed by “specific reduction targets for the value chain” (De Groen et al., 2022: 89). Two options for EU farming companies to mitigate the environmental impact of embedded DEC in their soy supply chain emerged from the interviews. The first option is to look for new suppliers which practice extensive due diligence themselves and already offer a segregated stream of DEC-free soy (D, F, G, H). The second option is to engage with existing suppliers, who are then faced with the spillover of reporting requirements, as well as the expectation to upscale efforts on traceability and segregating supply chain flows (D, F, G).

These suppliers can either choose to engage with the spillover of reporting, due diligence, and traceability requirements or end the business relationship, electing to export soy to other markets instead (D, F, H). An engagement would entail investments in monitoring capacities and subsequently prioritizing traceable or certified DEC-free soy for the EU market (D, F). Moderator three reinforces the likelihood of trader engagement with increased traceability and DEC-free soy demand due to the looming threat of losing EU market access (D, F).

The interactions between soy suppliers and EU farming companies are dictated by a **fourth moderator**: the market dynamics of the soy supply chain. Few large soy traders dominate the market and sell the commodity to a large number of downstream clients (D, F, G, H). This bottleneck results in a power asymmetry between the limited number of large traders and the diverse mass of downstream companies buying from them (D, F, G, H). These properties of soy imports can complicate switching suppliers or altering the trade patterns of highly integrated

large companies like Cargill (F). Thus, the moderator weakens the likelihood that soy suppliers respond to changed demand from EU farming companies.

If EU farming companies can enforce an engagement of soy suppliers with the upscale of reporting requirements and shift in demand towards traceable and DEC-free soy, they can increase the transparency in their animal feed supply chains and achieve the ultimate outcome of reduced imported DEC (D, F, G). Figure 4-7 illustrates the described intervention theory for disclosing companies in a flow chart, where blue circles describe the identified moderators that emerged from expert interviews.

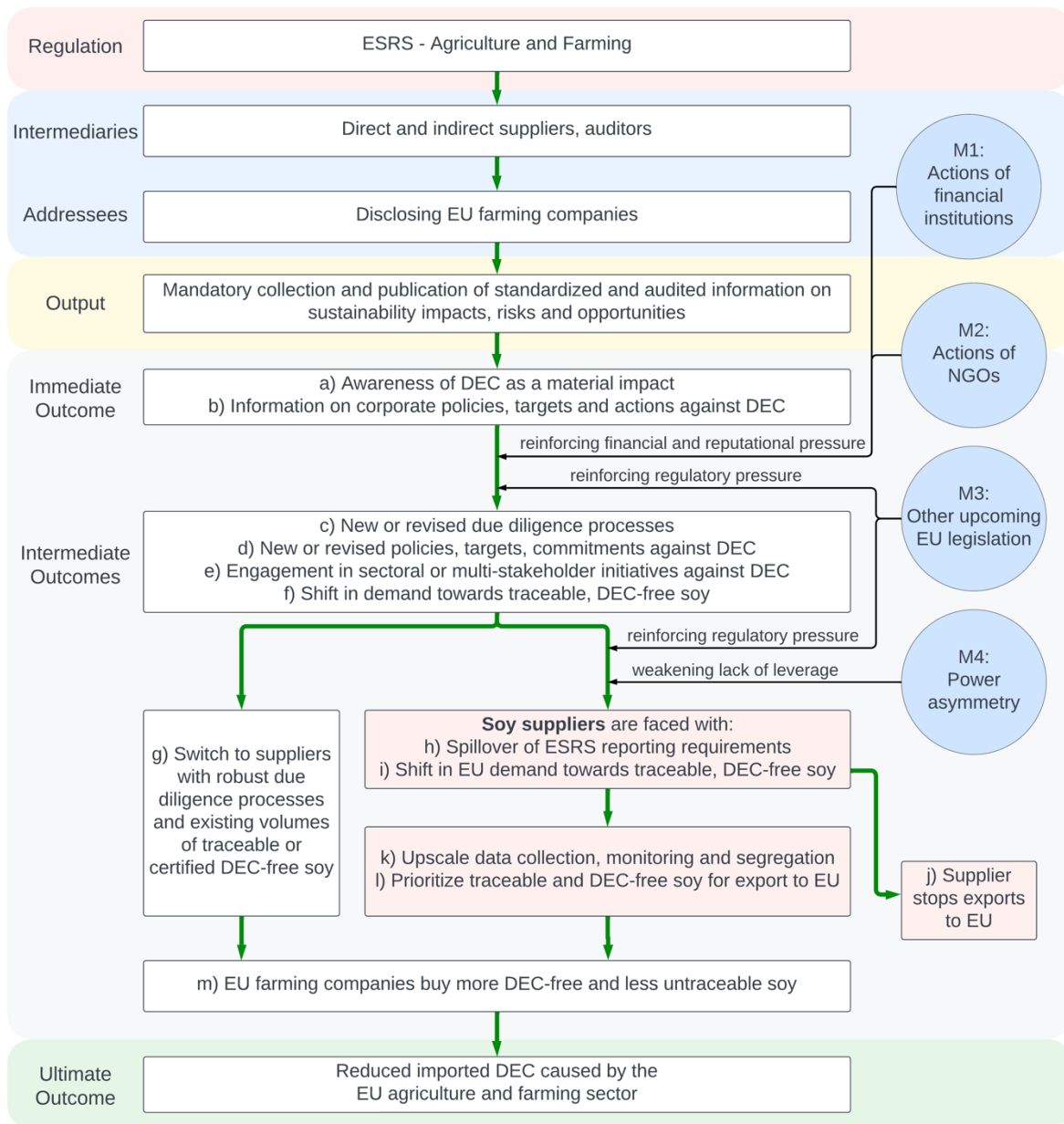


Figure 4-7: Intervention theory for disclosing companies.

Source: Author's illustration.

### **4.3.2.2 Financial institutions**

This subchapter constructs a partial intervention theory on the interaction between financial institutions and disclosing companies as identified in **moderator one** of the intervention theory. In the terminology of intervention theory, disclosing companies are, in this case, intermediaries that generate information about their sustainability performance for financial institutions in the role of addressees.

There are **three main assumptions** of future program operators. First, the increased disclosure of sustainability information allows investors to better include sustainability risks, opportunities, and impacts of investee companies in decision-making processes (European Commission, 2021d). Second, this is expected to cause increased capital flows to those companies that act more environmentally and socially responsible than their competitors (European Commission, 2021d). In this manner, the EU financial market minimizes its exposure to systemic climate, biodiversity, and human rights-related risks (European Commission, 2021d). Third, the redirection of capital flows incentivizes disclosing companies to decrease their negative environmental and social impacts (European Commission, 2021d).

Strengthening these assumptions is the empirical finding that financial institutions increasingly interact with sustainability information on investee companies, primarily motivated by its relevance to the performance of investments, as well as stakeholder demands and ethical considerations (Amir & Serafeim, 2018). Moreover, evidence exists that increased sustainability performance and disclosure leads to lower capital costs and increased access to financing (Chava, 2014; Raimo et al., 2021).

Furthermore, the concept of information asymmetry supports the assumption that a broader information base for financial institutions will improve market outcomes (Akerlof, 1978). In economic theory, market equilibrium can only be reached when perfect distribution of information is given (Akerlof, 1978). Hence, asymmetrically distributed information on DEC and connected social and environmental risks and impacts leads to adverse selection – in this case suboptimal investing and lending decisions by financial institutions (Akerlof, 1978). The ESRS introduce the mandatory disclosure of material corporate risks and impacts and create a more complete information base for such decisions, thus offering potential to decrease the extent of market failure resulting from inadequate consideration of sustainability-related risks, impacts, and opportunities.

The transitional and reputational pressures that financial institutions themselves are exposed to are expected to increase the likelihood of the described impact route materializing. Transitional pressures include regulatory interventions, such as the Sustainable Finance Disclosure Regulation, as well as the actions of supervisory bodies, which include mandatory climate stress-testing for financial institutions (B, D, F, G). Moreover, the Corporate Sustainability Due Diligence Directive sets requirements for the due diligence processes of financial institutions (European Commission, 2022a). Reputational pressures are assumed to be magnified by civil society organizations and their ability to name and shame financial institutions that keep investing in unsustainable business models at large scales (E, G).

In the specific context of DEC roles as investors and lenders, financial institutions are deemed key share- and stakeholders for large EU farming and soy trading companies and can use this leverage to exert influence over disclosing companies (A, B, D, E, F, G). Two forms of interactions between financial institutions and disclosing companies concerning DEC emerged from interview data and the literature. Firstly, financial institutions can engage directly with disclosing companies, an approach that is mainly taken by more environmentally aware financial institutions (B, D, F, G). Secondly, financial institutions may exclude companies that show no

intention to address material impacts and risks arising from DEC from their portfolios (A, B, D, E, F). Existing research deems the engagement option that includes shareholder activism more impactful than exclusion policies (Amir & Serafeim, 2018). In the next step, financial institutions' engagement and exclusion practices concerning DEC are assumed to increase the financial risks and opportunities of large EU farming companies and soy traders. The risk expresses itself in the threat of divestment and increased capital costs due to poor sustainability performance, while the opportunities for top performers include increased investment and lower capital costs (A, B, F, G). The crucial underlying mechanism is that the described incentives increase the likelihood of behavior changes by disclosing companies aimed at reducing imported DEC. Next to affecting the behavior of investee companies, the described impact mechanism would also lead to a reduced contribution of the financial sector to DEC (F, G). Figure 4-8 shows the intended impact mechanism in which financial institutions can incentivize action against DEC by EU farming companies in a partial intervention theory.

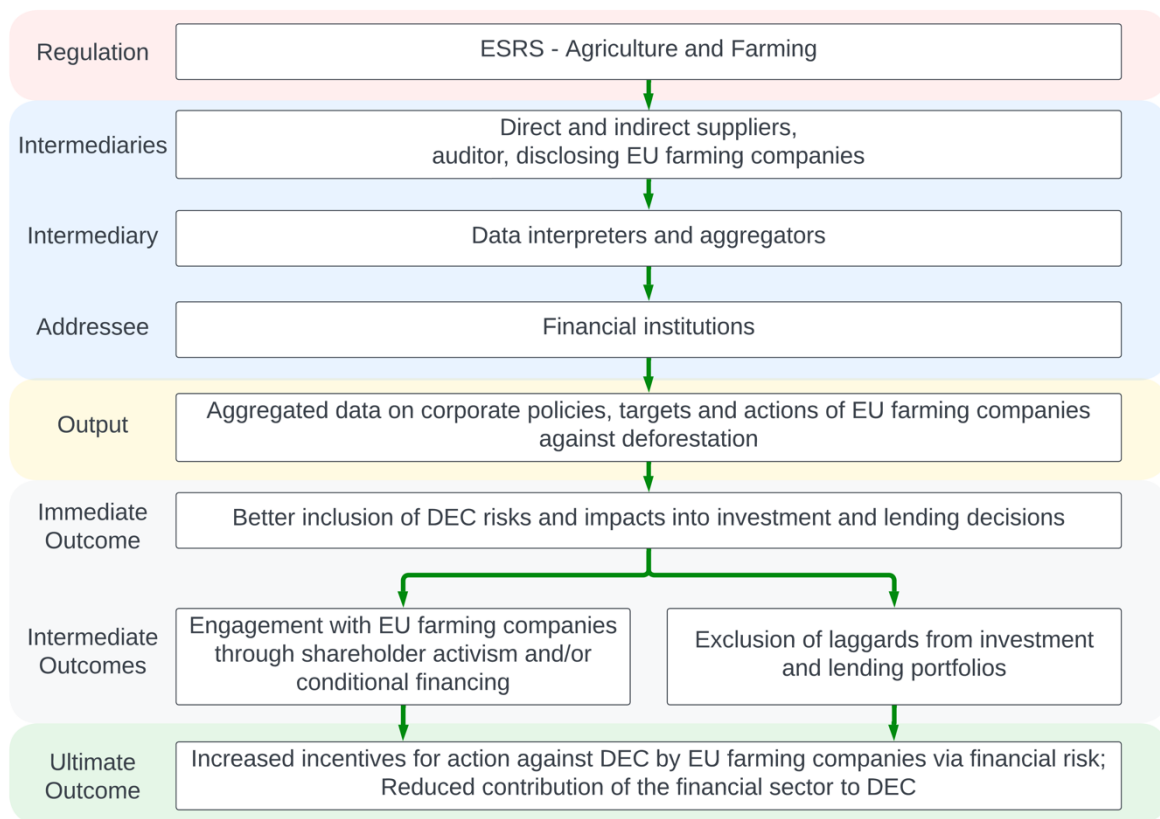


Figure 4-8: Intervention theory for financial institutions.

Source: Author's illustration.

Overall, it is questionable to what extent the mechanism translates into practice, as DEC is merely one route among many in which companies generate negative social and environmental impacts. With highly diversified portfolios, the capacity of financial institutions to track singular environmental and social issues is inherently limited (A, B, D, E, F). As a result, institutional investors frequently make use of intermediaries that interpret and aggregate existing data to a decision-relevant level (A, B, G, F). As of now, those intermediaries are mostly ESG rating companies, despite frequent criticisms of untransparent methodologies and highly diverging sustainability scores between rating providers (Jonsdottir et al., 2022; Kotsantonis & Serafeim, 2019). Intermediaries that specialize in DEC and allow for different levels of data aggregation



are currently in their beta phase and offer potential to increase the accuracy and transparency of the data on DEC provided by intermediaries to financial institutions (F, G).

The amount of attention that deforestation receives from financial institutions is rising. At COP 26, thirty financial institutions with more than \$8.7 trillion in assets under management have committed to eliminating commodity-driven deforestation from their portfolios until 2025, in line with the SBTi's guidance for the agricultural sector (Science-Based Targets Initiative, 2022; UNFCCC, 2021). The signatories state that awareness of deforestation is critical to ensure the success of their own net-zero plans while minimizing reputational and legal risks (UNFCCC, 2021). However, most financial institutions heavily exposed to deforestation do not yet have sufficient policies and capacity to ensure a deforestation-free portfolio (Global Canopy, 2023a). This results in the conclusion that the depicted impact mechanism "is a potentially very powerful lever in the future, but less tested" (D). This potential justifies further research on financial institutions' awareness of the DEC caused by investee companies and the specific data needs to counteract it.

#### **4.3.2.3 NGOs**

This subchapter elaborates on the interactions between NGOs and disclosing companies as identified in **moderator 2**. According to the CSRD's ex-ante impact assessment, the role of NGOs is to hold disclosing companies accountable for their social and environmental impacts (De Groen et al., 2022; European Commission, 2021c). As disclosing companies under the CSRD are obliged to follow the ESRS guidelines, the likelihood of selective and incomparable reporting that obscures negative corporate impacts is expected to decrease (Primec & Belak, 2022). The key assumption is that the broader and more complete information base equips NGOs with the ability to create reputational opportunities and risks for disclosing companies, incentivizing a reduction of social and environmental impacts (A, B, E, G). Interviewees emphasize that without external groups analyzing the information created by the ESRS and communicating back findings and expectations to companies and the public, an impact beyond transparency is unlikely (D, E, G). A high-level expert added that the perception of powerful stakeholders about information is typically more important than the information itself, confirming the importance of NGOs as catalyzing actors (H).

Two mechanisms for NGOs to engage with disclosing companies emerged. First, NGOs can approach laggard companies with large environmental and social impacts from DEC and offer assistance in building up ambition and capacity to better address such impacts in the future (E, G). Such partnerships between NGOs and EU farming companies aimed at increasing the sustainability of soy supply chains exist, for example between WWF and six large downstream soy importers from Germany including meat giant Tönnies (WWF, 2022). Second, a public naming-and-shaming strategy can facilitate a network of expectations and increase the pressure on companies to improve disclosed policies, targets, and actions as a result of the transparency created by the CSRD (A, B, E, G). Empirical cases exist in which negative publicity produced by NGOs created reputational and legal risks that incentivized companies to adjust their behavior. Shortly after Greenpeace criticized the cattle sector's role in driving deforestation and slave labor in a widely publicized report, the four largest meat packers in the world agreed to only source from lands that are conversion-free since 2009 (Gardner et al., 2016). Further, a study of 539 large companies confirms that media coverage of corporate social irresponsibility increases the financial risk of companies (Kölbel et al., 2017).

While the first, cooperative approach offers reputational opportunities for companies cooperating with NGOs, the second, naming-and-shaming approach increases the reputational risks for disclosing companies (A, B, E, G). The created reputational risks and opportunities

may increase the likelihood that laggard EU farming companies adopt new policies, targets, and actions against DEC. Institutional theory supports the argumentative chain. It confirms that corporate actors react to societal expectations and pressures, which are often communicated by NGOs, with converging behavior, in a process termed normative isomorphism (DiMaggio & Powell, 1983). Figure 4-9 shows the intended mechanism through which NGOs can incentivize action against DEC by EU farming companies.

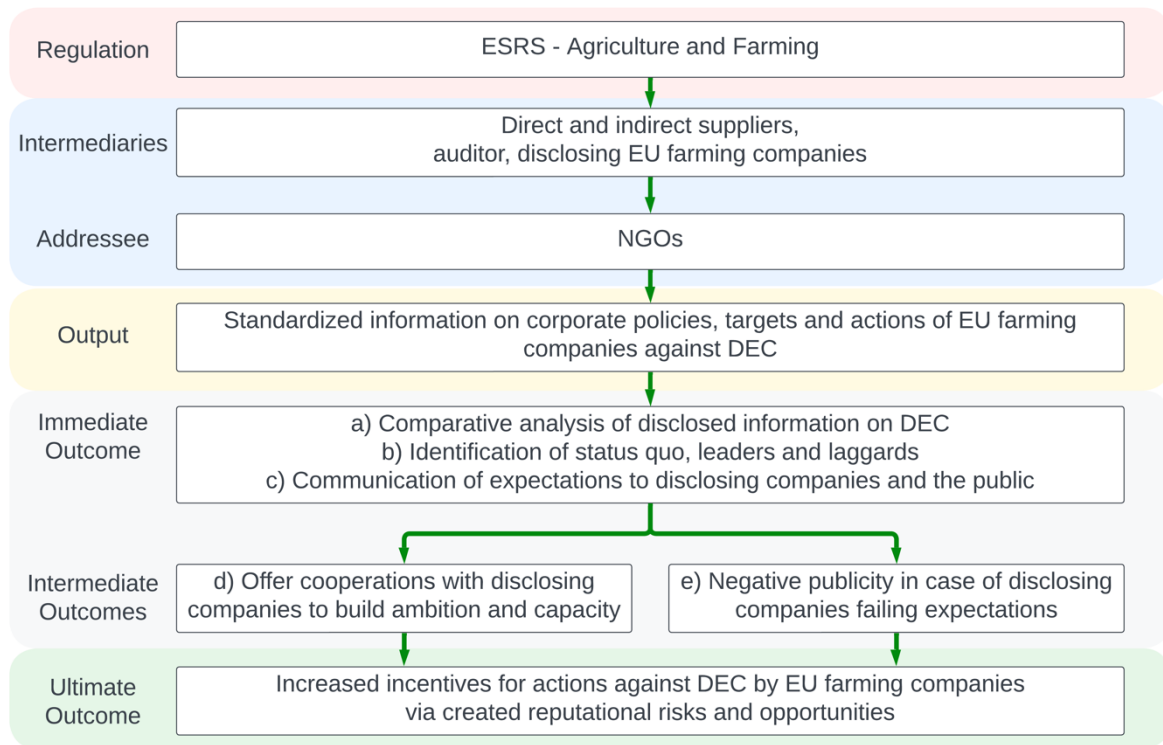


Figure 4-9: Intervention theory for NGOs.

Source: Author's illustration.

#### 4.3.2.4 Summary of the intended impact mechanism

The following prerequisites must be met so that the ESRS for farming and agriculture lead to the ultimate outcome of reduced imported deforestation by EU farming companies. First, the introduction of mandatory sustainability disclosure must increase the awareness by EU farming companies that DEC is a sector-specific material impact. Second, the enforced transparency on policies, targets, and actions against DEC must motivate behavior changes in disclosing companies. These behavior changes include the adoption of more stringent policies and due diligence processes, as well as increased engagement in sectoral or multi-stakeholder initiatives against DEC.

The likelihood of these behavior changes is reinforced by the financial and reputational incentives created by financial institutions and NGOs as users of disclosed information, as elaborated in the previous two subchapters. Further, other upcoming EU legislation that will introduce stricter due diligence requirements and intends to prohibit market access for commodities with a high risk of embedded deforestation reinforces the likelihood that EU farming companies adopt said behavior changes.

Additionally, the behavior changes must then lead to a shift in demand from aggregated towards traceable and DEC-free soy for animal feed. Reduced imported DEC can be achieved if soy suppliers fulfill the spillover of reporting requirements and react to the shift in EU demand by upscaling data collection and monitoring capacity and prioritizing traceable and DEC-free soy for export to the EU. On the one hand, a power asymmetry in favor of soy traders caused by the market structure weakens the likelihood of such a response. On the one hand, the threat of losing market access because of upcoming EU legislation increases said likelihood.

## 4.4 Weaknesses and Countermeasures

This subchapter answers **research question three** by first identifying five weaknesses in the causal chain of the intervention theory based on scientific literature on sustainability reporting, the policy document analysis, and expert interviews. Then, the actions of multi-stakeholder initiatives and other voluntary reporting guidelines are consulted in combination with expert interview data to generate policy design options including specific disclosure requirements that may mitigate the identified weaknesses.

### 4.4.1 Materiality assessment

The **first identified weakness** concerns itself with the materiality assessment and affects the strength of the relationship between the output of the ESRS and the immediate outcome relevant to DEC. The policy document analysis pointed out that companies are required to perform a materiality assessment using “appropriate thresholds” in a matrix comprised of the likelihood and severity of impacts, risks, and opportunities (EFRAG, 2022c: 29). Companies are then required to report how the materiality analysis was operationalized (EFRAG, 2022c: 29). In the current constellation of the ESRS, disclosure requirements that address DEC are not mandatory if land use change is not deemed material by the disclosing EU farming company and would cause the causal chain of the intervention theory to break off at an early stage.

However, disclosure requirements and instructions regarding how companies identify material impacts, risks, and opportunities are kept vague and qualitative, leaving significant room for interpretation potentially resulting in loopholes that enable disclosing companies to omit material risks from reporting (A, B, E, I, J). Further, exorbitant complexity and inconsistencies between interrelated ESRS documents may confuse disclosing companies and result in divergent approaches to the materiality assessment (A, E, J). An omission of material land use change impacts in the upstream supply chain of EU farming companies could either be a consequence of lacking sustainability expertise and capacity or an intentional omission (Dingwerth & Eichinger, 2010).

The scientific literature on sustainability reporting confirms the identified problem with materiality assessments empirically. Eccles et al. (2012) criticize substantial variation in sustainability disclosure practices, with selective disclosure undermining comparability. Jonsdottir et al. (2022) confirm that, one decade later, this finding persists, as institutional investors lament a lack of materiality, accuracy, and reliability of disclosed information. Hence, the identification of material issues on a sector-specific level and the need to harmonize disclosure on environmental key performance indicators are pointed out (Eccles et al., 2012; Jonsdottir et al., 2022). Christensen et al. (2021) argue that it is a challenging issue for standard setters to anticipate material issues in a forward-looking manner due to limited research on how the disclosed information is typically used by stakeholders. To ensure complete disclosure, a sector-specific approach is recommended – to the detriment of intersectoral comparability (Christensen et al., 2021).

In line with this perspective, interviewees, and members of the EFRAG's technical expert group pointed out that the ESRS need to ensure that it is not possible for disclosing companies to omit material topics from reporting (A, B, D, E, I, J; EFRAG, 2023d). An identification of sector-specific material impacts by standard setters was deemed both possible and necessary, especially for high-impact sectors such as agriculture and farming (A, B, E, I; EFRAG, 2023d).

The following **countermeasures** emerged to address the identified weakness. Two approaches to preempting the potential failure of farming companies to identify land use change as a material impact in the ESRS came up. The first and more forcing option is prescribing a list of material topics for the sector, thus entirely circumventing the materiality assessment, and making disclosure requirements on DEC automatically mandatory (A, B, E, I, J). Such an approach might be subject to opposition from disclosing companies, who argue for the need for entity-specific assessments due to the variety of business models within one sector (B, I, J). A potential compromise is the identification of a subset of companies within the sector that must report on DEC (A, B, I). As the sectoral impact on DEC stems from farming companies that import soybeans for animal feed (Karlsson et al., 2020), mandatory disclosure may be limited to either all EU farming companies or only those EU farming companies that import a significant amount of soy products (A, B, I). Such a specification has the benefit of targeting only those companies with the highest risk of DEC while decreasing the reporting burden on those companies without significant DEC risk (B). The second option was ultimately discarded due to feasibility concerns (A, B, E, I, J).

The second and preferred option is an alignment of the ESRS with the GRI's approach to materiality assessments in the agriculture and farming sector (A, B, D; EFRAG, 2023d). The GRI standard provides a concise list of sector-specific topics that are likely to be material, which are then connected to disclosure requirements (Global Reporting Initiative, 2022a). This list of topics features several issues that are relevant to DEC, including natural ecosystem conversion, supply chain traceability, and several human rights-related topics (Global Reporting Initiative, 2022a). The ensuing disclosure requirements in the GRI standard are then divided into these subtopics (Global Reporting Initiative, 2022a). The procedure was praised as intuitive and straightforward to follow for disclosing companies who keep the sovereignty to decide which topics are material for their individual business models (A, B, D; EFRAG, 2023d).

By providing a more granular list of likely material topics in the ESRS for agriculture and farming and assigning disclosure requirements clearly to their respective topics, companies would be given clear and detailed guidance on which topics to consider in the materiality assessment, thus decreasing the likelihood of selective reporting (A, B, D; EFRAG, 2023d).

An additional reinforcing mechanism that prevents selective disclosure and raises the credibility of reported information is the limited assurance that disclosing companies are mandated to provide under the CSRD. Scholars point to the added value of third-party assurance, sustainability reports without assurance are deemed to be an unreliable indicator of a company's real stance towards sustainability that regularly lacks comprehensiveness and credibility (Schreck & Raithel, 2018). The previous mandatory sustainability disclosure policy in the EU, the NFRD, did not include mandatory assurance, resulting in the data being deemed incomplete and partially unbelievable (B, I). In turn, the presence of third-party assurance provides more robust signals that have been found to reduce information asymmetry between a company and its stakeholders more effectively (Boiral et al., 2019; Schreck & Raithel, 2018). This results in the recommendation for policymakers to complement mandatory sustainability disclosure with assurance to avoid biased and opportunistic disclosure of sustainability information (Cuadrado-Ballesteros et al., 2017; Schreck & Raithel, 2018).

External assurance increases the likelihood that incomplete reporting or non-compliance is detected (A, B, E, I, J). Hence, it incentivizes disclosing companies to be diligent in the materiality assessment as the detection of incomplete or faulty materiality assessments implies reputational and legal risks and repeating the assessment requires further resources and capacities (B, E, I, J). Specific attention must be paid to the competence of auditors, as a case study of water disclosure in the mining industry found no increase in credibility when external assurance was used. (Talbot & Barbat, 2020). Additionally, four experts have raised concerns about the ability of conventional financial auditors to assure the information disclosed under the ESRS (A, B, E, I). Two options emerged to increase the capacity of auditors under the ESRS to provide credible assurance of materiality assessments and disclosed information. The first option is extensive training of existing conventional auditors that creates a sufficient capacity to analyze sector-typical social and environmental risks, impacts, and opportunities, thus minimizing the likelihood of missing material issues during the audit process (A, B, E). The second option envisages a shift in the landscape of auditing companies, where conventional financial auditors do not perform sustainability audits (A, B, E, I). These audits are instead performed by an emerging field of sustainability auditors who are specifically educated to assure information under the ESRS (B, E, I). Instead of economists, sustainability professionals would be placed in the role of auditors, who were deemed more likely to provide credible assurance. Two experts stressed the importance of expanding professional training and creating educational opportunities in universities that address the expanding market for sustainability assurance (A, E). The first option was considered more feasible, while the second option was deemed less feasible yet more likely to be effective (A, B, E; I).

To summarize, ensuring that EU farming companies correctly identify land use change as a material environmental impact in the ESRS requires procedural alignment with the GRI standard for agriculture and farming that reduces complexity and suggests a list of likely material topics. Moreover, increasing the capacity of auditors to identify incomplete materiality analyses through training and education is needed. Figure 4-10 locates the identified weakness and connected policy recommendations in the intervention theory framework.

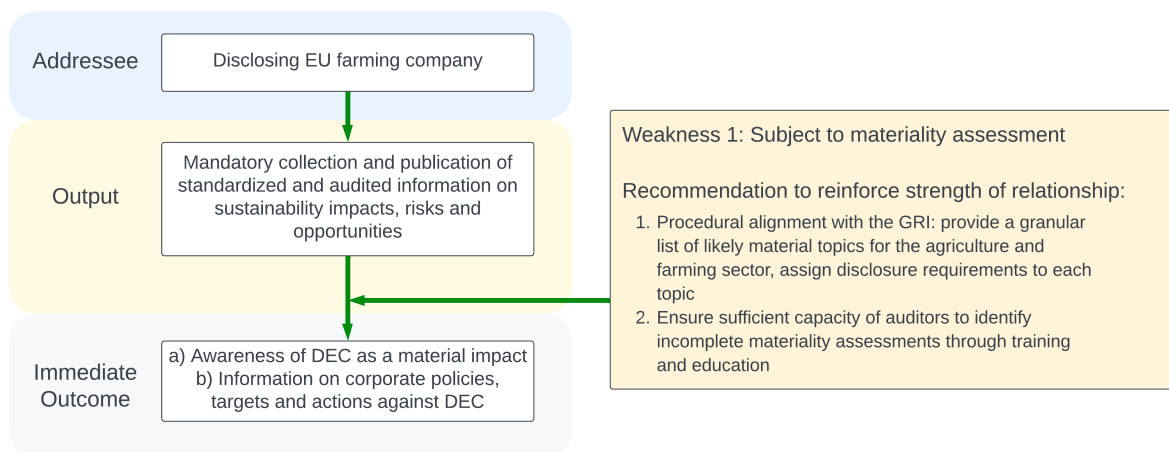


Figure 4-10: Policy recommendations for weakness 1.

Source: Author's illustration.

#### 4.4.2 Uncertainty of behavior changes

The **second identified weakness** affects the crucial step from the immediate outcome of more information on DEC generated by disclosure requirements to changed behavior and decision-

making of disclosing companies in the EU farming sector. As the intervention theory shows, the strength of relationship between these steps is moderated by the reputational pressure created by NGOs, the financial pressure created by financial institutions, as well as other upcoming regulations that address DEC. As an information-based policy tool, mandatory sustainability disclosure cannot enforce behavior changes in disclosing companies or set targets for environmental impacts (A). Merely the collection and assurance of data under the CSRD are mandatory (Directive (EU) 2022/2464). There is thus a natural source of uncertainty about whether such a policy will provoke behavior changes in disclosing companies. The scientific literature on the real effects of sustainability reporting shows an ambiguous picture. While some studies identify corporate behavior changes and even changes to independent variables such as air emissions or water quality (Chen et al., 2018; Christensen et al., 2017; Downar et al., 2021; Fiechter et al., 2022), other studies find no tangible evidence for such effects of mandatory sustainability disclosure (Carungu et al., 2020; Haji et al., 2023). The lack of consensus over whether and to what extent mandatory sustainability reporting causes behavior changes justifies the ensuing analysis, which aims to identify disclosure requirements and supporting policy design features that increase the likelihood of EU farming companies acting to reduce imported DEC.

Three **countermeasures** that strengthen the likelihood of behavior changes of disclosing companies have emerged from interview data and grey literature. The disclosed information on DEC must be democratized via easy accessibility, comparable by preferring quantifiable metrics where possible, and useful in representing the status quo of soy imports by disclosing companies.

#### 4.4.2.1 Democratization of data

The **first countermeasure** to incentivize behavior changes by disclosing companies is the democratization of data. In the stakeholder consultation for the CSRD, 80 percent of users of sustainability data indicate frequent difficulties in identifying relevant information due to inconsistent formats, bloated reports, and unnecessary content in sustainability reports (European Commission, 2021c). Interviewees mentioned the possibility that essential data gets drowned out in the noise due to the mass of produced information under the ESRS, thus discouraging stakeholders to engage with the disclosed data (A, B, I, J). Such a lack of engagement would weaken the reputational and financial risks and opportunities that NGOs and financial institutions could create for disclosing companies (B, I).

To maximize the availability and accessibility of disclosed information to its users, this existing problem with sustainability reporting must be prevented from affecting the ESRS. An existing countermeasure is the prescription of the ESRS to publish the sustainability report in the annual management report. However, interviewees still considered it an unnecessary burden for users of sustainability information to consult the mass of individual sustainability reports especially when the intention is a comparative analysis (B, I). The creation of a central EU database that labels and aggregates the information disclosed in sustainability reports and enables filtering and large-scale analyses across disclosing companies was brought up as a solution that would significantly increase the accessibility of disclosed information and empower the users of sustainability data (A, B, I, J). A legislative proposal for the establishment of such a platform for both financial and non-financial information, the European Single Access Point (ESAP), exists (European Commission, 2021e). It is intended to be operationalized by 2024, thus lining up with the timeline of the ESRS (European Commission, 2021e). As soon as the platform is initiated, disclosing companies should be mandated to upload their sustainability reports to the ESAP (A, B, I). Thus, the ease and likelihood of stakeholders interacting with data disclosed under the ESRS are increased. This reinforces the strength of causality in the intervention

theories created for financial institutions and NGOs as users of data that incentivize behavior changes in disclosing companies through financial and reputational risks and opportunities (A, B, I).

#### **4.4.2.2 Comparability**

The **second countermeasure** to incentivize behavior changes by disclosing companies is increasing the comparability of disclosed information. Experts expressed concern over the limited number of quantifiable metrics related to DEC in the current draft of the ESRS for agriculture and farming (A, B, E, F, G, I). Especially for financial institutions, decision-relevant and machine-readable data was identified as a precondition for a more effective allocation of capital via reduced information asymmetry (A, B, D, E, F, G, I). A barrier to achieving comparable data is that prescribing one of multiple competing methodologies in a piece of neutral EU legislation was considered difficult in the dynamically evolving field of nature-related impact measurement (A, E). However, compared to other nature-related impacts like pollutants, plastic, or biodiversity stress, deforestation is a well-understood problem with solid data availability and thus greater potential for quantification (D, E, G).

Financial institutions' actions against DEC are characterized by a dichotomy between a few actors that focus on the impact of their investments and actively engage with investee companies via shareholder activism, and a majority of laggards that either practice exclusion of highly unsustainable companies or do not engage with the topic at all (Global Canopy, 2023a). Due to the limited capacity allocated to the social and environmental impact analysis of investments, it is common for financial institutions to merely identify whether a zero-deforestation policy was adopted by the investee company (G). However, this is an inaccurate indicator of company performance on DEC due to the highly diverging scopes, implementation, and monitoring of such commitments (Austin et al., 2021; Garrett et al., 2019). Financial institutions frequently bring up a lack of sufficiently aggregated and comparable data on DEC as a barrier to adopting their own zero-deforestation commitments (D, E, F, G, J; CDP & Accountability Framework, 2022).

The sector-specific ESRS have been pointed out by experts as an opportunity to create a broader and more accurate database on DEC that, in combination with regulatory and civil society pressure, can reduce the hesitancy of willing financial institutions to adopt zero-deforestation commitments (A, D, E, F, G; CDP & Accountability Framework, 2022). For financial institutions, the role of currently emerging specialized intermediaries that transparently provide information on company-specific DEC performance was emphasized (F, G). The comparability of disclosure requirements on DEC can be improved by emphasizing numerical indicators while ensuring common denominators in their measurement (D, G). The ensuing possibility of establishing benchmarks and rankings on the DEC performance of disclosing companies was also deemed to benefit NGOs in identifying and calling out laggards, further increasing the likelihood of preventative actions by disclosing companies (A, B, E, G, I).

#### **4.4.2.3 Transparency on the contribution of disclosing companies to DEC**

The **third countermeasure** to incentivize behavior changes by disclosing companies is adding disclosure requirements that indicate the contribution of disclosing companies to DEC. As pointed out in the answer to research question one, the ESRS for agriculture and farming require qualitative information on policies, targets, and actions against DEC. However, the existing disclosure requirements struggle in expressing the actual contribution of EU farming companies to imported DEC. This becomes especially clear when comparing the ESRS to the disclosure

requirements of existing multi-stakeholder initiatives on DEC (CDP & Accountability Framework, 2022; Global Reporting Initiative, 2022a).

First indications that the current version of the ESRS sector standard might omit essential information regarding DEC arose in an EFRAG webcast on the agriculture and farming standard (EFRAG, 2023e). In the discussion, a lack of time and capacity among policymakers was brought up several times (EFRAG, 2023e). Interviewees have confirmed observed capacity shortages and communication problems in the policymaking process of the ESRS (A, B, E, I). One EFRAG member specifically pointed out that better use needs to be made of existing initiatives and reporting guidelines, as these, in opposition to the policymakers have had the time to perform extensive stakeholder outreach and develop deep topical expertise (EFRAG, 2023a). A senior employee of a leading multi-stakeholder initiative against DEC praised the GRI sector standard, stating it aligns with best reporting practice, given that companies disclose robustly on each disclosure requirement (D).

As pointed out in the answer to research question one, the ESRS show weaknesses and unclarity in the disclosure of supply chain traceability, ecosystems converted, and GHG emissions from land use change. The next subchapters propose indicators that serve the dual purpose of increasing the comparability of disclosed information and quantifying disclosing companies' contributions DEC. Leong & Hazelton (2019) find that comparable disclosure requirements that allow for benchmarking best promote organizational change in disclosing companies. The proposed indicators were deemed by experts to enable benchmarking by NGOs and financial institutions (C, D, F, G).

#### 4.4.2.3.1 Traceability

The **first proposed indicator** to increase comparability addresses supply chain traceability. This thesis has identified indirect sourcing and subsequent high levels of aggregation of soybeans by large traders as the primary mechanism through which EU farming companies import DEC (zu Ermgassen et al., 2022). The scientific literature has indicated that supply chain transparency and traceability is a necessary and promising approach to reducing the DEC caused by international trade (Godar et al., 2016; Pendrill et al., 2019). Hence, a disclosure requirement on the traceability of forest risk commodities was considered a suitable indicator to address DEC in the ESRS for the agriculture and farming sector by experts (C, D, F, G, H). In a webcast, the writing team of the ESRS for agriculture and farming was urged by an expert group member to consider including traceability more explicitly in the standard with reference to sectoral initiatives and existing voluntary standards (EFRAG, 2023e).

A sensible starting point for the design of a disclosure requirement on traceability is to identify how the issue is addressed by leading multi-stakeholder initiatives against DEC with disclosure elements. Interviews and academic literature have identified the Accountability Framework and CDP Forest as market-leading initiatives that feature disclosure requirements (G, F, I; Garrett et al., 2019; zu Ermgassen et al., 2022). In a publication by the Accountability Framework Initiative (2019) that aligns with CDP Forest data requirements and aims to create a common methodology for assessing progress toward DEC-free supply chains, traceability is addressed by two questions:

1. „What percentage of the commodity volume in the company's supply chain is traceable to applicable supply chain levels (e.g. direct suppliers/processing facility/production unit)?
2. What percentage of the commodity volume in the company's supply chain can be traced to origin in low-risk jurisdictions?“ (Accountability Framework Initiative, 2019: 12).



The information provided by the ladder question is in line with the balance between detail and scale that is recommended by Godar et al. (2016). In this approach, traceability is only required back to a level that ensures a negligible risk of DEC, thus allowing the efforts to upscale traceability to be focused on the frontiers where such conversion is known to occur (Godar et al., 2016). This implies that for low-risk regions, traceability to a country of origin may be sufficient to prove negligible risk, while in high-risk jurisdictions, traceability to the subnational, regional, or farm level might be required (Godar et al., 2016). Data tools and satellite monitoring capacities exist for the high-risk sourcing regions of Brazil, Argentina, and Paraguay (Trase, 2023). Such a pragmatic approach to traceability was considered useful to adopt in the ESRS sector standard (C, D, F, G, H).

In the past, companies have been observed to inflate the percentage of traceability by reporting only partial information, for example by excluding the indirect supply chain or certain sourcing regions from consideration (D). The ESRS should thus elect clear and intentional language to ensure that the reported percentages must be a proportion of the disclosing company's total supply chain volume of the forest risk commodity (D).

The GRI sector standard adds a third disclosure requirement by urging disclosing companies to describe any “improvement projects to get suppliers certified to internationally recognized standards that trace the path of products through the supply chain to ensure that all sourced volume is certified.” (Global Reporting Initiative, 2022: 62). Certification schemes for DEC-free soy are not considered to be at a sufficient scale to cover a noteworthy percentage of trade volumes, implying that manually upscaling product traceability to its origin is the mechanism through which company exposure to DEC must be minimized (C, D, G, F).

To summarize, companies in the agriculture and farming sector that deem land use change a material issue should be mandated to disclose the extent of traceability of their supply chain as required by the Accountability Framework initiative, as well as the efforts made to increase traceability as required by the GRI (Accountability Framework Initiative, 2019; Global Reporting Initiative, 2022). Whereas the first two questions represent quantifiable metrics on the status quo of disclosing companies' supply chain traceability, the third requirement adds relevant forward-looking information. By mandating disclosure on the traceability of soy supply chains, the ESRS would require an indicator for the most important mechanism through which imported deforestation by the EU farming sector can be reduced (C, D, F, G, H). Moreover, the recommendation encourages engagement of disclosing companies with the upstream supply chain, as determining the level of traceability requires the accumulation of information across value chain actors (D, F, G).

#### **4.4.2.3.2 Ecosystems converted**

The **second proposed indicator** to increase comparability quantifies ecosystem conversion. The scope of the disclosure requirement on size, location, and type of converted ecosystems in the ESRS for agriculture and farming is unclear. In its current version, the scope includes “own operations and suppliers or sourcing locations” (EFRAG, 2023c: 12). The use of the word ‘or’ leaves room for interpretation whether DEC in the indirect supply chain of disclosing companies caused by the import of forest risk commodities must be quantified and reported. As the indirect supply chain of animal feed is the primary cause of DEC in the EU farming sector (Karlsson et al., 2020; zu Ermgassen et al., 2022), the phrasing should be changed to emphasize the inclusion of the indirect supply chain in this disclosure requirement. This simultaneously promotes the alignment of the ESRS with the globally leading voluntary reporting guideline GRI (Global Reporting Initiative, 2022a).

Further, the disclosure requirement should prescribe a cutoff date instead of letting companies elect it freely (C). The proposed cutoff date of January 1, 2020, which will also apply to the EU DfPR should be adopted (European Commission, 2022b). Exceptions should be made in the case of already existing sector-wide landscape initiatives that have agreed on earlier cutoff dates – such as January 1, 2008, for the Amazon Soy Moratorium (C; Heilmayr et al., 2020). By prescribing which cutoff date must be used for the disclosure of DEC, comparability of reported data is created while importantly respecting the cutoff dates of existing initiatives (C).

The disclosure of size, location, and type of ecosystem conversion should be performed based on the highest available resolution of data, where product traceability to farm level should be preferred (D, F, G). For the high-risk sourcing regions, the industry-leading open-source platform Trase provides data on commodity-linked DEC exposure down to the municipality level and individually for all major suppliers by matching ecosystem conversion polygons to soy production and trade flow data (Trase, 2023). Hence, disclosing companies can generate narrow estimates of DEC caused by their consumption using the best available data on suppliers and sourcing regions. Trase is explicitly recommended as a tool for disclosing companies in the ESRS E4 on biodiversity and ecosystems; the same should be done in the sector standard for agriculture and farming (EFRAG, 2022e).

Extensive methodological guidance for the calculation of ecosystem conversion exists from widely acknowledged multi-stakeholder initiatives (Accountability Framework Initiative, 2019; SBTi, Accountability Framework & GHG Protocol, 2022). Following this guidance in the ESRS would provide a common denominator and methodology to the quantitative disclosure requirement on converted ecosystems.

#### 4.4.2.3.3 GHG emissions from land use change

The **third proposed indicator** to increase comparability quantifies scope three GHG emissions from land use change, which have been highlighted to be substantial by Pendrill et al. (2019). The exclusion of scope three land use change emissions from the GHG inventory and weak language in the sectoral standard serves as an example of the inconsistency and existing unclarity in the draft ESRS that were mentioned by experts (A, B, E). Thus, it is recommended to clearly establish the disclosure of scope one, two, and three GHG emissions from land use change as mandatory in the ESRS for agriculture and farming (E).

The disclosure should follow the standardized methodology of the widely accepted GHG Protocol, which specifies using the finest available data resolution of product, sourcing area, or sector averages and will be published in its final version in 2023 – before the implementation of the ESRS (GHG Protocol, 2022). Detailed guidance for disclosing companies on the conversion of estimated DEC into land use change emissions exists and should be adopted in the ESRS (SBTi, Accountability Framework & GHG Protocol, 2022)

In line with the EU's net zero plans, the disclosure of GHG emissions from DEC in the farming sector is expected to exert pressure on companies to upscale efforts against imported DEC (D, G). Moreover, the use of sector average data and resulting high GHG emissions in the case of low traceability may motivate companies to initiate action aiming to improve supply chain traceability in order to decrease the reported emissions (D, G). GHG emissions are an indicator that is far more widely used compared to traceability and ecosystem conversion (G). Climate targets are more common among stakeholders of farming companies than land use targets, especially for financial institutions, and are thus deemed more likely to receive significant attention (G).

#### 4.4.2.4 Takeaways

The likelihood that mandatory disclosure incentivizes behavior changes by disclosing companies was deemed to be positively affected by the establishment of a European Single Access Point that democratizes the information, allowing for easier accessibility and analysis (A, B, I, J). Adding robust indicators on supply chain traceability, natural ecosystems conversion, and GHG emissions from land use change would close the identified gap of disclosure requirements that depict the actual contribution of companies to DEC (A, B, E, I). It is expected that the proposed metrics increase the awareness of disclosing companies about their impact on DEC (A, C, D). Further, increased comparability and decision-relevance of reported information for financial institutions and NGOs are expected to increase the likelihood of behavior changes in disclosing companies due to reputational and transition risks and opportunities (A, E, G, I). Figure 4-11 locates the identified weakness and connected policy recommendations in the intervention theory framework.

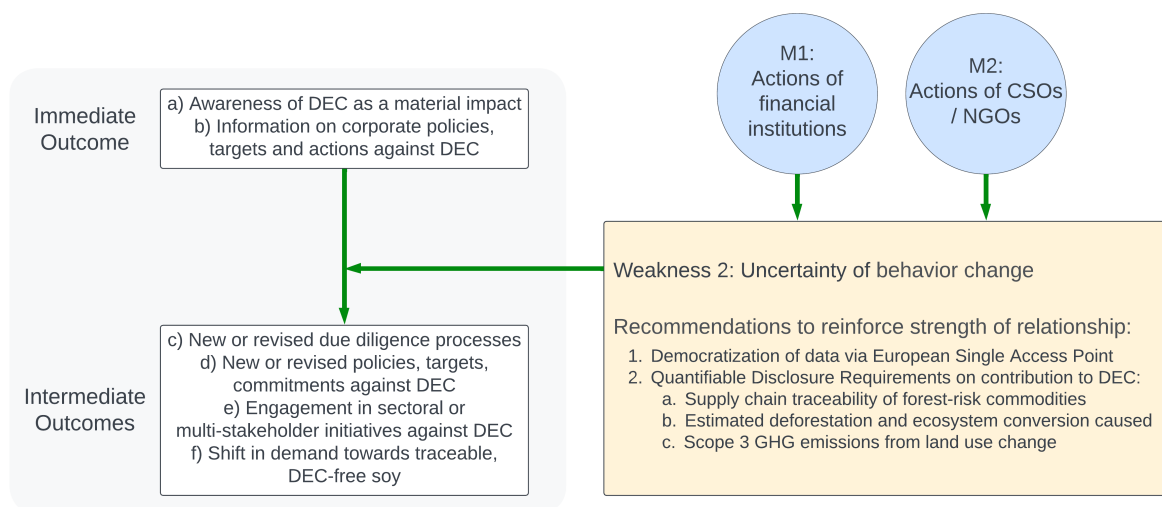


Figure 4-11: Policy recommendations for weakness 2.

Source: Author's illustration.

#### 4.4.3 Limited leverage over the upstream supply chain

The **third identified weakness** in the intervention theory addresses the communication between downstream EU farming companies and their suppliers of soy products. Due to the large market share of a limited number of large soy trading and crushing companies and the ensuing large number of downstream buyers, a power asymmetry in favor of the trading companies exists (F, G, H). For example, Cargill has a market share of 70% for soy from Brazil imported to the UK (Mighty Earth, 2020). This power asymmetry leaves individual farming companies with little leverage over their suppliers and decreases the likelihood of significant behavior changes by trading companies because of new information requests and shifts in demand (F, G, H).

This power asymmetry expresses itself in the inert opaqueness of supply chains, as trading companies tend to provide limited information on the traceability and origin of their soy products (D, F). There is a large and inert mass of soy traders who make no or only sporadic efforts to reduce the DEC in their supply chains (Global Canopy, 2023a). Currently, only 43% of the companies with the highest deforestation exposure in the soy sector – many of which are large trading companies – have a zero-deforestation commitment in place (Global Canopy,

2023a). Less than one-fifth of these companies also require their indirect suppliers to be deforestation and conversion-free (Global Canopy, 2023a). Despite these low numbers, encouraging cases exist in which major traders come close to full supply chain traceability (Global Canopy, 2023a). Amaggi is one of these cases, having created its own monitoring system spanning 6.000 farms and 15 million hectares (CDP & Accountability Framework, 2022). The trader can monitor 99% of its soy sourced in the Amazon biome and aims for 100% traceability including indirect suppliers in 2025 (CDP & Accountability Framework, 2022). Interestingly, in a webcast, a representative of Amaggi expressed a lack of demand for their existing DEC-free soy which is consequently not sold as such on the market (CDP & Accountability Framework, 2022). This circumstance reinforces the need for mandatory disclosure and other stringent demand-side regulation, as such measures may motivate a shift in demand toward traceable, DEC-free soy (zu Ermgassen et al., 2022). An expert interviewee attested that downstream companies do show interest to reduce the impact connected to soy imports:

*“Downstream companies would be very happy if they were able to meet their commitments and if upstream companies would transparently provide them with deforestation-free materials. If this information was available at a sufficient scale to them, downstream companies would act on it. The supply chain lever would work for sourcing policies.” (D)*

Collaborative engagement from downstream companies through sectoral initiatives was brought up as a **countermeasure** to the existing power asymmetry, hence offering the potential to increase the leverage of EU farming companies over their soy suppliers (F, G, H). Through soy manifestos with industry and sector-wide scale, downstream companies can create a common ask and thus increase the likelihood of affecting the behavior of large suppliers (F, G, H). Further, such a common ask may include aligned reporting requirements, supporting uniform data format, and reducing the administrative burden on traders who otherwise would have to answer diverging questionnaires individually for their buyers (F, G). Experts deemed it likely that the foundation of new manifestos, the expansion of existing manifestos, and increased communication between manifestos are effective ways of streamlining the communication with suppliers through common asks, thus effectively countering the power asymmetry (F, G).

In France and the UK, such manifestos exist at reasonably large scales, with major farming companies and retailers having signed agreements to eliminate DEC from their soy supply chains until no later than 2025, in line with the Science-Based Target initiative’s guidance for the agriculture and farming sector (Earthworm, 2020; Science-Based Targets Initiative, 2022; UK Soy Manifesto, 2021). The French initiative has expressed plans to extend to the European level by encouraging the creation of comparable initiatives in other member states and pursuing subsequent alignment between them (Earthworm, 2020). The collective agreements by downstream companies aim to convince direct suppliers to adopt the same commitments to DEC-free soy supply chains and encourage a harmonized approach to reporting on progress (Earthworm, 2020; UK Soy Manifesto, 2021). In line with the Accountability Framework’s approach, traders are asked to provide information on total sourcing volume and hectares, as well as the hectares of DEC linked to the company’s operations and detailed information on traceability (Earthworm, 2020; UK Soy Manifesto, 2021).

In other instances, collaborative engagement has been successful in increasing the leverage over affected actors. A common example is collaborative shareholder engagement, where multiple partial owners of a company follow a strategy of joint shareholder activism to collectively affect the behavior of large companies (Perrault & Clark, 2015). As participation in collaborative engagement indicates genuine engagement of disclosing companies with DEC, an additional disclosure requirement that makes explicit whether a disclosing company is a member of a sectoral or industry initiative that practices collaborative engagement with soy traders is

recommended (F, G, H). Further, such a disclosure requirement may incentivize disclosing companies to join soy manifestos, causing their influence to rise further (F, G). Figure 4-12 locates the identified weakness and connected policy recommendations in the intervention theory framework.

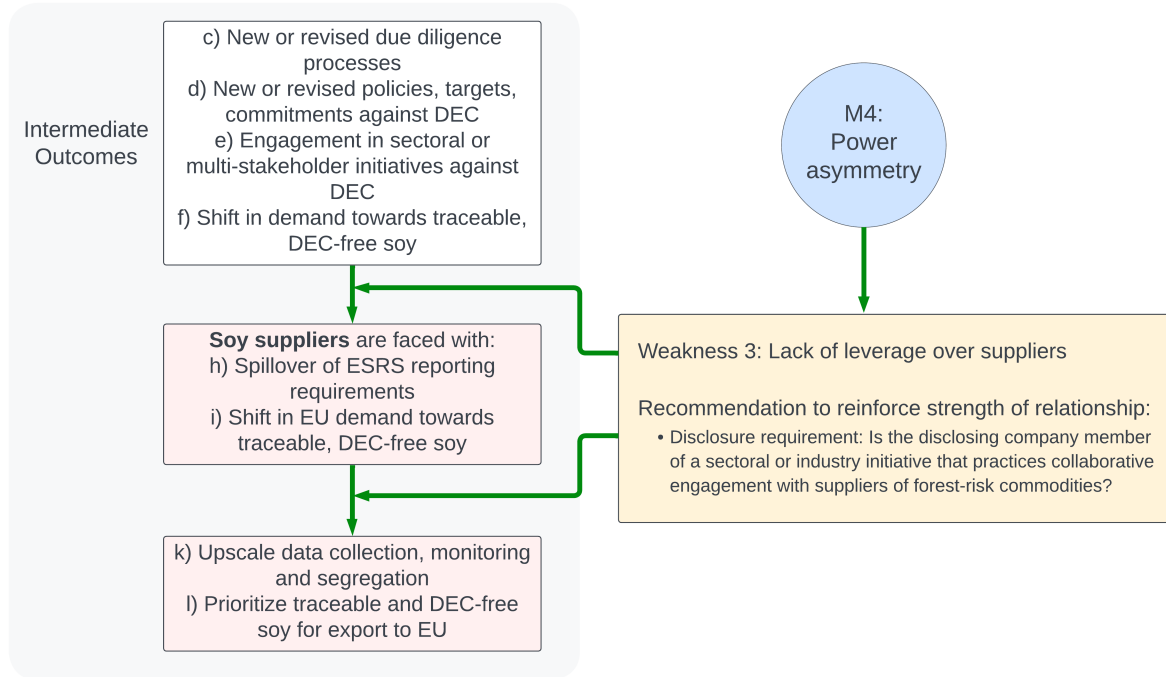


Figure 4-12: Policy recommendations for weakness 3.

Source: Author's illustration.

#### 4.4.4 Disconnect to the social impacts in producing countries

The **fourth identified weakness** in the intervention theory is a stark disconnect between EU farming companies from the social impacts and drivers of DEC in producing countries (C, D, F, H). Two interviewees with expertise in both disclosure regulation and sustainability reporting stressed that DEC has both environmental and social impacts and that the highly separate treatment of social and environmental issues in the ESRS contradicts this reality (C, D, F). It was brought up that the sector-specific standards offer the opportunity to consolidate disclosure requirements on human rights and environmental impacts of DEC in one document (C, D). Again, the GRI standard for agriculture and farming was brought up as representing good practice for the consideration of the social impacts of DEC (D). One expert warned that the increasing use of satellite data for monitoring and other technocratic approaches to supply chain sustainability threatens to further strengthen this disconnect, as the generated information does not reach local populations in producing areas (C).

In producing countries, the displacement of local communities and other human rights infringements are persistent in the expansion of commodity production (Urzedo & Chatterjee, 2021). In a webinar on corporate action against DEC, an affected member of a local community shared that defending their territories in the Amazon against the production of forest-risk commodities is a constant and highly time and resource-consuming activity (Global Canopy,

2023b). The territories of many local communities get allocated to companies without consultation or information on concessions, granted projects, value chains, or who will import the commodity (Global Canopy, 2023b). The leading multi-stakeholder initiative on DEC dedicates a core principle to respecting the rights of Indigenous peoples and local communities, and ensuring their free, prior, and informed consent for new projects (Accountability Framework Initiative, 2019b). A high-level expert elected simple words to describe what **countermeasures** are expected of companies:

*“In terms of not displacing people from their land, you just don’t do it. Land rights and land tenure are directly related to sourcing and land-use policies. Deforestation policies need to include commitments to land tenure and land rights. When a producer is acquiring land, they should not only look at not converting ecosystems but also doing a land tenure study and getting free, prior, and informed consent from local communities. That is most reachable by this mechanism” (D).*

The existing disclosure requirements on land tenure and procedures to obtain free, prior, and informed consent were deemed appropriate and must be kept in the sector standard (C, D). Experts deemed it unlikely that demand-side policy can significantly affect the socio-economic circumstances that motivate DEC for commodity production (C, H). The need for investment in local populations was pointed out, as land grabbing and subsequent cattle ranching or soy production is commonly the only option for inhabitants of highly rural areas to generate an income (C, H).

*“If we would invest in the local populations - the higher their life quality, the better it is for the environment. People do not want to be cattle ranchers or farmers; it is a hard life - ups and downs with international commodity prices and so forth. We cannot think of these places like the Amazon and Congo basin as Antarctica because they are not empty. Many European politicians think like that, and I think we are never going to solve the problem if we think these places are empty” (H).*

Despite acknowledging a low likelihood of being adopted in the ESRS, local verification schemes were brought up as a tool that increases both the credibility of zero-DEC claims and creates a new business model in rural areas of producing countries (C, H). The concept would encourage or require the verification of disclosed information on traceability by actors or institutions with geographical proximity to the area where the impact occurs (C). Such actors include municipalities, smallholder farmers, community members, or NGOs (C). Downstream companies would compensate the local verification body for the comprehensive investigation of potential DEC and human rights infringements connected to the sourced commodity (C). Development organizations were mentioned as promising actors to build the required capacities in rural areas (C).

To summarize two recommendations are made to bridge the gap between downstream companies and the reality in producing countries. First, the disclosure requirements on land tenure studies and procedures to inform free, prior, and informed consent must be kept in the sector standard for agriculture and farming until its implementation (C, D). Second, an additional disclosure requirement for EU farming companies that quantifies the percentage of locally verified DEC-free soy is recommended (C). Figure 4-13 locates the identified weakness and connected policy recommendations in a simplified model of the soy supply chain. The arrows indicate that the disclosure requirements must, in the first step, be fulfilled by downstream companies and soy traders, and, in the second step, reach soy producers and local stakeholders.

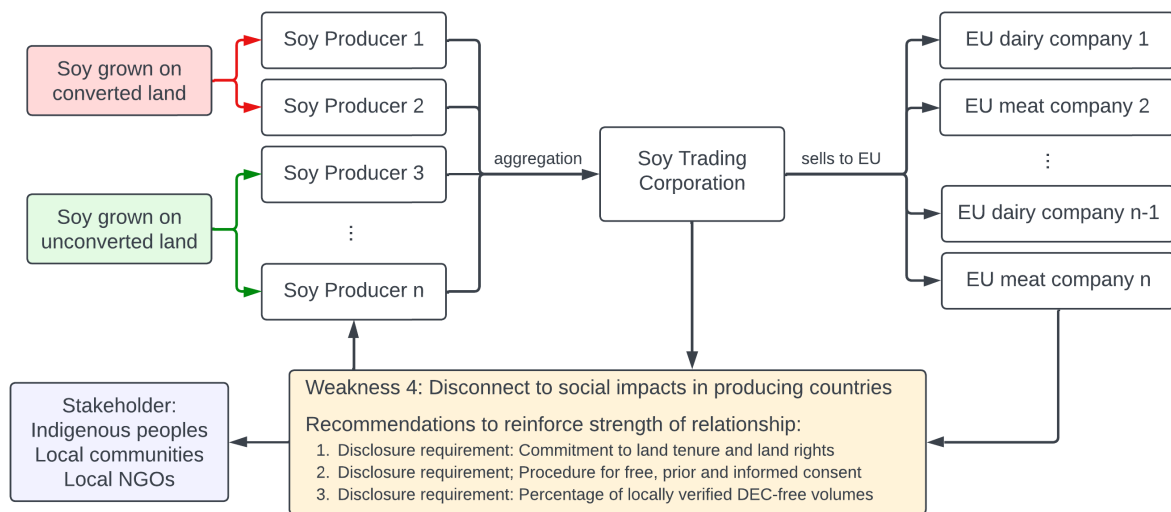


Figure 4-13: Policy recommendations for weakness 4.

Source: Author's illustration, adapted from zu Ermgassen et al. (2022).

#### 4.4.5 Leakage

The **fifth identified weakness** in the intervention theory is leakage, which was described by five experts as a predominant problem in the governance of environmental resources (C, D, F, G, H). If the EU farming sector reduces the DEC connected to its soy imports by shifting its demand towards traceable, DEC-free soy, it is not certain that the overall DEC embodied in international trade decreases due to risks of regulatory, geographical, and cross-commodity leakage (H).

**Regulatory leakage** of DEC occurs because of diverging policies between regions or jurisdictions (Moffette & Gibbs, 2021). Whereas the EU is implementing mandatory sustainability reporting, supply chain due diligence, and deforestation-free products policies, other key importing regions of forest risk commodities are not planning to introduce similarly stringent regulations (D, F, H). Due to strong economic incentives caused by the globally rising demand for soy, it was deemed likely that soy production continues to expand into forests and other vulnerable ecosystems to satisfy the rising demand (H). The soy produced on recently converted lands would simply change supply streams and destinations away from Europe to other parts of the world (D, F, H).

Regulatory leakage was deemed to be more likely if EU farming companies switch suppliers, or soy traders switch producers, instead of staying engaged in high-risk areas and cases of non-compliance (D, G, F, H). Whereas sourcing 100% DEC-free soy would imply no DEC imported to the EU, interviewees emphasized that such an objective could be achieved by moving completely away from high-risk sourcing areas. This would cause other actors that are likely to care less about environmental and social issues connected to soy production to fill the void (D, G, F, H). Thus, the objective for downstream companies should be to exclude “notoriously bad actors” (D), but otherwise stay engaged on the landscape and supplier level to improve the systems and processes of suppliers acting in high-risk jurisdictions (D, F).

The identified **countermeasure** for the ESRS is an extension of the disclosure requirement on policies against DEC. The disclosure should mandatorily address how the disclosing company or its direct soy suppliers treat non-compliance (D). Additionally, a description of whether and how the company or its direct suppliers engage with landscape or jurisdictional approaches to supply chain governance in producing regions could adequately indicate whether an engagement or exclusion approach is followed (D, H).

**Geographical leakage** affects corporate zero deforestation commitments and jurisdictional and landscape approaches to preventing DEC (Zu Ermgassen et al., 2020). It occurs as a consequence of the chosen scope of commitments or protected areas (Zu Ermgassen et al., 2020). The most common example of geographical leakage connected to soy production is the Amazon Soy Moratorium. While confirmedly reducing deforestation in the Amazon rainforest, it caused a major unintended shift in DEC frontiers to other vulnerable ecosystems in Brazil – mainly the Cerrado savannah and Pampas grasslands (Zu Ermgassen et al., 2020). Corporate zero deforestation commitments that exclude other vulnerable ecosystems magnify such geographical leakage (Gollnow et al., 2022). The threat and likelihood of geographical leakage can be minimized by inclusive coverage and definitions (Garrett et al., 2019). In the ESRS for farming and agriculture, the disclosure requirement on ecosystem conversion already includes such wide definitions, as the size, location, and type of ecosystem conversion must be disclosed - thus includes not only forests but also other types of ecosystems (EFRAG, 2023a). A further **countermeasure** against geographical leakage is to enforce the disclosure of the geographical coverage of existing zero-deforestation commitments, as the exclusion of other vulnerable ecosystems narrows geographical coverage undermines effectiveness, and indicates low ambition (Garrett et al., 2019; Grabs et al., 2021).

The Amazon Soy Moratorium serves as an example of not only geographical but also **cross-commodity leakage** (Trase, 2020). Soy production frequently displaces already converted existing pastureland, and in turn, pastureland for cattle moves into the Amazon, causing further deforestation (Song et al., 2021; Trase, 2020). Hence, soy plays an indirect role in the DEC caused by pastureland expansion for cattle. The dynamic shows that while soy expansion has moved away from rainforests and towards savannahs and grasslands, the existence of cross-commodity leakage contradicts the assumption that soy expansion is becoming increasingly decoupled from deforestation (Trase, 2020). Addressing cross-commodity leakage requires a holistic coverage of forest risk commodities and can be best addressed by jurisdictional approaches in producing countries (F, H; Song et al., 2021). Demand-side policy has highly limited prospects of identifying or preventing cross-commodity leakage (F, H). For the ESRS, the only possible **countermeasure** is the inclusion of all significant forest risk commodities for the respective sectors, as it aids in preventing data gaps that would allow commodities to expand without quantification (F).

#### 4.4.6 Summary of weaknesses and countermeasures

Table 4-1 presents a concise answer to **research question three** by depicting the five identified weaknesses of the intervention theory and presenting the associated policy recommendations for the ESRS that aim to mitigate the weaknesses. The proposed disclosure requirements may increase the likelihood that the ESRS for farming and agriculture improve the transparency of soy supply chains and contribute to reducing imported DEC. Whether the transparency policy can produce tangible outcomes cannot conclusively be predicted. Uncertainty remains, especially connected to whether mandatory disclosure will incentivize behavioral changes in disclosing companies. Moreover, leakage was deemed by experts to be an unavoidable unintended consequence (D, F, G, H).



Table 4-1: Weaknesses and connected policy recommendations.

Identified weakness	Associated recommendation for the ESRS
Dependence on materiality analysis	<ul style="list-style-type: none"> <li>- Procedural alignment with the GRI:               <ol style="list-style-type: none"> <li>1. provide a granular list of likely material topics for the agriculture and farming sector.</li> <li>2. assign disclosure requirements to each topic.</li> </ol> </li> <li>- Ensure the capacity of auditors to identify incomplete materiality assessments through training and education.</li> </ul>
Uncertainty of behavior change	<ul style="list-style-type: none"> <li>- Democratization of information: ensure easy accessibility and analysis of disclosed data for users via European Single Access Point.</li> <li>- Comparability of information: Add quantifiable disclosure requirements that indicate disclosing companies' contribution to DEC.               <ol style="list-style-type: none"> <li>1. Supply chain traceability of forest-risk commodities.</li> <li>2. Estimated deforestation and ecosystem conversion caused.</li> <li>3. Scope 3 GHG emissions from land use change.</li> </ol> </li> </ul>
Limited leverage of disclosing companies over suppliers	<ul style="list-style-type: none"> <li>- Disclose whether the company is a member of a sectoral or industry initiative that practices collaborative engagement with suppliers of forest-risk commodities.</li> </ul>
Disconnect from the social impacts of DEC in producing countries	<ul style="list-style-type: none"> <li>- Disclose own or supplier's commitment to land tenure and land rights.</li> <li>- Disclose own or supplier's procedure for free, prior, and informed consent of local communities.</li> <li>- Disclose the percentage of locally verified DEC-free volumes.</li> </ul>
Leakage	<ul style="list-style-type: none"> <li>- Regulatory:               <ul style="list-style-type: none"> <li>- Disclose own or supplier's process in case of non-compliance.</li> <li>- Disclose own or supplier's engagement with landscape or jurisdictional approaches in producing regions.</li> </ul> </li> <li>- Geographical:               <ul style="list-style-type: none"> <li>- Disclose geographical coverage of zero-deforestation commitments.</li> </ul> </li> <li>- Cross-commodity:               <ul style="list-style-type: none"> <li>- Ensure comprehensive coverage of all forest-risk commodities between sector standards</li> </ul> </li> </ul>

Source: Author's illustration

## 5 Discussion

This chapter starts out by relating the previously presented findings to existing research on sustainability reporting and scholarly policy recommendations related to DEC. Then, the research problem is placed and discussed in its regulatory, political, and economic context which serves to clarify the limitations of what mandatory sustainability reporting in consuming countries of forest-risk commodities can realistically achieve in countering the systemic issue of agricultural commodity-driven DEC.

The discussion moves on to critically re-examine methodological choices by identifying their strengths and weaknesses and considering their implications on the thesis' results. The thesis' contribution and limitations, as well as the generalizability of findings, are discussed.

### 5.1 Discussion of key findings

This subchapter follows the narrative of the research questions to iteratively and briefly list key findings that are then discussed in the context of existing scientific literature. The similarities and differences between the thesis' findings and existing literature are then explored, and takeaways are formulated based on this comparison. Due to the recent rise of mandatory sustainability reporting, and future implementation of the ESRS, the availability of highly relevant literature is limited. On the contrary, scholarly policy recommendations to counter commodity-driven DEC are plentiful but rarely consider mandatory disclosure policy in consuming countries.

#### 5.1.1 Qualitative and quantitative disclosure requirements

**Research question one** synthesized disclosure requirements related to DEC from existing draft ESRS documents. It has been found that qualitative disclosure requirements on corporate policies, targets, and actions against DEC are already present in the ESRS for the agriculture and farming sector, while quantifiable metrics that indicate the contribution of disclosing companies to DEC are insufficiently integrated into the standard.

Primec and Belak (2022) assume that the ESRS will initiate harmonization that overcomes sustainability reporting's often-criticized weakness of selective disclosure of information and lacking comparability. However, the identified absence of disclosure requirements on DEC that promote comparability in published draft policy documents threatens this assumption, given that it holds up for other environmental and social corporate impacts as well. As the case study has focused only on DEC caused by the EU farming sector, further research on the accuracy and specificity of disclosure requirements on other social and environmental issues is needed to increase the generalizability of this takeaway. Such research could be conducted in the form of other case studies on similarly specific corporate impacts or constitute a holistic analysis of an entire sector standard.

A relevant connected dynamic to monitor in the future is the willingness of legislators to prescribe methodologies for data collection and measurement in EU law on sustainability disclosure. On the one hand, a universally applied methodology allows for direct comparison and benchmarking of disclosing companies which is deemed highly useful for financial institutions and NGOs as users of sustainability data (Leong & Hazelton, 2019). On the other hand, competing methodologies from various initiatives co-exist, especially in the emerging and dynamically evolving field of nature-based impact measurement (E). In the absence of a single, dominantly established methodology – as is the case with air emissions and the GHG Protocol – it was deemed unlikely that policymakers prescribe a methodology, as 'picking a winner' would

significantly distort the market of competing methodologies and might hamper its speed of development (E, I). Reiterating the timeliness of this issue is a discussion among policymakers on the neutrality of EU legislation observed in a webcast, where the previously described trade-off was brought up and debated with highly diverging opinions between participants (EFRAG, 2023e).

The observed qualitative nature of disclosure requirements on DEC combined with the hesitancy to prescribe methodologies in the mandatory ESRS threatens to lock in the frequently perceived disconnect between the practice of sustainability reporting and the urgent issue of “sustaining the life-supporting ecological systems on which humanity and other species depend” (Milne & Gray, 2013: 13). This, it is argued, may even make the concept of sustainability reporting “reinforce business-as-usual and greater levels of un-sustainability” (Milne & Gray, 2013: 13). Following this perception, instead of a solution, sustainability reporting is described as merely a coping mechanism for the deeply rooted unsustainable production and consumption patterns of industrialized societies (Dingwerth & Eichinger, 2010).

### **5.1.2 Impact mechanism**

**Research question two** constructed an intervention theory to identify what conditions need to be true so that the ESRS for farming and agriculture reduce imported DEC. An impact on imported DEC can be achieved if the awareness of DEC as a material impact for EU farming companies rises because of the ESRS. Such awareness must then translate into updated, science-based corporate policies against DEC, the initiation of more extensive due diligence processes, and more widespread participation in sector initiatives that create a common ask for traceability to soybean traders. Soy traders must be incentivized to fulfill the spillover of reporting requirements and prioritize DEC-free soy volumes for export to the EU.

Upscaling supply chain transparency is a central tool identified by the scientific community to monitor and manage the DEC embodied in the international trade of forest risk commodities (T. A. Gardner et al., 2019; Godar et al., 2016; Renier et al., 2023). The effectiveness of private sector commitments varies greatly due to diverging scopes, cut-off dates, covered commodities, monitoring capacity, and disclosure practices (Garrett et al., 2019; Gollnow et al., 2022; Zu Ermgassen et al., 2020). Hence, scholarly recommendations to address imported DEC include stricter demand-side policies from consuming countries (Grabs et al., 2021; Pendrill et al., 2019). Existing studies only briefly address mandatory disclosure as a tool to increase supply chain transparency and counter DEC (Bager et al., 2021; zu Ermgassen et al., 2022). This thesis addressed a gap in the literature by conducting an in-depth analysis that makes the underlying impact mechanism explicit, using the EU agriculture and farming sector and its contribution to DEC through soybean imports as a case study.

Limited prior research on how stakeholders use the information provided in sustainability reporting decreases confidence in the causal chain (Christensen et al., 2021). A point of emphasis for further research is to identify more granularly the extent to which financial institutions and NGOs use the created data and, in turn, affect the behavior of disclosing companies through financial and reputational pressures and opportunities. Further, the role of financial institutions as financiers of activities that lead to DEC remains understudied (F, G).

### **5.1.3 Weaknesses in the impact mechanism**

**Research question three**, in the first step, identified weaknesses in the intervention theory. It was found that dependence on the materiality assessment, uncertainty of behavior changes in disclosing companies and limited leverage of downstream companies over soybean traders

decrease the strength of the causal chain. Further, a disconnect between EU farming companies and impact drivers in producing countries, and a risk of leakage was found. The identified weaknesses will be discussed against common scholarly policy recommendations to clarify the limitations of the ESRS.

The identified uncertainty of behavior change in disclosing companies under the ESRS suggests a need for accompanying measures aiming to reduce imported DEC. The ESRS were deemed likely to incentivize action from those farming companies that do little or nothing to address embodied DEC. The reason is that mandatory disclosure increases public exposure and prevents the continued obscuring of significant environmental and social impacts in the supply chain (A, C, D, F). However, both scientific literature and expert interviewees point to the necessity of complementing the information-based policy with more stringent demand-side regulation to minimize imported deforestation (Bager et al., 2021; Pendrill et al., 2019; zu Ermgassen et al., 2022; C, D, F, G). Mandatory due diligence regulations, such as the EU Corporate Sustainability Due Diligence Directive, can circumvent the uncertainty of behavior change connected to the ESRS by prescribing minimum requirements for managing supply chain impacts and risks (European Commission, 2022a). The EU Deforestation-free Product Regulation intends to entirely prohibit market access for products that contain the risk of embodied deforestation (European Commission, 2022b). These policies can affect supply chain opaqueness in a more direct and targeted manner, whereas the ESRS rely on intermediary steps as well as stakeholder pressure to incentivize behavior changes. The existence of more potent demand-side measures might partially explain why mandatory disclosure is not at the forefront of scholarly policy recommendations against DEC. However, to inform the design of future demand-side policies, legislators were brought up as important additional users of disclosed information under the ESRS (C, G, J).

The risk of regulatory, geographical, and cross-commodity leakage, as well as the pronounced disconnect between EU farming companies and the social impacts and drivers of DEC in producing countries, show further limitations of the ESRS. These findings are compatible with the scholarly call for a diverse policy mix featuring both demand-side regulations as well as strengthened jurisdictional approaches, monitoring capacities, and investment in producing countries (Pendrill et al., 2022). The authors show that only half of the deforested land becomes productive within a few years after clearance, implying that other mechanisms such as speculative clearing, contested land tenure, and uncontrolled spread of human-made fires cause a significant percentage of DEC (Pendrill et al., 2022). Such additional drivers of DEC cannot be addressed by mandatory disclosure or other demand-side policy, which can inherently only affect the fraction of DEC that is commodity-driven and embodied in international trade.

One high-level expert noted that policymaking will likely continue to struggle in overcoming the systemic nature of the mechanisms that drive DEC, where individual economic incentives motivate behavior (H). The poor socio-economic conditions in rural areas of producing countries cause land grabbing and ensuing DEC for commodity production to frequently be the only option to create a source of income (C, H). In the context of soy, rising global demand and a lack of viable substitutes in Asia are expected to keep the commodity price and thus also the incentive for DEC high (H). In a global economy with unharmonized legislation, leakage is expected to continue drastically hampering the efforts to reduce DEC (H).

To summarize, while the ESRS can contribute to increasing supply chain transparency and reducing imported DEC, the policy is unlikely to cause substantial changes in overall DEC due to the deeply rooted and systemic nature of the problem.

#### **5.1.4 Recommended disclosure requirements**

In the second step, **research question three** recommended disclosure requirements that mitigate the identified weaknesses in the intervention theory. The discussion will focus on the recommendation to introduce disclosure requirements on supply chain traceability, ecosystem conversion, and scope three GHG emissions from land use change. The reason is that these recommendations comprise the most wide-reaching proposed changes while offering sufficient breadth in the existing literature to enable further elaboration.

Misiuda and Lachmann, (2022), while explicitly referring to the ESRS, state that the formulation of precise disclosure requirements with clearly defined scopes by policymakers enhances the perceived credibility of disclosed information. Additionally, Leong and Hazelton (2019) find that the extent to which organizational change is incentivized by mandatory disclosure standards is highly dependent on the specificity of disclosure requirements. A special emphasis is placed on the appropriateness of indicators for stakeholders and information intermediaries, as well as a sufficient aggregation of data that allows for benchmarking (Leong & Hazelton, 2019). In this context, the thesis' recommendation to include disclosure requirements on supply chain traceability, ecosystem conversion, and scope three GHG emissions is in line with existing literature, as specific and comparable disclosure requirements are considered to promote the likelihood of behavioral change in disclosing companies (Leong & Hazelton, 2019).

This thesis argues that increasingly prescribing methodologies to support the comparability of disclosed information is crucial in raising the integrity of mandatory sustainability disclosure in the EU. Moreover, it argues for a practical approach that utilizes the existing expertise and resources of leading multi-stakeholder initiatives on singular environmental and social impacts. In the context of the research problem, these points of emphasis are compatible with the urgent call for pragmatic approaches to fight DEC by the scientific community and international organizations (FAO, 2022b; Godar et al., 2016; IPBES, 2019).

Among nature-based impacts, DEC driven by the international trade of forest-risk commodities is considered a quantifiable and well-understood problem with adequate data availability (D, F, G, H). Hence, a prescription of methodologies for measuring supply chain traceability, ecosystem conversion caused and GHG emissions from land use change was considered implementable (D, F, G). Interviewees, as well as scientific and grey literature universally identified the Accountability Framework Initiative and CDP Forest questionnaire as the leading multi-stakeholder initiatives concerning corporate guidance and disclosure elements (Garrett et al., 2019; zu Ermgassen et al., 2022; A, B, F, G). The organizations cooperate and create common outputs that align methodologies (Accountability Framework Initiative, 2019a). No established competing methodologies or initiatives were identified in interviews, scientific and grey literature. The existing alignment of the GRI agriculture and farming standard's disclosure requirements on DEC with the Accountability Framework initiative is a notable step towards its institutionalization as the leading, unified methodology provider on the matter (Global Reporting Initiative, 2022b). This is magnified by the explicit intention of the ESRS for agriculture and farming to be based on and harmonized with the GRI sector standard (EFRAG, 2023d). Taken together, these elaborations serve as a justification for this study's recommendation to adopt quantitative disclosure requirements on DEC that reference the Accountability Framework initiative and the GRI.

## 5.2 Implications of applied methodology and theory

This subchapter reflects on the consequences that the choice of methodology and theory had on the analysis, assesses the generalizability of findings, and reviews the legitimacy of the posed research questions.

### 5.2.1 Use of intervention theory

The study made use of an ex-ante intervention theory framework to make the impact logic through which the ESRS can reduce imported DEC explicit. The use of ex-ante intervention theory is subject to controversy in the scientific community. Skeptics criticize the inherent uncertainty and criticize that oversimplification and tunnel vision regularly occur in ex-ante intervention theories (van der Knaap, 2004). Other scholars deem the ex-ante use of intervention theory useful to identify the preconditions for the effectiveness of a policy (Mickwitz, 2021). This thesis argues that there is merit in formulating the intended impact mechanism of a policy before its implementation, in line with Mickwitz (2021). At the same time, research question three acknowledges the previously mentioned criticism by asking how inevitably existing uncertainty can be minimized through policy design. Proactively searching out weaknesses and uncertainties in the intervention theory diversified the analysis to not only assess effectiveness by also enabling the preemptive identification of potential unintended consequences, such as smallholder exclusion and leakage. For practical reasons and due to time limitations, only the five most prevalent identified uncertainties and weaknesses were brought up in the analysis.

This study is partially limited by the choice of reduced imported DEC as the desirable ultimate outcome of the ESRS for farming and agriculture. The focus of the study could have reasonably been adjusted to investigate the reduction of information asymmetry between stakeholders and disclosing companies in more detail. Van der Knaap (2004) might label this pointed focus rigidity or tunnel vision in the intervention theory caused by the elected boundaries.

The biggest obstacle to the application of intervention theory in this study is the high degree of complexity of both the ESRS as a policy tool and DEC as a systemic problem of socio-environmental governance. Especially spillover effects through the upstream supply chain of disclosing companies are highly intricate, depend on the final disclosure requirements, and are hard to predict (De Groen et al., 2022). Hence, a delicate trade-off to navigate was keeping the complexity of the intervention theory manageable to enable a concise analysis while avoiding oversimplification (Rogers, 2000). The intervention theories for NGOs and financial institutions are vulnerable to being considered oversimplified, especially when prescribing Boolean courses of action. These included divestment or engagement with EU farming companies for financial institutions and cooperating or naming-and-shaming in the case of NGOs. Naturally, the reality is more intricate and offers more than two courses of action, which arguably requires an extension of the impact mechanism. With the danger of artificially keeping complexity low, it was deemed that such efforts would be misguided as the relevant dynamic was considered to be located at the outer boundary of relevance to the research problem and suffer from insufficient empirics (Christensen et al., 2021).

Overarchingly, the high complexity of the research problem resulted in the need for prioritization, which in turn implies that not all connected ambiguities could be addressed in the research. This conceivably reduces the validity of this study's findings. However, the purpose of using intervention theory in this case study was to identify key preconditions for impact to then generate pre-emptive recommendations for disclosure requirements that increase the

likelihood of effectiveness and decrease the likelihood of unintended consequences. To serve this purpose, intervention theory was the most accurate and granular tool identified.

The choice against other theoretical frameworks comes with unavoidable shortcomings. Most importantly, it could not be addressed whether the added burden on disclosing companies resulting from the recommended disclosure requirements outweighs the benefits, as the intervention theory neglects the inferred cost of the policy instrument. A cost-benefit analysis such as the one conducted by de Groen et al. (2022), though qualitative in nature due to a lack of data, could have addressed this dimension.

Intervention theory tends to inform iterative improvements on the operational level rather than transformative change on the system level as is needed for sustainable development (Mickwitz et al. 2021). This arguably poses a disconnect to the urgency with which action against DEC must scale up to prevent the crossing of planetary boundaries (IPBES, 2019; Rockström et al., 2009). Triple loop learning that questions the values and decision-making processes underlying the incumbent political and economic arrangements could have been generated by a less narrow framework, such as actor-network theory as recommended by Barter & Bebbington (2013). Such an analysis might have had more value in advancing academic research on wicked socio-environmental problems but would have likely undermined the practical purpose of providing pragmatic recommendations to the policymakers of the ESRS. An interesting topic for further research is a discourse analysis focusing on the power dynamics among participating actors and groups in the policymaking process of the ESRS, as friction was mentioned during interviews and could be observed in an EFRAG webcast (EFRAG, 2023e).

## **5.2.2 Methodology and data sources**

The study followed a case study approach which traded off the generalizability of findings for the benefit of an increased depth of analysis. As the ESRS are not yet implemented, limited existing literature and a lack of empirics further justify the case study design, which encourages the analysis of a variety of data sources (Creswell & Creswell, 2018).

The primary data sources for the analysis were scientific and grey literature, as well as ten expert interviews. The interviewed experts could be categorized into two groups. The first group was comprised of senior researchers on forest-risk supply chains and the dynamics of DEC, who are employed in research institutes and NGOs specialized in the topic. The second group featured academics with experience in researching the effects of mandatory sustainability reporting and topical knowledge of the ESRS. The semi-structured format allowed for flexibility while supporting the reliability of findings. The internal validity of findings would have benefited from a higher number of conducted interviews, reducing the impact of individual viewpoints which are potentially biased (Verschuren, 2003). However, significant saturation in interview data was observed after ten interviews. Further, significant overlap between interviews, scientific and grey literature increased the confidence in the results. An extension of interview groups to include EU farming companies that will be subject to the ESRS, as well as financial institutions could have further emphasized the interdisciplinary nature of the study. Interviewing those actor groups would have elevated the acceptance and legitimacy of the study's findings, though their direct stake in the research problem might have biased the resulting answers. Time limitations and a lack of access to representatives of EU farming companies and financial institutions contributed to their exclusion from the study. There is merit in constructing an intervention theory that incorporates the views of disclosing EU farming companies and financial institutions, as stakeholders typically have diverging opinions of how a policy is expected to work (Mickwitz, 2021). Thus, the use of multiple intervention theories for one policy instrument is encouraged (Mickwitz, 2021).

The perspective of disclosing companies and financial institutions as users of sustainability data was instead taken from the impact assessment of the CSRD and cost-benefit analysis of the ESRS, which feature extensive stakeholder consultations (De Groen et al., 2022; European Commission, 2021c). Documents from multi-stakeholder initiatives, as well as scientific literature and theory, were included in the analysis to address potentially remaining gaps and ensure sufficient triangulation of data sources (Mickwitz, 2003). The manual transcription and coding of the data in a thematic analysis helped significantly in internalizing the collected data and identifying recurring themes.

During the early stages of research, including the ESRS sector standard on food and beverages into the scope of the thesis was explicitly discussed. This would have resulted in the coverage of the five leading agricultural forest risk commodities (Goldman et al., 2020), leading to a wider application area of the study's findings. However, the danger of significantly reducing the specificity of the analysis and resulting recommendations led to its exclusion from the scope. Each forest risk commodity is characterized by different underlying dynamics and market structures. For example, while certifications that prove that a product is DEC-free exist at insufficient scales for soybeans, they are significantly more widespread for palm oil (D, F). This offers higher levels of traceability for palm oil but simultaneously increases the risk of smallholder exclusion due to the relative cost of certification (D, F). Hence, the exclusive focus on the ESRS for farming and agriculture and soybean imports benefitted the specificity of the case study. The applicability of findings to other sectors would have to be individually verified for each sector, region, identified weakness, and recommendation, implying limited generalizability of findings as is typical with singular case studies (R. K. Yin, 2018).

### 5.2.3 Choice of research questions

This paragraph critically reflects on the legitimacy of the study's research questions. The first part of the analysis conveys the dynamic that soybean imports are the primary mechanism through which the EU farming sector contributes to imported DEC. However, as this mechanism is already explored, the subchapter can be deemed to have impaired legitimacy. As it serves to provide necessary background knowledge and creates a starting point for the ensuing analysis, it could arguably have been placed in the literature review.

There is novelty and merit in conveying to what extent DEC is addressed in the upcoming ESRS by synthesizing related disclosure requirements and comparing them to multi-stakeholder and voluntary guidelines. Practitioner interest in the policy documents has been confirmed by expert interviewees, validating the significance of research question one. Research question two directly addresses the academic research aim by exploring under which conditions mandatory disclosure is most likely to decrease information asymmetries, incentivize corporate behavioral changes, and achieve environmentally and socially relevant outcomes. The investigation is partially hampered by the speculative and unproven character of the impact mechanism. By identifying weaknesses in the created intervention theory and generating recommendations for specific disclosure requirements, research question three satisfies the practical aim of the thesis and increases the relevance of the study for the specified audience of ESRS policymakers.

The analysis of draft policy documents which are still subject to changes before the implementation of the ESRS decreases the likelihood of a significant contribution to academic knowledge generation. However, it strengthens the likelihood of achieving the practical aim of the thesis, as the recommendations can more easily be integrated into the ongoing policymaking process.



The elected focus on disclosing companies and reduced imported DEC as an ultimate outcome is in retrospect contestable, as more robust policy tools that affect the behavior of EU farming companies will be adopted in the form of the EU Corporate Sustainability Due Diligence Directive and the EU Deforestation-free Product Regulation. The choice of the CSRD as the analyzed policy is strengthened by the corporate supervisor's role in the EFRAG writing team of the ESRS agriculture and farming standard. As the ESRS are an information-based policy tool, a stronger consideration of the users of the generated information and the overall reduction of information asymmetry would have been arguably more accurate and closer to the overarching objective of the Directive. Nevertheless, the framing of the research problem enabled the generation of knowledge in line with the academic and practical research aim of the thesis.

## 6 Conclusions

Agricultural commodity-driven DEC is a significant contributor to GHG emissions, land-system change, and biodiversity loss. The international trade of such commodities is characterized by highly opaque supply chains, with uncontrolled and indirect sourcing complicating interventions. Hence, there is a scholarly call to upscale efforts that increase supply chain transparency, including through enforced disclosure. This thesis explored the contribution that mandatory sustainability reporting in consuming countries can make to improve supply chain transparency and decrease the DEC embodied in international trade. For this purpose, the draft ESRS for the agriculture and farming sector were used as a case study, and an ex-ante intervention theory was created. The EU farming sector contributes to DEC through the import of soy products for animal feed from countries where soy cultivation expands into tropical forests, savannahs, and grasslands – mainly in Brazil, Argentina, and Paraguay.

The **first research question** investigated to what extent the draft ESRS incorporate disclosure requirements that address DEC caused by the EU farming sector. The draft ESRS feature qualitative disclosure requirements on corporate policies, targets, and actions against DEC. Quantifiable indicators that estimate the actual contribution of individual EU farming companies to DEC are insufficiently integrated into the standard.

The **second research question** established the intended impact mechanism through which the ESRS for agriculture and farming can contribute to reducing imported DEC. Four preconditions need to be fulfilled. Firstly, the policy must increase awareness that DEC is a material impact for EU farming companies. Secondly, the ensuing mandatory disclosure must motivate behavioral changes in disclosing companies including a revision and strengthening of due diligence processes, as well as corporate policies, targets, and commitments against DEC. Thirdly, soy traders must be faced with an upscale in reporting requirements and a shift in demand from EU farming companies towards traceable soy volumes. Lastly, a reduction in imported DEC can be achieved by incentivizing suppliers to segregate trade flows and prioritize traceable and DEC-free soy for export to the EU market.

The **third research question** identified weaknesses in the described impact mechanism and generated recommendations that address the policymakers of the ESRS. In this endeavor, five weaknesses were identified. First, the disclosure requirements on DEC are only mandatory if the disclosing company itself deems the impact material. Second, there is uncertainty connected to whether disclosing companies adopt behavior changes because of mandatory disclosure. Third, the structure of the soy supply chain is characterized by a power asymmetry that benefits large soy traders and limits the leverage of EU farming companies over their suppliers. Fourth, there is a disconnect between EU farming companies on the one hand, and the social impacts and drivers of DEC in producing countries on the other hand. Lastly, there is a high risk of unintended consequences because of regulatory, geographical, and cross-commodity leakage.

The following **recommendations to the policymakers of the ESRS** are made to mitigate the identified weaknesses. To increase the likelihood that EU farming companies correctly identify DEC as a material impact, a harmonization of the ESRS with the GRI's approach to materiality assessments is recommended, as it provides a granular list of likely material impacts for the agriculture and farming sector. Further, the capacity of future auditors to detect incomplete materiality assessments must be ensured.

To incentivize the adoption of behavior changes by disclosing companies, the comparability of disclosed information for key stakeholders must be enhanced to allow for benchmarking, so that financial institutions and NGOs can generate reputational and transition risks and opportunities for EU farming companies. Thus, the inclusion of quantitative disclosure

requirements on soy supply chain traceability, ecosystem conversion, and scope three GHG emissions from land use change following the guidance of the Accountability Framework and the GHG Protocol is recommended.

Participation in sectoral initiatives that unite downstream companies and create a common ask for traceability from soybean traders effectively increases the leverage of EU farming companies over their suppliers and institutionalizes a communication framework. Hence, the disclosure requirement on actions against DEC should be extended to include whether the disclosing company is a member of such an initiative.

Disclosure of supplier policies for land tenure studies and the process to ensure free, prior, and informed consent from local communities for new projects aid in weakening the disconnect of EU farming companies to the social impact drivers in producing countries. A disclosure requirement on the percentage of locally verified DEC-free soy volume may create an alternative business model for rural populations in the future.

Incentivizing continued engagement in high-risk-producing areas may decrease the likelihood of regulatory leakage. Transparency on engagement can be created via disclosure requirements on supplier processes in case of detected non-compliance with zero-deforestation commitments and qualitative descriptions of the engagement with jurisdictional approaches in producing countries.

Due to the threat of regulatory leakage, policymakers are urged to strengthen diplomatic efforts aiming to spread the coverage of transparency and demand-side regulation to more consumer countries, most importantly China. Geographical leakage can be minimized if the scope of demand-side regulation consistently includes not only tropical forests but also other vulnerable ecosystems such as savannahs and grasslands. Lastly, increased cooperation between consumer and producer countries is needed. Without extensive investments in rural livelihoods, as well as monitoring and enforcement capacities in producer countries, the individual and systemic economic incentives in favor of DEC for commodity production will continue to persist and outweigh associated risks.

**Future research** may be conducted in the form of an ex-post analysis that measures whether the quantity and quality of zero-deforestation commitments by EU farming companies subject to the ESRS increase compared to those of a control group. Insights into how financial institutions and NGOs make use of the information generated by the ESRS, as well as the role of intermediary data aggregators and interpreters, are needed to assess the policy's effectiveness in reducing information asymmetries. Quantifying the contribution of European SMEs to imported DEC could inform the relevance of developing tailored simplified reporting standards and increasing the scope of companies subject to mandatory sustainability reporting.

More case studies on how singular, sector-specific impacts are represented in the ESRS may reveal overlaps with this study and hint at overarching issues in the policy's design. There is merit in performing a discourse analysis focusing on the power dynamics among participating actors and groups in the policymaking process of the ESRS, as frictions were brought up during interviews and could be observed in a public EFRAG webcast (EFRAG, 2023e). A more sophisticated study design would be necessary to develop methodologies for measuring the effectiveness and unintended consequences of the EU policy mix against imported deforestation over time.

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## **Appendix I: Economic activities of the agriculture and farming sector**

The sector definitions are not final and are subject to changes in the public consultation of the ESRS. The definitions underlying this thesis are the latest ones as of 10 Feb, 2023:

“The Agriculture & Farming sector includes the production of crop products and production of animal products, covering also the forms of organic agriculture, the growing of genetically modified crops and the raising of genetically modified animals. The sector includes growing of crops in open fields as well in greenhouses. It also includes service activities incidental to agriculture, as well as hunting, trapping and related activities. The sector also includes capture fishery and aquaculture, covering the use of fishery resources from marine, brackish or freshwater environments, with the goal of capturing or gathering fish, crustaceans, molluscs and other marine organisms and products (e.g. aquatic plants, pearls, sponges etc). Also included are activities that are normally integrated in the process of production for own account (e.g. seeding oysters for pearl production). Service activities incidental to marine or freshwater fishery or aquaculture are included in the related fishing or aquaculture activities.

Agricultural and farming products are sold directly to consumers, retail and wholesale distributors and to businesses for use in consumer and industrial products. Undertakings in the sector may source a substantial portion of commodities from third-party growers in various countries. Therefore, managing sustainability risks within the supply chain is critical to securing a reliable supply of raw materials and reducing the risk of price increases and volatility over the long term. In addition, undertakings in the sector produce raw and processed animal products, including meats, eggs, and dairy products, for human and animal consumption. Key activities include animal raising, slaughtering, processing, and packaging. The sector’s largest undertakings have international operations, and undertakings are vertically integrated to varying degrees. Large operators typically rely on contract or independent farmers and may have varying degrees of control over their operations.

Included are these activities in accordance to the following NACE code classification:

- A.01.11 Growing of cereals (except rice), leguminous crops and oil seeds
- A.01.12 Growing of rice
- A.01.13 Growing of vegetables and melons, roots and tubers
- A.01.14 Growing of sugar cane
- A.01.16 Growing of fibre crops
- A.01.19 Growing of other non-perennial crops
- A.01.21 Growing of grapes
- A.01.22 Growing of tropical and subtropical fruits
- A.01.23 Growing of citrus fruits
- A.01.24 Growing of pome fruits and stone fruits
- A.01.25 Growing of other tree and bush fruits and nuts
- A.01.26 Growing of oleaginous fruits
- A.01.27 Growing of beverage crops
- A.01.28 Growing of spices, aromatic, drug and pharmaceutical crops
- A.01.29 Growing of other perennial crops
- A.01.30 Plant propagation
- A.01.41 Raising of dairy cattle
- A.01.42 Raising of other cattle and buffaloes

- A.01.43 Raising of horses and other equines
- A.01.44 Raising of camels and camelids
- A.01.45 Raising of sheep and goats
- A.01.46 Raising of swine/pigs
- A.01.47 Raising of poultry
- A.01.49 Raising of other animals
- A.01.50 Mixed farming
- A.01.61 Support activities for crop production
- A.01.62 Support activities for animal production
- A.01.63 Post-harvest crop activities
- A.01.64 Seed processing for propagation
- A.01.70 Hunting, trapping and related service activities
- A.03.11 Marine fishing
- A.03.12 Freshwater fishing
- A.03.21 Marine aquaculture
- A.03.22 Freshwater aquaculture“ (EFRAG, 2022a).



## **Appendix II: Example Interview Questions**

Experts on sustainability reporting:

- What are the advantages and disadvantages of sector-specific standards compared to cross-cutting standards?
- What is your view on mandatory sustainability reporting regarding its ability or inability to increase transparency on imported deforestation?
- Can limited assurance in the ESRS provide credibility to disclosure requirements about the upstream value chain?
- If you could change the ESRS, in which areas would you start?
- In your opinion, who are the most important users of deforestation-related disclosure?
- How can the disclosure be shaped to be useful to the users you mentioned?
- What is the likelihood that the disclosed information leads to outcomes beyond transparency?
- What could prevent such outcomes?
- Which other factors affect whether and how the disclosed data is used?

Experts on DEC:

- How has corporate engagement with DEC changed in the last decade?
- What has your experience been in interacting with soy farmers / traders / downstream companies / financial institutions?
- In your opinion, what can demand-side regulation contribute to decreasing DEC? What advantages / disadvantages exist?
- What is the envisioned route from increased supply chain transparency to action/change?
- How can mandatory disclosure in consuming countries bridge the distance to producing countries / ensure synergies with jurisdictional approaches?
- Which approaches to increasing the sustainability of supply chains / land use worked and which did not? What can be learned from past failures?
- What differentiates the soy supply chain from those of other forest-risk commodities?

## Appendix III: Main themes of coding structure

Users: NGOs

Users: Financial institutions

Other users

Intermediaries

Behavioral change of disclosing companies

Soy supply chain dynamics

Dynamics of DEC

Social impacts of DEC

Other regulations / Political context

Limited Assurance / Auditors

Materiality Analysis

EFRAG / Policymaking process

Architecture of the ESRS

Data attributes / Disclosure Requirements / Indicators

- Policies, targets, actions

- Harmonization between standards

- Machine Readability

- Local verification schemes

- Land-tenure

- Definitions

- Traceability

- Comparability

- Other

Future Research