

A Matter of Frames?

Stakeholders' Perspectives on Scope 3 Emissions Disclosure and
Action-taking in the EU's Food Processing Sector

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Abstract

While emissions from the food sector continue to rise, corporate carbon disclosure has emerged as an important driver to push for companies' commitment to reduce GHG emissions in their value chain. This thesis investigates how different stakeholders frame Scope 3 emissions disclosure and action-taking within the EU food processing sector, in which upcoming regulations will enhance their relevance. The aim is to provide insights on the ways scope 3 emissions disclosure and action-taking are framed by different stakeholders, to understand how frames inform shared and conflicting perspectives which may be relevant for defining disclosure and actions at the EU level and inform different interest groups on the present and future direction of the system. The study employs an exploratory case study methodology, combining stakeholder theory and framing theory. Data were collected through interviews, documents, and a conference observation, and analyzed through a qualitative content analysis performed on NVivo. Findings indicate that stakeholders universally recognize the importance of Scope 3 emissions. External stakeholders emphasize the financial and reputational benefits of disclosure, whereas internal stakeholders emphasize risks. Key issues include data quality, transparency, and knowledge gaps: there is consensus on the necessity of regulatory frameworks to drive change but concerns about their implementation and impact on smaller actors, particularly farmers. Proposed solutions highlight the role of the public sector in easing data regulations and technology-driven automation. Pre-competitive collaboration is deemed crucial, albeit with doubts on how to scale up solutions. Stakeholders emphasize the shift from disclosure to action, particularly in supporting farmers and promoting regenerative agriculture. The research highlights the need for a holistic approach to Scope 3 emissions, the effects that policy interventions beyond direct regulations can have on the system, and the importance of interdisciplinary research on data issues and collaboration across the food supply chain. Practical implications include the necessity for mandatory disclosure policies to enhance transparency and financing the transition through collaborative efforts. This thesis contributes to understanding the complex dynamics of Scope 3 emissions disclosure and action-taking in the EU, offering insights for stakeholders to advance sustainable practices within the food sector.

Keywords: Scope 3, Food Sector, Corporate Carbon Disclosure, Food Processing

Executive Summary

Rising greenhouse gas (GHG) emissions at the global level are threatening the pledges of the Paris agreement, with efforts to make companies accountable for their carbon emissions through carbon disclosure becoming a prominent mechanisms. Carbon disclosure refers to the process of gathering and presenting carbon-related information (He et al., 2022), and the GHG Protocol and the Carbon Disclosure Project (CDP) are leading Multi-Stakeholder Initiatives (MSIs) in the field of carbon disclosure: the standard set by the GHG protocol identifies three scopes of emissions. Scope 1 emissions are emissions from owned or controlled sources. Scope 2 emissions are emissions generated by purchased energy. Scope 3 emissions are the rest of emissions outside of the direct control of the company, which are generated upstream and downstream in the value chain. Despite the widespread adoption of the system, there are still many issues associated with assessing carbon disclosure and performance.

The following thesis focuses on scope 3 emissions in the food processing sector in the EU. For Food processing companies, scope 3 emissions represent around 80% of overall emissions (Hansen et al., 2022), with agricultural commodities purchased by companies as the biggest source of GHG emissions in the value chain. Moreover, the complexity of supply chains creates barriers in terms of transparency and traceability. Climate impacts of agricultural commodities makes farmers an important focus for companies, however actions to reduce emissions are still characterized by a high degree of uncertainty. Finally, the role of upcoming regulations in the EU makes the issue of scope 3 disclosure and the scale-up of reduction strategies a contentious one. While current research highlights the complexity of comparing scope 3 disclosure and the vagueness of terms associated with actions within the supply chain (Morrison et al., 2023; Patchell, 2018a), it is necessary to understand what stakeholders think of the current system, of its relevance for the food sector and on the different opinions behind the issues and the possible solutions.

Therefore, the **research aim** is to provide insights on the ways scope 3 emissions disclosure and action-taking are framed by different stakeholders, to help advance a more collaborative way of defining impacts and standardizing scope 3 disclosure and impact definition. The thesis' insights may help food processing companies in Europe understand how other stakeholders frame scope 3 disclosure and action-taking, along with expectations and issues associated with their current performance. The results may also be of relevance to European policymakers to understand the role of policy in the context of a future mandatory disclosure framework, while incentivizing actions to be taken by companies beyond disclosure. The research questions addressed are the following:

The research questions addressed in this thesis are the following:

RQ1: How do different stakeholders frame the impacts of Scope 3 emissions disclosure and action-taking in the food processing sector in the EU?

- **What is the current state of Scope 3 emissions disclosure** in the food processing sector in EU14?

RQ2: How do these frames inform shared or conflicting views around Scope 3 emissions disclosure and action-taking in the food processing sector in the EU?

The **research design follows an exploratory case study to apply a novel combination of theories in this field of research. The research applies a qualitative content analysis of a series of interviews, podcasts, webinars, reports and a conference observation** to by sustainability professionals. The data was reviewed in NVivo and thoroughly analyzed to identify and make sense of the shared and conflicting perspectives emerging from the frames.

Results have proven significant for both research questions. In particular, **the sub-question** (*What is the current state of Scope 3 emissions disclosure in the food processing sector in EU14?*) has

highlighted the increasing intention among companies to disclose scope 3 emissions, indicating a positive trend in transparency and accountability in the EU14. However, **more than half of the companies analyzed** still did not disclose scope 3 emissions. There is also a **lack of data comparability and transparency** hindering the analysis of the process behind disclosure and SBTi-approved targets. Finally, **action-taking remains problematic, with scope 3 emissions on the rise**, highlighting a complexity to address those emissions compared to scope 1 and 2.

The first research question (see RQ1) has shown how frames are contextual to the nature of the food system (complex and transient nature of food supply chains, lack of transparency and traceability in the system, presence of many sub-sectors within the system itself, role of farmers and power imbalances). For this reason, **internal stakeholders** highlight the risk of not disclosing scope 3 emissions, with frontrunners also highlighting the opportunity to establish strategic relationships; data quality, accessibility, and transparency, along with the cost of disclosure are shown to be crucial issues for internal stakeholders. Mandating ESG disclosure through the CSRD is seen as a push to disclose, but the system can also redirect resources away from actions. The lack of knowledge on how to reduce emissions highlights the need for exhaustive guidance to encourage the shift in companies' long-term vision. In terms of solutions, internal stakeholders focus on increased investments in agricultural projects, along with collaboration between all actors involved. External stakeholders emphasize the opportunities of engaging with scope 3 emissions: cost reduction, market share growth, new business development, risk mitigation, and increased transparency. They also highlight data issues, stressing the importance of standardizing secondary data and adopting primary data, using technology to reduce costs and complexity. Collaboration with farmers and financing schemes are also seen crucial for emission reduction. A shift to a process-based system and a focus on plant-based portfolios are recommended to achieve a sustainable food system.

The second research question (RQ2) has highlighted how these frames inform shared and conflicting views around scope 3 disclosure and action-taking. There is a shared consensus that scope 3 disclosure is the core of GHG disclosure for food processing companies, and that external pressure is going to increase, pushing more companies to disclose. There is consensus on the role of policies mandating scope 3 disclosure in increasing the level of transparency of food processing companies. Disclosure also needs to happen with better quality data, and that the focus needs to be on actions, avoiding that disclosure may cause a lack of resources being allocated towards actions to reduce emissions. To reduce emissions, financing farmers in the transition is crucial: collaboration is needed to build trust, and collaborative structures are needed also between the public and private sector and across companies. This direction is seen as necessary to build resilience in the supply chain, focusing on engaging actors from the farm to the board level. Regarding conflicting views, the research has shown that there are doubts on whether and how to implement market-based instruments to create a framework that incentivizes food companies to act. Moreover, the role of regenerative agriculture is recognized by all, but there are doubts on how to scale up in-farm projects. While collaboration across companies through pre-competitive frameworks is seen as a solution by all, the way to achieve this collaboration is still clouded by doubts. Finally, the reluctance of food processing companies of discussing the shift to plant-based portfolios highlights how companies are still grappling with how to deal with risky commitments.

Research on the possibility for standardization of emission factors at the EU level in conjunction with the implementation of the CSRD is needed, to understand how companies will deal with mandatory disclosure given the existing issues regarding data reliability and issues of data variability within supply chains. **The role of farmers in the transition in the EU** has also emerged as an important topic: farmers' actions to allow companies to report reductions, such as insetting measures, or the effect of a possible implementation of market-based mechanisms, are interesting avenues to explore. **Facilitating collaborative structures for**

MNCs and SMEs to harmonize the process of disclosure and act in shared supply sheds to reduce GHG emissions has emerged as a crucial topic: more research is needed in how to bring companies together in these pre-competitive structures. **Research focused on food processing sub-sectors** can also provide specific insights based on the commodities purchased by food processing companies: for meat and dairy companies, these specificities are also related to the need to reduce global consumption of meat and dairy and to the effects that this has on companies. This research also highlighted the complexity of leveraging the power of consumers to steer companies' investments towards plant-based and more sustainable commodities, so future research might focus on understanding how to leverage change through public and private financing. Finally, the **feasibility of policies affecting scope 3 disclosure** presents itself as an interesting avenue for research.

There is a **need for more interdisciplinary research** which goes beyond the assessment of companies' level and/or quality of disclosure from a quantitative point of view. The focus on the social motives behind the barriers to disclosure and action-taking highlighted that the food system is an important variable that needs to be considered. This insight might also be applicable to other sectors, in which the focus should not only be on GHG accounting, but also on what enables or prevents this framework to be effective within the system. Particularly, the thesis highlighted that there needs to be more research on actions rather than disclosure. A body of evidence has been found on the need for more research on collaborative structures, social dimensions of supply chain relationships and context-based, actionable projects (regenerative agriculture, agroforestry, financing, and insurance schemes) if reductions in scope 3 emissions are to be achieved.

Practical implications of the thesis relate to how the conceptual framework can help stakeholders from all groups to understand how other stakeholders view and frame the framework of scope 3 disclosure and action-taking. The thesis has provided some important insights regarding what is shared among stakeholders and what needs to be discussed more to advance solutions beyond the context of the EU. There are contentious issues to be defined, but also actionable solutions that can be implemented through collaboration. The focus on collaboration has highlighted how all stakeholders are willing to share insights and harmonize disclosure and actions in the context of scope 3 emissions. Implications for companies relate to the need to focus efforts on scope 3 disclosure for the upcoming regulations on mandatory disclosure, while collaborating to harmonize data sources and to advance requests which can aid companies in reporting actions within the supply chain. Financing has shown to be crucial, along with collaboration across company groups to create a common front and compete on actions rather than on disclosure. **Policymakers can also draw interesting conclusions from the analysis.** The role of policy in the EU is shown to be an important driver for disclosure, however harmonizing policies to companies' action is important to avoid disclosure to become the ultimate goal of this increasing transparency. Policies aimed at incentivizing actions to reduce emissions are needed, while easing data-gathering processes and involve actors from the whole supply chain in the discussion. To sum up, the thesis highlighted that: *Scope 3 disclosure is an important driver of transparency. Data policies are needed to ease the process of disclosure for all companies, from frontrunners to laggards. Scope 3 disclosure is not the ultimate goal, and actions are needed within the agricultural supply chain. Companies, through sustainability departments, need to involve all actors in the supply chain, especially focusing on farmers and on steering boards' decisions to highlight risk management for the company. Farmers are the core solution to unlock scope 3 emissions reductions, and trust needs to be built through long-term collaboration. Collaboration needs to happen across companies to act on common supply sheds, and between the public and private sector to scale up financing schemes. Policies need to incentivize disclosure without redirecting companies' resources away from actions, allowing companies to credibly report emissions reductions while working to solve issues within the EU's food system which go beyond scope 3 disclosure and action-taking.*

In **conclusion**, scope 3 disclosure and action-taking in the food processing sector in the EU has shown to be an established framework which will evolve, incorporating more companies in the sector. Issues curbing scope 3 disclosure must be solved to allow companies to focus on actions more extensively, and collaboration across all steps of the value chain can unlock solutions to increase financing of large-scale projects, easing the process of reporting scope 3 reductions, allow farmers to gain from a shift to a more sustainable food system and companies' boards to understand the risks of not implementing reduction strategies in the agricultural supply chain. The insights gathered for this research have shown that in the EU, there is momentum for companies to act. Allowing for these actions to take place is up to future implementation of the solutions identified, while it is up for future research to go beyond the first step of this research to delve more into the many avenues which will not only achieve scope 3 reductions in the food processing sector, but a transition to a more sustainable food system.

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Abbreviations

- AG ETS – Agricultural Emissions Trading System
- BCSD – Business Council for Sustainable Development
- CCA – Corporate Carbon Accounting
- CDP – Carbon Disclosure Project
- CERES – Coalition for Environmentally Responsible Economies
- CSDDD – Corporate Sustainability Due Diligence Directive
- CSRD – Corporate Sustainability Reporting Directive
- ETS – Emissions Trading System
- EU – European Union
- FLAG – Forest, Land and Agriculture Guidance
- GHG – Greenhouse Gas

GHG Protocol – Greenhouse Gas Protocol

IEA – International Environmental Agency

IPCC – Inter-governmental Panel on Climate Change

MSIs – Multi-Stakeholder Initiatives

NGO – Non-Governmental Organization

SBTi – Science-Based Target Initiative

WBCSD -World Business Council for Sustainable Development

WICE – World Industry Council for the Environment

WRI – World Resource Institute

WWF – World Wildlife Fund

1 Introduction

Rising greenhouse gas (GHG) emissions at the global level are threatening the pledges of the Paris agreement, with the effort to keep temperatures below 1.5°C becoming more difficult to attain along with making the commitment to remain below 2°C more ambitious every year. To reach reduction goals, national pledges remain the focus of international climate strategies (Pattberg, 2017). However, the focus on national actors has been accompanied by efforts to make companies and businesses accountable for their carbon emissions through governing by disclosure¹ (Pattberg, 2017). Carbon disclosure is one of the most prominent mechanisms: corporate carbon accounting (CCA) refers to the mechanisms to collect, record and analyze climate-related information to inform internal and external stakeholders on the progress of the business in relation to disclosure and performance (He et al., 2022). In particular, Carbon disclosure refers to the process of gathering and presenting carbon-related information; carbon performance refers to the process which evaluates the way companies manage and control carbon emissions (He et al., 2022).

The mechanisms that regulate CCA are connected to a variety of actors and stakeholders. In the field of sustainability, Multi-Stakeholder Initiatives (MSIs) are a type of governance structure which create voluntary rule-systems governed by different stakeholders in the profit/non-profit and state/non-state realm (De Bakker et al., 2019). The GHG Protocol and the Carbon Disclosure Project (CDP) are leading MSIs in the field of carbon accounting. The GHG Protocol was jointly created by the World Resource Institute (WRI) and the World Business Council for Sustainable Development (WBCSD) with the aim of establishing standardized frameworks for the measurement of GHG emissions for the public and private sector (Greenhouse Gas Protocol). The CDP is a non-profit organization based in the UK which leverages investor pressure to influence carbon disclosure of companies and cities, with over \$136tn investor assets and more than 23,000 companies disclosing climate-related information (CDP).

The standard set by the GHG protocol differentiates emissions based on the direct or indirect control that the company has on those emissions. Scope 1 emissions are emissions from owned or controlled sources. Scope 2 emissions are emissions generated by purchased energy. Scope 3 emissions are the rest of emissions outside of the direct control of the company, which are generated upstream and downstream in the value chain. This system is becoming increasingly adopted by companies, to mitigate the effects of industry on the climate, and is implemented for all sectors of the economy, including the food sector: the global food system is and will be highly affected by climate change, and around 25-30% of global GHG emissions are attributable to this sector (Mbow et al., 2019). Emissions in the food sector are vastly associated with land and use production, followed by distribution, processing, consumption and end-of-life treatment (Schulman et al., 2021). For Food processing companies, these emissions are mostly distributed across the upstream value chain and fall under Scope 3 categories, representing around 80% of overall emissions (Hansen et al., 2022).

1.1 Problem definition

As mentioned before, scope 3 emissions represent indirect emissions resulting from operations outside the direct control of a company. Indirect operational control, however, does not imply that companies should disregard these emissions, as they constitute the biggest share of emissions for many companies in different sectors (Hertwich & Wood, 2018). For this reason, it is expected that companies account for these emissions when dealing with carbon disclosure and target-setting. Despite the widespread adoption of the system, there are still many issues

¹ The term 'governing by disclosure' refers to the diffusion of information to influence the behavior of particular actors. Through disclosure, actors are made accountable for specific behaviors, and this soft law policy has been a cornerstone of climate change policy, especially to influence non-state actors (Gupta, 2010). For more information: <https://wires.onlinelibrary.wiley.com/doi/abs/10.1002/wcc.67>

associated with assessing carbon disclosure and performance, both for companies in terms of what and how to measure and how to access data and for organizations in terms of how to assess how well companies perform (Hertwich & Wood, 2018; Klaaßen & Stoll, 2021; Xia & Cai, 2023). Moreover, the literature highlights a lack of empirical research on Scope 3 emissions and on the need to identify specific issues in different sectors (Hertwich & Wood, 2018; Hettler & Graf-Vlachy, 2023).

The food processing sector is an interesting case study to understand the issues associated with scope 3 disclosure and action-taking, along with the focus on the EU. In particular, the sector is characterized by the prevalence of scope 3 emissions, with agricultural commodities purchased by companies as the biggest source of GHG emissions in the value chain. Moreover, the complexity of supply chains creates barriers in terms of transparency and traceability. The GHG impacts of agricultural commodities makes farmers an important focus for companies, however actions to reduce emissions are still characterized by a high degree of uncertainty. Finally, the role of upcoming regulations in the EU makes the issue of scope 3 disclosure and the scale-up of reduction strategies a contentious one. Research on food and beverage processing companies has focused on assessing the state of disclosure, with a focus on what motivates companies to disclose and what issues emerge from the system as being contextual to the food sector (Blanco et al., 2016; Li et al., 2020; Matisoff et al., 2013). However, while the research highlights the complexity of comparing scope 3 disclosure and the vagueness of terms associated with actions within the supply chain (Morrison et al., 2023; Patchell, 2018a), it is necessary to understand what stakeholders think of the current system, of its relevance for the food sector and on the different opinions behind the issues and the possible solutions.

Therefore, there is a need for stakeholders operating within this system to understand shared and conflicting frames connected to scope 3 disclosure and action-taking in the food processing sector, to understand how issues are framed and what motivates the framing, along with highlighting shared solutions and contentious ones.

1.2 Aim, research questions and contributions

The sections above have highlighted the existence of an issue that relates to corporate commitments around reduction of GHG emissions and the need to pursue a shared and collaborative framework for defining the impact of scope 3 emissions. With this in mind, the thesis thus seeks to contribute in two ways:

First, the thesis will provide insights on the ways scope 3 emissions disclosure and action-taking are framed by different stakeholders, to help advance a more collaborative way of defining impacts and standardizing scope 3 disclosure and impact definition. Given the importance of assessing indirect emissions along the food supply chain, the thesis will then highlight the importance of building an effective and shared framework around scope 3 accounting, disclosure, and target-setting for the food sector, along with some guidance for stakeholders on what issues need to be defined more and what solutions might be implemented in the present and in the future.

Second, the thesis aims to provide insights that may help food processing companies in Europe understand how other stakeholders frame scope 3 disclosure and action-taking, to understand expectations and issues associated with their current performance. The results may also be of relevance to European policymakers to understand the role of policy in the context of a future mandatory disclosure framework, while incentivizing actions to be taken by companies beyond disclosure.

The **research questions** addressed in this thesis are the following:

RQ1: How do different stakeholders frame the impacts of Scope 3 emissions disclosure and action-taking in the food processing sector in the EU?

- **What is the current state of Scope 3 emissions disclosure** in the food processing sector in EU14?

RQ2: How do these frames inform shared or conflicting views around Scope 3 emissions disclosure and action-taking in the food processing sector in the EU?

1.3 Limitations and scope

The scope of the thesis is based on the **exploratory nature** of its design. The **focus on food processing companies** was motivated by the aim to highlight scope 3 emissions, which represent the highest share of GHG emissions for food processing companies, while the **choice of the EU as a geopolitical entity** relates to the role of upcoming regulations impacting scope 3 disclosure. The focus on the EU might hinder generalizability given the emerging importance of policies affecting food processing companies in the EU, but it also provides interesting insights given how novel these regulations are compared to global standards. The results of the analysis would have benefitted from a larger sample: specifically, more interviews and more companies to be included in the sub-question. To account for potential gaps, the analysis also covered reports, podcasts, webinar and websites and the observation of a conference. The choice of qualitative methods relates to the exploratory nature of the research. Finally, the interdisciplinarity of the thesis presents a variety of findings and avenues for practice and research: while this resulted in the thesis not delving into specific concepts in a thorough fashion, the thesis highlighted connections between climate issues (scope 3 emissions) and social, economic, and political dimensions of sustainability.

1.4 Ethical considerations

The research has not been funded/supported by any organization, thus there is no known conflict of interest to be highlighted. For what concerns the interviews, interviewees were informed of the aim of the research and confidentiality was ensured. Moreover, none of the findings have proven harmful for the reputation, dignity and privacy of the interviewees or the companies they work for, which will also remain anonymous along with the identities of the interviewees. Personal biases are an inevitable result of interviews: however, measures to limit biases were implemented, both within interviews and by including a wider array of documents for the analysis. Finally, all sensitive information gathered through the interviews will be stored on my computer and on a separate USB pen drive. The identity of the interviewees will not be disclosed by the documents and will be coded, and the documents will not be shared with anyone.

1.5 Audience

This thesis contributes to highlight shared and conflicting perspectives advanced by different stakeholders in the EU food processing sector, to achieve an understanding of how the current framework informs issues and solutions, and how consensus (or lack thereof) can drive an evolution towards increasing disclosure and scale up actions to reduce emissions in the agricultural supply chain. Therefore, the thesis aims to contribute to both research and practice: by identifying avenues to be explored to solve issues and advance solutions for both disclosure and action-taking, the thesis will contribute to a better understanding of relevant research topics. By investigating where consensus lies and where contentious opinions are still hindering change, the thesis also contributes to provide practical guidance for companies, policymakers and other external stakeholders involved in the framework of scope 3 disclosure and action-taking.

1.6 Outline

This thesis is organized as follows: **Chapter 1** introduces the topic, defining the research problem, the research questions guiding the analysis and the overarching aim. It also outlines limitations, the intended audience and the ethical concerns associated with the research. **Chapter 2** provides the theoretical background of the thesis, discussing the general framework of carbon accounting, carbon disclosure as a sub-framework and scope 3 emissions as one group of GHG emissions covered by the framework. Chapter 2 also provides a brief background on the EU's food sector, along with introducing the theories used to analyze the topic and their application to develop the data analysis framework. **Chapter 3** provides a literature review on the role of MSIs in developing the framework of corporate carbon disclosure, with a focus on scope 3 emissions and the state of scope 3 emissions in the food sector, to give a comprehensive understanding of the thesis' foundation and of the gaps identified in the research, which the thesis aims to cover. **Chapter 4** outlines the research design of the thesis, presenting the methods chosen for data collection and analysis, their limitations and the actions taken to mitigate them. **Chapter 5** presents the analysis of the findings, in which insights from the sub-question and the two RQs will be synthesized in a final section highlighting shared and conflicting perspectives emerging from the analysis. **Chapter 6** discusses the findings, their significance and relevance, the methodology' solidity and limitations in terms of design and implementation and reviews the thesis' practical implications and research contributions. **Chapter 7** provides a conclusion, answering the research questions and identifying avenues for future research and practice.

2 Background and theoretical framework

The purpose of this chapter is to provide a background on carbon disclosure, with a focus on scope 3 emissions, on the food sector in the EU and the relevance of the food processing sector in relation with scope 3 emission disclosure and action-taking. The section will then delineate the theoretical framework based on stakeholder theory and frame theory, which will serve to analyze empirical data and answer the research questions.

2.1 From carbon accounting to carbon disclosure

Defining carbon accounting inherently expresses a general idea of the purpose of the discipline itself. Carbon accounting is a landscape in which many actors operate with different objectives: for instance, climate scientists are concerned with accounting for global emissions for research purposes, while institutions like the IPCC are interested in connecting the physical effects of GHG emissions with the political consensus needed to act (Ascui & Lovell, 2011). With the term corporate carbon accounting (CCA) the aim is to narrow down this complex field to one of its streams, which is interested in 'reporting GHG emissions and impacts from climate change at the corporate level' (Ascui & Lovell, 2011, p. 980). CCA allows businesses to calculate the carbon footprint and quantify GHG emissions along their direct and indirect operations. He et al. (2022) identify four major streams of CCA literature: carbon disclosure, management, performance, and assurance. The thesis focuses on carbon disclosure as one sub stream of CCA. Carbon disclosure is concerned with how and why companies disclose climate-related information in annual reports, sustainability reports or through specialized organizations (e.g., CDP).

2.1.1 Institutionalization of carbon disclosure

To understand the relevance of carbon disclosure it is necessary to briefly understand the history of how such a governance structure came about. Carbon disclosure is considered an innovative approach to drive climate mitigation which goes beyond the focus on state-actors to highlight the role that businesses have in the race towards GHG emissions reduction. 'Governing by disclosure' (Pattberg, 2017) has become a powerful environmental narrative that resulted in the institutionalization of carbon disclosure at the global level. Carbon accounting is motivated by the idea that voluntary disclosure of climate-related information can push companies to reduce GHG emissions in the long run. The idea to institutionalize carbon disclosure emerged in 1989, when the Coalition for Environmentally Responsible Economies (CERES) - set up by a group of institutional investors and environmental organizations in the US – published the Valdez Principles (Pattberg, 2017). The idea was that investors could influence company behavior and that companies had to start disclosing the impacts of their operations on the environment to show preparedness for eventual climate-related risks.

After this idea of carbon disclosure gained more traction worldwide, new organizations related to the field of carbon accounting started to be set up. In 1991, the Business Council for Sustainable Development (BCSD) was born after Stephan Schmidheiny – a Swiss businessman – gathered 48 CEOs to publicize the concept of sustainable development at the corporate level to gather corporate support for the new concept before the 1992 Rio Earth Summit. In 1995, the BCSD merged with the World Industry Council for the Environment (WICE) and the World Business Council for Sustainable Development (WBCSD) was created. It was only in 1998 that the first NGO-business partnership was created between the Council and the World Resources Institute (WRI): the Greenhouse Gas Protocol (GHG Protocol) was created. After years of negotiations and preparations, the Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard was published in 2001, a milestone in the creation of a standardized guidance system for GHG accounting at the global level (WBCSD, 2024).

The standard has then been used and applied by other organizations to promote disclosure at the corporate level. The CDP, formerly the Carbon Disclosure Project, has been the most

successful at institutionalizing carbon disclosure by leveraging the power of investors. Established in 2000, it is a non-profit charity that runs a global disclosure system for businesses, cities, states, and regions with 746 capital markets signatories amassing \$136tn in assets. This leverage power has led over 5600 European companies to disclose in 2023. In 2003, the CDP issued its first questionnaire asking companies to disclose past and future emissions; since then, it has developed and issued annual questionnaires and created a scoring system to assess the quality of disclosure of companies, along with expanding and adapting the questionnaires to other entities (CDP, 2024). Quality of disclosure is determined by assessing how much a company discloses and how many entries of the questionnaire are filled: this definition of quality – equated with the quantity of information disclosed rather than assessing whether companies ultimately reduce emissions – carries an important meaning and has resulted in some criticism in the literature (Bazhair et al., 2022; Liesen et al., 2015; Matisoff et al., 2013).

The path towards the institutionalization of carbon disclosure has also been accompanied by many critiques regarding the lack of commitments of companies towards a concrete reduction of GHG emissions, with emissions decreasing at a slower pace compared to the necessary commitments to achieve net zero by 2050 (Bazhair et al., 2022; Bjørn et al., 2022; Giesekam et al., 2021; He et al., 2022). In 2015 the Paris Agreement established the commitment of 196 nations to limit global warming below 2°C and pursue efforts to limit it to 1.5°C, and many saw the opportunity to push for science-based targets to be adopted at the corporate level (Bjørn et al., 2022). In that same year, the Science-Based Target initiative (SBTi) was founded, as a partnership between the CDP, the United Nations Global Compact, World Resources Institute (WRI) and the World Wide Fund for Nature (WWF) (SBTi, 2024), with the aim to mobilize the corporate world to implement GHG reduction targets which are aligned with the Paris Agreement pledges. This further step towards the institutionalization of carbon disclosure has connected more stakeholders from the private, public and NGO sectors to push for further commitment from businesses around the world.

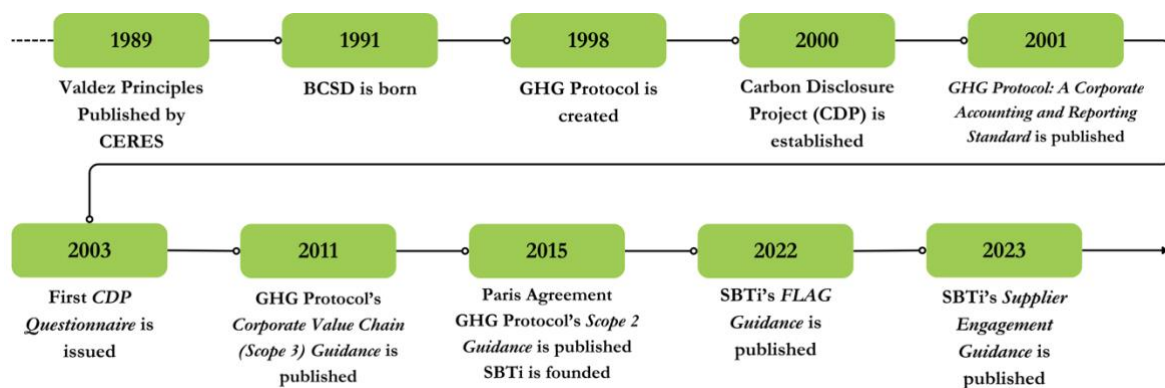


Figure 1 Visual representation of the evolution of carbon disclosure. Source: Own illustration.

2.1.2 Scope 3 emissions in carbon disclosure

As mentioned in the previous section, the Corporate Accounting and Reporting Standard by the GHG Protocol represents the most important standard and guidance for calculating, disclosing, and setting targets for GHG emissions. Initially, the document only dealt with direct (scope 1) emissions; it was updated in 2015 with the creation of the scope 2 guidance and in 2011 with the Corporate Value Chain (Scope 3) Standard (Pankaj Bhatia et al., 2011). The three documents are meant to be used in conjunction to cover all scopes of GHG emissions which companies may be responsible for. Scope 1 refers to emissions resulting from the company's direct operations; Scope 2 covers indirect emissions from purchased energy (heat and electricity); Scope 3 represents all the remaining indirect emissions from the company's value chain, both upstream and downstream.

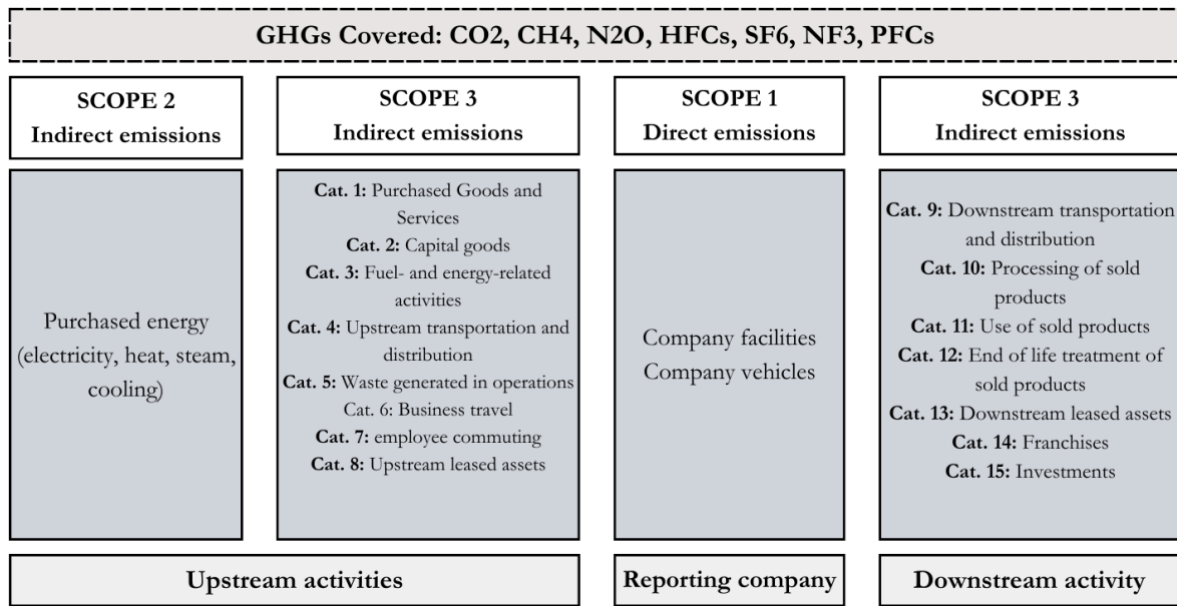


Figure 2 Visual representation of the division of GHG in scopes. Source: Own illustration, based on GHG Protocol (2015).

The focus of this thesis is limited to scope 3 emissions, which – as mentioned in previous sections – represents for most companies the highest percentage of emissions. After three years of multi-stakeholder negotiations, the Corporate Value Chain (Scope 3) Standard was published in 2011 and is still the main document most companies rely on for dealing with emissions across the value chain: the main aim expressed by the GHG protocol is to help companies report, manage and reduce GHG emissions across the value chain.

Scope 3 emissions represent a unique kind in the world of carbon disclosure: emissions happen along a company's value chain and come from a variety of hotspots, and are divided into 15 categories (see [Table 2.1](#) for the list of categories); to measure scope 3 emissions the GHG protocol provides guidance on a variety of measures to deal with data collection and processing, calculation, results, and reporting; since companies in different sectors have different value chains, sector-specific guidance is provided. For this reason, the GHG Protocol recognizes the impossibility of comparing scope 3 emissions across companies because of the different ways emissions can be measured, the different methodologies accepted and the different sectors. This has important results for research and for the overall commitment of companies to reduce emissions.

As the other standards, disclosure is based on **five accounting and reporting principles: relevance, completeness, consistency, transparency, and accuracy**. Yet these principles have been criticized by the literature for their vagueness and have been deemed unfit to assess the quality of reporting for scope 3 emissions (Liesen et al., 2015; Matisoff et al., 2013). The Protocol recognizes the inherent existence of tradeoffs across these 5 principles: tradeoffs should be balanced based on the company's individual business goal. The information provided by the document relates to four main steps of scope 3 disclosure (previously mentioned): data collection and processing, calculation, results, and reporting. Data collection and processing starts with identifying the company's organizational boundary, that is the indirect operations that the company considers as part of the calculation:

1. **Equity Share**
2. **Financial control**
3. **Operational control**

Companies are free to choose what they consider to be the most appropriate organizational boundary. In addition, specific guidance exists for certain sectors, as will be shown further in this chapter with the FLAG (Forest, Land and Agriculture) guidance, relevant for the food sector. Then, scope 3 emissions are divided into 15 categories which cover both upstream and downstream emissions, to facilitate data collection and to allow companies to identify hotspots within the value chain. Companies can thus set boundaries and include relevant scope 3 emissions while justifying the exclusion of specific categories. After having set the organizational boundary and scope 3 boundary, the company can start collecting data. Companies may use two types of data:

1. **Primary data** (supplier-specific data or data obtained by other value chain partners)
2. **Secondary data** (e.g., industry averages, spend data, activity data)

Despite the higher accuracy of primary data, the company may have to choose to use primary or secondary data (or hybrid datasets) depending on resources, time, supplier engagement, quality of data and relevance of scope 3 activities.

Calculation of emissions happens through the conversion of primary/secondary data representing business activity into the associated GHG emissions. Then, results are collected by the company which creates an inventory of the emissions and the division into the 15 categories. Finally, reporting relates to the way the companies decide to act on the emissions calculated: reporting is a first step leading to set reduction targets, commit to supplier engagement, highlight hotspots and opportunities to answer investors' requests for increased transparency and commitment or/and to comply with regulatory requirements.

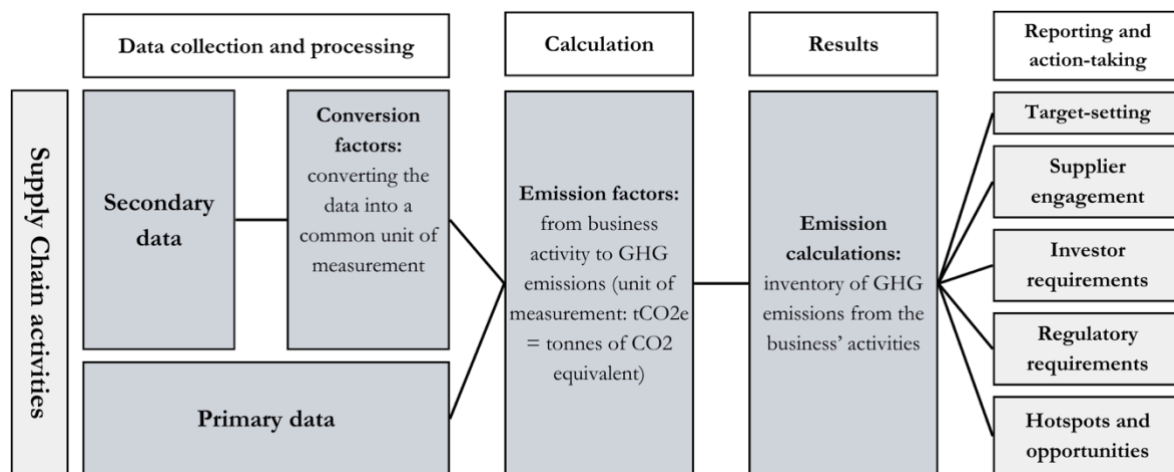


Figure 3 Visual representation of the steps of GHG accounting. Source: based on GHG Protocol (2015).

The Guidance shows that the current setting gives a lot of space of maneuver to companies, while also recognizing the complexities that companies may face even before reporting. The reporting part is what external stakeholders see of the companies' work towards disclosure: it usually happens through companies' sustainability/annual reports, which may also integrate information compiled in the CDP questionnaire, in case the company discloses information through the CDP. The CDP questionnaire gives the company an additional level of legitimacy of the information disclosed, with a section dedicated specifically to scope 3 emissions. The section is however not mandatory, as scope 3 disclosure still remains voluntary. The Corporate Sustainability Reporting Directive (CSRD) coming into force in the EU will make scope 3 disclosure mandatory for some companies operating in the EU (European Commission, n.d.). This future mandatory framework, which will be discussed more thoroughly in the following section, provides another reason to focus on the state of scope 3 emissions disclosure and action-taking in the EU.

Finally, guidance on dealing with scope 3 emissions (action-taking) allows companies to pledge for emissions reduction, but also to engage with suppliers to define a future framework for reduction. Supplier engagement strategies allow companies to have an additional element of maneuver to deal with their value chain emissions. Supplier engagement strategies are allowed both by the GHG protocol and the SBTi, with specific guidance documents (Anderson, CM. et al., 2022; Pankaj Bhatia et al., 2011; SBTi Criteria and Recommendations for Near-Term Targets, 2023).

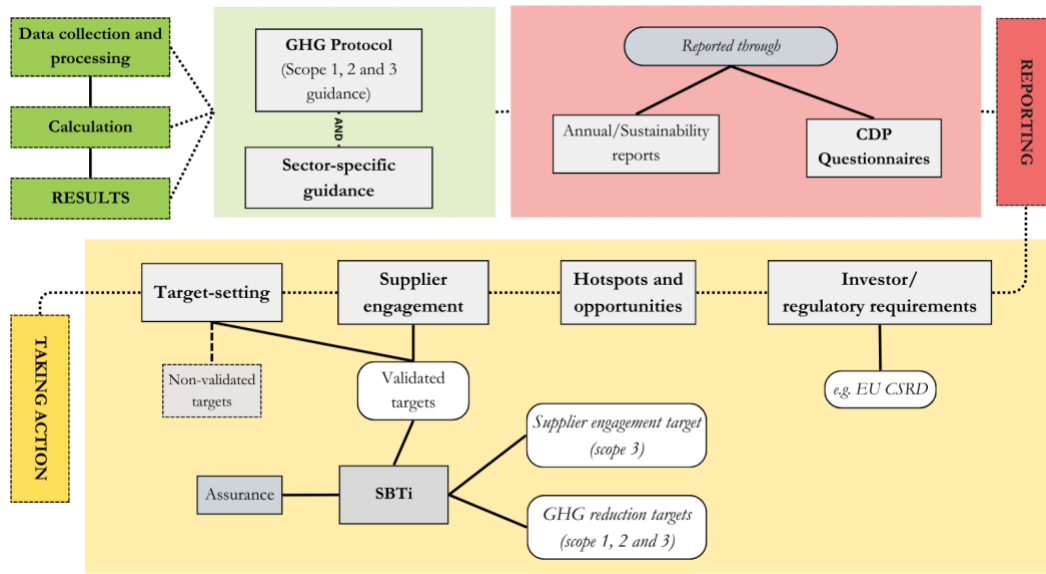


Figure 4 Visual representation of carbon disclosure governance. Source: Own visual.

This section has showed how the system of disclosure and action-taking for scope 3 emissions has many streams from which guidance comes from and that it gives companies many different tools to report and take actions: this can generate confusion for companies, practitioners and other stakeholders interested in this system, along with making scope 3 emissions difficult to assess consistently within the same company and across companies, even within the same sector: the choice of different emission factors, data sources, reduction and engagement pledges creates a realm in which the term scope 3 can result in different calculations and targets. This shows that scope 3 emissions disclosure and action-taking is an interesting example of multi-stakeholder engagement process in the world of carbon accounting. The next sections will connect carbon disclosure to the food processing sector in the EU and explain the relevance of the theoretical frameworks chosen to analyze scope 3 disclosure in the food processing sector in the EU.

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2.2 Sustainability in the food sector and the relevance of food processing companies in the EU

The aim of the following chapter is to connect scope 3 emissions to the food sector and to provide a brief background of the food sector in the EU. Given the complexity associated with defining the boundaries of the food sector, it is complex to estimate overall emissions: as mentioned in the introduction, around 25-30% of global GHG emissions are attributable to the food sector (Mbow et al., 2019), and emissions are mostly associated with land and use production, followed by distribution, processing, consumption and end-of-life treatment (Schulman et al., 2021). Moreover, the effects of the sector on the environment are not only confined to climate: water use, water pollution and biodiversity loss are all important aspects to be considered to shift to a more sustainable food sector (Acampora et al., 2022).

The focus of this thesis is on the effects of the food processing sector on the climate, which are accounted for by calculating scope 3 emissions. The food sector, like all other sectors of the economy, is characterized by complex and long value chains which involve a variety of actors. In the case of the food sector in the EU, this value chain can be simplified to identify four steps (see *Figure 5*), from the production of food to its consumption. Each step involves an array of different actors (the main actors are identified in *Figure 5*). The processing and manufacturing phase is where food and drink manufacturers (hereby identified as food processing sector) operate. The sector can thus be considered as positioned in the middle of the supply chain, and because the majority of emissions come from the producing phase, the bulk of emissions are associated with the scope 3 category, particularly to Category 1 (Purchased Goods and Services). Relevant emissions coming from the agricultural value chain (land use change, land use, livestock, fertilizer use) are identified as FLAG emissions (Anderson, CM. et al., 2022): because of the criticalities associated with these emissions, the SBTi published the FLAG Guidance, establishing rules on how to account, disclose and set targets for all companies along the value chain whose emissions portfolio is characterized by FLAG-related emissions.

This guidance is in line with the future guidance which will be published by the GHG Protocol in 2025 (Anderson, CM. et al., 2022). The guidance covers near-term (5-10 years) targets and allows two approaches for FLAG management: sector pathway and commodity pathways.² The guidance is relevant for food and beverage processing companies, which are required to set FLAG targets according to SBTi rules, independently from energy/industry-related targets (related to the rest of emissions). The FLAG target must cover at least 67% of FLAG-related scope 3 emissions and if scope 3 gross emissions are 40% or more of total emissions, companies must set a FLAG scope 3 target and an energy/industry scope 3 target in order for the target to be SBTi-approved.

In the context of the EU, the food processing sector is extremely relevant in terms of its economic role: in 2020, there were 291 000 F&B processing enterprises in the EU, (14.1 % of manufacturing enterprises), employing 4.6 million people, with a value added of €227 billion. There are a few large F&B processors with a big market reach, accounting for 57.6 % of the total value added in food processing (Eurostat, 2023). SMEs are also a crucial group for food and beverage processing in the EU: SMEs generate 39.1% of the sector's turnover and 40.7% of the value added and provide more than half of jobs in the sector (Eurostat, 2023). These companies are also an important focus of the EU's policies aimed at achieving a more sustainable food system in the context of the Green New Deal policy package. In a report by the EEA (European Environmental Agency), it is also acknowledged that currently policies that target food manufacturers are mainly voluntary. However, the report discusses the EU's commitment to increase coordination and actions across different levels in the food chain are, integrating the food processing sector. Food manufacturers are considered some of the most influential actors of the food supply chain: for this reason, binding measures are envisioned to promote sustainability (Mike Asquith et al., 2023).

Three policies are going to influence companies' behavior regarding sustainability in the food sector: the Corporate Sustainability Due Diligence Directive (CSRD), EU taxonomy, and the Corporate Sustainability Reporting Directive (CSRD) (European Commission, n.d.). Increasing corporate reporting through the implementation of the CSRD is considered one of the most transformative future policies affecting food processing companies, and its aim is directly connected to the content of this thesis: to enhance transparency and accountability by mandating comprehensive sustainability reporting. Companies will have to report on

² The FLAG sector pathway is aimed at companies with diversified FLAG emissions, while the commodity pathways, which include 11 pathways for specific commodities, is aimed at companies with commodity-based emissions.

environmental protection, social responsibility, human rights, anti-corruption, and board diversity. The policy covers companies with over 250 employees, €50M turnover, or €25M in total assets, applying to all listed companies. Starting from January 1, 2024, large companies have started gathering data to report on 2025, meaning that the effects of the directive are already felt by companies in the EU (European Commission, n.d.). A report by Alliance For Corporate Transparency and Frank Bold, analyzing 1000 companies' sustainability reports to assess their preparedness for the EU Non-Financial Reporting Directive, Food & Beverage was shown to be the best-ranking high-risk sector in terms of climate disclosure: 48.4% of companies disclosed scope 1 and 2 emissions. However, the report explicitly excluded scope 3 emissions targets. With scope 3 emissions accounted for, 71.6% of companies in Food & Beverage did not provide information on scope 3 emissions (Alliance for Corporate Transparency, 2019). The 2019 research report already presented a complex situation regarding scope 3 emissions, showing how scope 3 disclosure is a more complex endeavor for the majority of companies in the sector.

The future of disclosure in the EU with the entry into force of the CSRD makes this case study interesting to understand what the different perspectives around scope 3 disclosure and action-taking are now, given the role that the CSRD will have in pushing for mandatory disclosure for the biggest food processing companies, along with the new target-setting rules established by the FLAG Guidance which put scope 3 emissions at the center of food companies' decarbonization strategies.

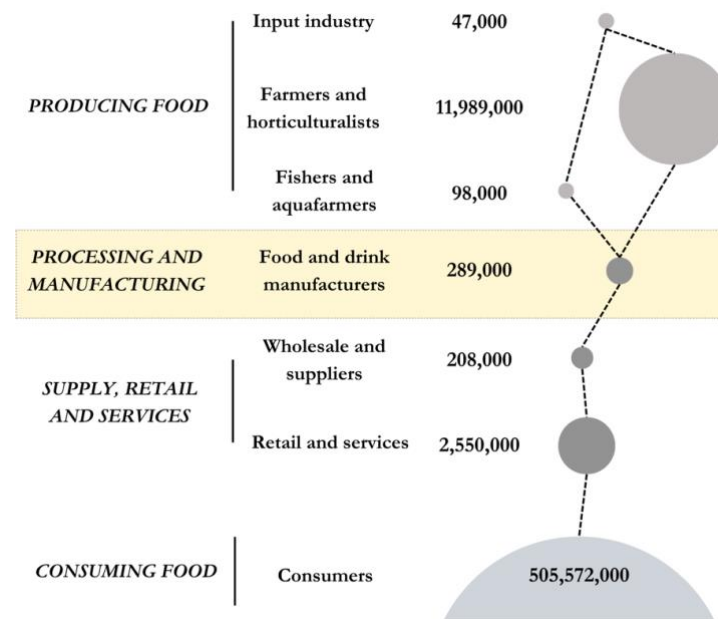


Figure 5 Visual representation of actors in the food chain in the EU. Source: Own visual, based on Mike Asquith et al., 2023.

2.3 Theoretical framework

The purpose of this section is to provide a background for the two theories which will serve as the basis for the thesis' research design. Stakeholder theory and frame theory will be analyzed and connected to the thesis topic, explaining the relevance for applying them to answer the thesis' research questions.

2.3.1 Stakeholder theory

Stakeholder theory is part of the field of organizational management and conceptualizes firms as influenced by a variety of stakeholders (Donaldson & Preston, 1995). The theory is considered to have emerged after the publication of R. Edward Freeman's Strategic Management: A Stakeholder Approach (Freeman, 1984), which set the basis for a new conceptualization of corporations being influenced and having to manage different stakeholders

affected by a firm's operation. The theory's success was a result of a changed perspective with regards of what the firm is responsible for. While the more traditional "shareholder view" of the firm, posits the firm has a primary duty to serve the owners of the company, stakeholder theory highlights that firms have a social, economic and political responsibility towards other actors both within and outside of the firm (Laplume et al., 2008). Beyond the idea of responsibility, stakeholder theory is also interested in how stakeholders influence managerial decisions: the relationship between stakeholders and corporations is thus bidirectional, with important analytical consequences (Donaldson & Preston, 1995).

Stakeholder theory has proved a useful analytical tool to study how firms respond to environmental pressures (De Bakker et al., 2019; Freeman & McVea, 2001). By focusing on stakeholders, the primary end of the firm is still related to profit-making; however, the theory analyses more thoroughly how the means to achieve this end become more entangled with stakeholders' interests (Phillips et al., 2003). Specific issues might involve stakeholders that are not relevant for other operations within the firm. The theory thus considers a firm as a plastic entity which deals with decisions by adapting them to its internal resources, external situations in the market and the general socio-political structure (Donaldson & Preston, 1995). Because of its long tradition and a high number of scholarly publications, stakeholder theory has been applied by referring to the analytical relevance of three aspects: descriptive/empirical, instrumental, and normative (Donaldson & Preston, 1995). The descriptive aspects present a model of how the firm is; the instrumental aspect establishes a framework that connects the theory with how it can be used to explain firms' behaviors; the normative aspect represents what stakeholder theory stands for, as a representation of the interests and of the values of stakeholders for the decisions of firms. Stakeholder theory also provides ways to identify and categorize stakeholders through stakeholder analysis since the creation of the theory by Freeman (1984).

Stakeholder analysis aims to identify all stakeholders with vested interests in the operations of a firm in a particular field, which have different levels of legitimacy. These are influenced by their direct/indirect involvement in a company's decision-making process, which in turn influences their power over the company itself. A first categorization distinguishes internal (actors within the firm) and external stakeholders (actors outside of the firm). Philips (2003) provides the distinction between normatively legitimate stakeholders (moral obligation of the firm to attend to their needs) and derivatively legitimate stakeholders (no moral obligation but with an influence over the firm). Mitchell et al. (1997) provide a theory of stakeholder identification and salience based on three characteristics that stakeholders might or might not possess: power, legitimacy, and urgency. If only one attribute is present, the salience of a stakeholder is low; two attributes show moderate salience and three attributes show high stakeholder salience. Moreover, salience can change if the company's perspective on the stakeholder changes or if the stakeholder manages to become more relevant. For the purpose of the thesis, the distinction between internal and external stakeholders can be expanded by combining the two theories of legitimacy and salience (Mitchell et al., 1997; Philips, 2003). Normatively legitimate external stakeholders (high salience) can be identified as **primary external stakeholders**, while derivatively legitimate stakeholders (high to moderate salience) can be identified as **secondary external stakeholders**. **This thesis will apply a descriptive model of stakeholder theory:** food processing companies operating in the EU are considered as part of a global and regional governance structure whose stakeholders (both internal and external) create pressures around sustainability. Carbon disclosure is one of the results of these pressures. The theory describes carbon disclosure (and more specifically scope 3 disclosure) as influenced by a variety of stakeholders. Stakeholder analysis, performed using the model of stakeholder theory explained in the current section, will help identify and analyze the function of different stakeholders and their ability to influence the system. The aim is to encompass the ideas and perspectives of these internal and external stakeholders.

2.3.2 Frame theory

Frame theory has been developed and used in many disciplines and scholarly research to analyze how different individuals and stakeholders interpret specific issues and instances and give meaning to them, along with the results of these meanings. It is mostly known as an important theory in communication science and has also been used to study climate communication (Mitchell et al., 1997). At the basis there is the idea that meaning is created through discourse (Hajer, 1995). Hajer's seminal work identifies discourse from an analytical point of view, as something that can be analyzed to extract meaning from. A discourse is identified as "a specific ensemble of ideas, concepts and categorizations that are produced, reproduced and transformed in a particular set of practices and through which meaning is given to physical and social realities." (Hajer, 1995, p. 44). The aim of discourse analysis is to identify how different actors find ways to communicate at this inter discursive level and how different forms of knowledge form authoritative narratives on a topic.

Discourse is considered a political act (Dryzek, 1997) and in this sense, the way stakeholders frame scope 3 emission disclosure is fundamental to understand which actions are taken and to motivate the actions themselves. Discourse analysis has been recognized as an important contributor in the study of environmental politics, through the study of changing hegemonic frames and their impacts in advancing new environmental discourses (Hajer & Versteeg, 2005). Discourse analysis finds one of its analytical explanation in frame theory, which is interested in how different discourses (frames) exist at the same time, interact and gain momentum to push for hegemonic narratives. Dewulf et al., (2009) identifies different streams of frame theory by looking at the nature of frames and what is getting framed, identifying frames as being either of cognitive or interactional nature. The first (cognitive frames) focus on frames as mental structures that facilitate the interpretation of incoming information, while the second (interactional frames) focus on the interactions between individuals and the construction of frames and meanings through this interaction. Furthermore, individuals can frame issues, identities and relationships, and processes. In a similar fashion, Entman (1993) identifies four core functions of frames: problem definition, diagnosis of causes, moral judgements and suggestion of remedies. By interpreting Dewulf et al.'s (2009) and Entman's (1993) perspective, the object of study of the present thesis will be **cognitive issue frames**: that is, the focus will be in on how stakeholders cognitively represent (give meaning to) the substantive issue (scope 3 disclosure and action-taking) in the conflict situation (actions to increase disclosure and reduce emissions): the term 'conflict situation' identifies a process in which different ideas of a concept (frames) are brought forward by different actors in order to win over a community to establish their frame as the hegemonic one. Hegemonic frames are frames that become shared and established among a larger group of people as the ones that best explain the 'true meaning' of the concept that is being framed. For the terms of this discussion, scope 3 emissions disclosure and action taking are identified as a '**quasi-issue**' to fit it into the definition of cognitive issue frames.

An overview of Frame theory is provided in **Figure 2.8** (see [Appendix](#)). Frame theory has been used extensively in both environmental policy and organizational management: Eriksson & Reischl (2019) analyze the different discourse around energy policy of the IPCC and the IEA to identify the prevalence of converging or diverging frames. Kaplan (2008), examines the ways actors within a firm attempt to transform their own cognitive frames of a situation into predominant frames through a series of interactions. The literature on frame theory identifies **converging and colliding frames**, that is, frames that push for conflicting narratives and shared frames. While the former are identified as the ones generating conflicts, shared frames can also lead to different interpretations of the same reality: Zimmermann et al. (2022) discusses the role of shared frames in the context of Multi-Stakeholder Initiatives (MSIs) to analyze what leads to different interpretation of shared frames and how solutions can appear by activating

and fostering shared frames. Shared frames can thus still create within-frame conflicts: for instance, a sustainability frame is a broad frame that can be interpreted by actors in different ways, based on different ideas of sustainability. Gray et al. (2015) provides results relevant for MSIs: the paper connects the institutionalization of meanings through an interactional framing perspective, similarly to what institutional entrepreneurs push for specific frames in MSIs, as will be discussed more thoroughly in the literature review (Levy et al, 2009; Pattberg, 2017). The paper also provides an explanation of how framings from the micro level (individual frames) can interact and influence frames at the meso level (e.g., communities).

By looking at the literature on frame theory, it is evident that the concept of framing is extremely plastic and can be adapted to one's specific analysis. In the context of the thesis, the focus will be on **cognitive issue frames**. The aim of the thesis is to identify cognitive frames in a system in which cognitive and interactional frames are connected to one another, as shown, and stated by Gray et al. (2015) (Figure 7 for visual reference). This connection and interaction cause the evolution of frames at the micro level (individuals) and the creation of hegemonic frames at the meso level (within groups in the same sociotechnical regime) and at the macro level (within institutions and policies). These hegemonic frames then influence individuals, in a cycle which reinforces or shapes new frames.

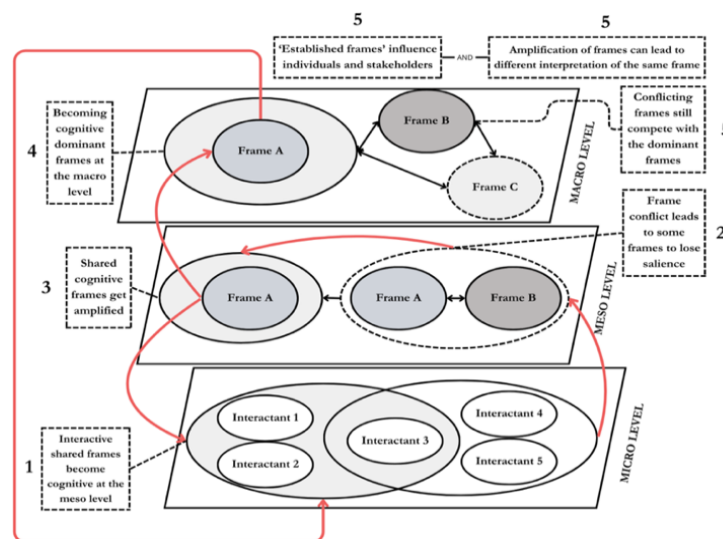


Figure 5 Interaction of frames at the micro, meso and macro level. Source: Own visual, based on Gray et al (2015).

2.3.3 Stakeholder and frame theory in the context of scope 3 disclosure and action-taking

Section 2.3 has given an overview of the theoretical framework which will be used for the analysis of the data, based on the characteristics of the governance structure around carbon disclosure and the need to delve into the different frames that stakeholders might have around scope 3 emissions disclosure and action-taking. Identifying these frames can advance new ways of dealing with the issues around scope 3 disclosure and action-taking, which will be highlighted in the literature review. This thesis tries to bridge the gap between the previous literature on scope 3 disclosure, and the literature employing frame analysis in the context of MSIs. Stakeholder theory will be employed to identify relevant stakeholders, how they are related to each other and how powerful their frames can be. Framing theory will then be used to identify these frames and how they can inform shared or conflicting views around scope 3 emissions disclosure and action-taking. The identified frames can inform future research, along with providing knowledge around how future policy can impact the evolution of this governance structure and how companies may act to advance their needs and visions (see [Figure 2.10 in Appendix II](#) for an overview of the application of the two theories).

3 Literature review on scope 3 emission disclosure in the food sector

3.1 Multi Stakeholder Initiatives (MSIs): a focus on corporate carbon accounting and disclosure

Sustainability in production, trade and consumption is governed through a complex system made up of national, regional, and international actors. While public actors are discussed extensively when the issues of climate governance arise, this complex transnational and globalized system has caused the emergence of private and hybrid forms of governance. Multi-Stakeholder Initiatives (MSIs) develop social and environmental standards and are created through the collaboration between business and societal interest groups through governance structures which allow all members to have equal possibilities to influence the initiative (De Bakker et al., 2019). De Bakker et al. (2019) review the literature dealing with MSIs and the different theories used to analyze it. In particular the paper applies a business ethics framework to identify three broad themes of research in MSIs: (1) the input into creating and governing MSIs; (2) the institutionalization of MSIs; and (3) the impact that relevant initiatives create, recognizing the existence of challenges at every level.

Many scholars have studied the role of MSIs from various perspectives, highlighting both its positive and critical aspects. In a seminal study on the topic of MSIs, Mena & Palazzo (2012) discuss the democratic legitimacy of MSIs and their role in the creation of a soft law framework. However, scholars have been more prone to highlighting the shortcomings of MSIs in the global context. Levy et al, (2009) discuss the shortcomings of the Global Reporting Initiative (GRI) by comparing the initial aim of the institutional entrepreneurs who pushed for it and the final outcome, showing that an emerging institution does not always reflect the intentions of its founders, and that the initial win-win ideal which pushed the adoption of the GRI has proved ineffective. In a similar study, Moog et al. (2015) highlight how the Forest Stewardship Council (FSC) was able to create good deliberative communication among actors but failed in terms of the original goal.

The literature on carbon accounting identifies similar issues, as the governance structure of Corporate Carbon Accounting (CCA) is influenced by two important MSIs: the GHG Protocol and the Carbon Disclosure Project (CDP). The literature on carbon accounting and disclosure discusses different aspects of this governance structure: (1) Evolution of accounting and disclosure mechanisms; (2) Analysis of why companies disclose; (3) Analysis of the state of disclosure and associated issues.

Concerning the evolution of accounting and disclosure mechanisms, He et al. (2022) show how the literature has developed into four major streams of carbon accounting: carbon disclosure, management, performance and assurance, and that carbon accounting is emerging as a distinct discipline. Carbon accounting is characterized by a lack of transparency, comparability and reliability of carbon accounting measurements and a lack of research on the effectiveness of disclosure (Dingwerth & Eichinger, 2010; Marlowe et al., 2022). Meanwhile, the institutionalization of carbon disclosure is also attributed to the role of governance entrepreneurs, similar to other MSIs, which were able to use shareholders' pressure as leverage for a widespread adoption of CDP guidelines (Kolk et al., 2008; Pattberg, 2017). However, governance entrepreneurs had to adapt to the pre-existing hegemonic structures to institutionalize carbon accounting (Pattberg, 2017). This adaptation is discussed by Ascui & Lovell (2011) with an analysis of the different conceptions of the meaning of carbon accounting. Tensions and contradictions in carbon accounting are studied as the result of colliding frames. The research highlights the political nature of carbon accounting and how relevant stakeholders' interpretations of its meaning is to advance towards a more effective framework.

Concerning the reasons behind disclosure, Hummel & Schlick (2016) suggest that voluntary theory and legitimacy theory provide an understanding of the motivations behind disclosure. Stakeholder theory is also used to explain companies' willingness to disclose (Liesen et al., 2015). Many papers address the issue of quality of reporting (Bazhair et al., 2022; He et al., 2022; Liesen et al., 2015; Morrison et al., 2023). The term 'quality' is however an issue itself, since there is no consistency in how quality is determined in the literature. This connects to the general issue of incomparability of sustainability reports given the high degree of freedom that companies have in choosing how to report (He et al., 2022; Marlowe et al., 2022). Much of the research highlights the gaps in disclosure, showing the low percentage of companies actually disclosing GHG emissions (Bazhair et al., 2022; Liesen et al., 2015; Matisoff et al., 2013). Matisoff et al. (2013), while highlighting a convergence of disclosure across firms and an increasing role of the CDP in promoting disclosure, highlights the issue of defining what quality of disclosure means, making a difference between increased reporting vs increased quality of reporting. After more than a decade, these issues are still relevant in the world of carbon disclosure. This quantitative rationale behind the definition of quality is criticized even more by Morrison et al. (2023): by determining the quality in terms of number of information, carbon disclosure creates a mechanism in which the role of the company is to report as much information as possible while distancing itself from the effects of its operations on the environment.

3.2 Scope 3 emissions disclosure and action-taking

The literature on scope 3 emission is mostly recent, and it also identifies the same issues associated with carbon accounting, but with a focus on scope 3 the scholarship shows how emissions in this area have been neglected in the past despite constituting a big share of emissions for most companies. Issues regarding scope 3 disclosure and action-taking can be identified along the whole process of disclosure.

Calculating scope 3 emissions along the supply chain is crucial for firms to identify hotspots and reduce emissions (Downie & Stubbs, 2012). Stenzel & Waichman (2023) highlight the issue of accessing reliable data for Scope 3 calculations in the upstream value chain, and how lack of coordination hinders access to primary data. Secondary data also represent an issue for companies: Busch et al. (2022) show how scope 3 data are the most inconsistent, and that the consistency of third party data is lower than company's reports. Primary data are the most reliable, however accessing them can prove costly, complex and time consuming, especially for companies with complex value chains (Hertwich & Wood, 2018). Issues related to data availability and inconsistency also influence the effectiveness of target setting, since effective reduction plans can only happen with consistent and comparable scope 3 accounting (Li et al., 2020).

In terms of reporting, Xia & Cai (2023) show that disclosure is mostly analyzed in terms of economic benefits. It highlights the connection between Scope 3 emissions and value chain operations, identifying the drivers to Scope 3 emissions reduction; however, these drivers have not helped reduce Scope 3 emissions. Lack of knowledge on how to operationalize change is discussed as one of the main barriers. Hettler & Graf-Vlachy (2023) highlight the importance of disclosing scope 3 emissions to allow companies to understand hotspots in the supply chain. However, they also highlight the need for more research on the consequences of Scope 3 emissions reporting. Mahapatra et al. (2021) hypothesize that Scope 3 disclosure is linked to higher economic performance: the results of their study, however, does not identify this positive connection. These results show that the idea of extending the win-win narrative to scope 3 disclosure has resulted in mixed and inconsistent results. When analyzing the issues regarding scope 3 reporting and investigating why scope 3 disclosure is not successful.

Patchell (2018) identifies issues both in the system itself and within firms. The system is accused of being more concerned with asking firms to report rather than assessing why certain firms have not reported. Using transaction cost theory, the research highlights that transaction costs for firms are too high and benefits too low for firms to put effort into scope 3 disclosure. Klaaßen & Stoll (2021) show that issues with reporting are associated to lack of knowledge, data issues and cost and administrative burdens. These issues are identified across different sectors, showing the need for sector-specific research to overcome lack of engagement by companies and underreporting (Blanco et al., 2016).

Recent reports regarding the state of disclosure highlight the complexity of both reporting and acting. A report by Carbon Market Watch (Thomas Day et al., 2024) highlights how “the limited depth of emission reduction targets for companies’ up- and downstream value chain emissions (scope 3) remain a key limitation for the integrity of most companies’ 2030 climate pledges” (Thomas Day et al., 2024), while CDP report on supply chain disclosure (CDP, 2023) has shown that while 41% of companies reported emissions for at least one Scope 3 category, only 39% of respondents engage with their suppliers on climate-related issues, covering an average of 41% of their procurement spend. Moreover, only 0.04% of companies require suppliers to set SBTs, and while category 1 represents the biggest share of scope 3 emissions, only 36% of companies reported they category 1 emissions. Regarding target-setting, only 46% of companies reported having absolute and/or intensity targets. Finally, there is a huge disparity between leading and bottom companies. The report shows that scope 3 emissions are still clouded by doubts and inaction, as shown by the literature.

3.2.1 Scope 3 emissions in the food sector

The food sector represents an interesting case study to evaluate the limitations of Scope 3 emissions disclosure and performance. Hansen et al. (2022) discuss the status of GHG reporting in the food sector, highlighting many shortcomings. The food sector is characterized by the failure to accurately calculate emissions in the agricultural sector, leading to many unreported emissions. Moreover, it criticizes the lack of emission reduction targets for many companies in the food sector, along with the lack of transparency of the Science-based target initiative (SBTi) in approving the feasibility of many dubious net zero pathways. Among the companies analyzed, it appears that data access and sector-specific guidance for emissions reduction need to be improved. Some companies highlighted the importance of certain data along with the lack of their disclosure, showing that a critique of the corporate world risks simplifying a more complex and systemic issue.

A report from TPI (Simon Dietz et al., 2022) aims at assessing the management quality and carbon performance of food producers through a methodology created by the TPI. The report highlights the relevance of food sector emissions and that only 3 out of 10 companies disclose sufficiently high-quality scope 3 emissions data. The study acknowledges that the different organizational boundaries chosen by the companies poses a problem in terms of the quality of comparison. Moreover, they highlight how a lack of reporting from food producers around Scope 3 emissions, especially linked to land- use change, prevented more companies from being included in the sample. A report from Carbon Market Watch (Thomas Day et al., 2024) also provides an overview of the state of scope 3 emissions in the food sector, focused on the state of disclosure and target-setting of the biggest food and beverage companies. The report shows that emissions mostly come from upstream agricultural emissions, and that some companies have improved the quality of reporting and target-setting. However, companies still lag behind in terms of actions to reduce emissions, and while many companies’ targets are aligned with the FLAG guidance, there is a high reliance on carbon sequestration to reduce emissions, with a lack of critical transition n measures. Action-taking remains a critical point for food companies.

Schulman et al. (2021) assess the state of food & beverage companies' GHG emissions' disclosure, showing an incomplete and inconsistent disclosure of Scope 3 emissions. Due to the voluntary nature of Scope 3 disclosure, companies choose to report scope 3 categories at their discretion, and among the 153 companies analyzed, only four companies commented on future goals to reduce emissions. The system around Scope 3 emissions has been shown to have multiple limitations, and in the food sector these limitations are particularly related to supply chain engagement in every step of corporate carbon accounting. Reavis et al. (2022) also evaluates the state of GHG disclosure, goal setting and climate science alignment of the top 100 Food and Beverage companies, primarily using Sources from the CDP and SBTi. While both disclosure and target-setting are on the rise in the food and beverage sector, the research shows that there is great variation of publicly disclosed GHG emissions: the research highlights that food companies still have limited GHG disclosure, along with the complexity of tracking progress toward climate goals and the lack of science-aligned goals. The authors also discuss the possibility and benefits of mandatory scope 3 disclosure in order to increase transparency; however, since data issues are still present, they also highlight a discrepancy between actual and reported emissions and the need to focus on better data access.

The issue of data access and reliability is the focus of Romijn et al.'s research (2018): more detailed data, increased transparency in available datasets and online platforms and integration of national and independent data sources, showing the role of both the public and private sector. Teske & Nagrath (2022) also highlight how the variability of data assumptions and methodologies hinders the comparability of industry-specific data for energy intensities, recommending the standardization of calculation and reporting methodologies for the food sector. They also highlight that the need to act by promoting sector-specific guidance could unlock the reporting of CO₂ emissions but also of CO₂ sequestration, given the unique characteristic of agriculture as a potential carbon sink. Soil management, reducing yield gap, and dietary shifts can help reduce some Scope 3 emissions in agriculture, and further research is needed to understand the contributions of different pathways to complete decarbonization of the agriculture sector.

Finally, case-study research on companies' show that frontrunners are increasing disclosure, but that research on companies' actions to reduce scope 3 emissions is still lagging behind. Asif et al. (2022) study Walmart's actions to increase scope 3 disclosure to highlight the use of different programs to monitor supply chain sustainability. Walmart is considered a leader in scope 3 disclosure; however, the research does not delve into the actions taken by the company to reduce emissions. Walmart's case shows that a major challenge for companies, researchers and practitioners is the identification of supply chain hotspots, and the programs used by Walmart are presented as a best practice to solve this issue: innovative technologies are shown to be crucial in dealing with SSCM and integration of scope 3 disclosure across the supply chain, and an effective calculation of Scope 3 emissions can happen only through a collaboration with suppliers. Qian et al. (2022) present an assessment of emission reduction pledges of PepsiCo, showing the important role of scope 3 emissions in the company's value chain (93% of GHG emissions). While the research shows the opportunities to engage with the value chain it recognizes that scope 3 emissions are still rising for the company. Overall, the literature review highlighted how issues related to carbon disclosure are heightened when scope 3 emissions come into the picture, and that the food sector represents an interesting case study to identify ways to unlock higher disclosure and a reduction of scope 3 emissions across the value chain (see [Figure 3.1 in Appendix II](#) for a summary of the main issues identified by the literature review).

4 Research design, materials, and methods

The following chapter outlines the research design of the thesis, explaining the methods employed for data collection and analysis, the motivations behind these choices along with some limitations and approaches to mitigate them.

4.1 Research design

The research method used in this thesis is motivated by the current situation with regards to scope 3 disclosure and action-taking in the food processing sector and the gaps identified in the literature review. The literature review on scope 3 emissions, particularly within the food sector, shows that while scope 3 emissions are becoming more relevant in the world of carbon disclosure, many issues still cloud companies' actions to calculate and reduce emissions in their supply chain. Accessing reliable data for scope 3 calculations still poses a substantial challenge, with inconsistency in secondary data and issues accessing primary data due to lack of coordination, resources, and time. In terms of reporting, despite recognizing the drivers for emissions reduction, there is a lack of effective action to achieve reductions, with many challenges for food companies. Transaction costs for firms are deemed too high, outweighing the benefits of scope 3 disclosure, and while progress is highlighted in terms of disclosure and target-setting, there remains a gap between reported emissions and actual reductions, with an emphasis on the need for better data access and standardization of methodologies. Despite efforts by frontrunners to increase disclosure, research on actions to reduce scope 3 emissions lags behind, pointing to the need for innovative solutions and collaborative approaches.

These issues highlight the need to analyze the current framework of disclosure and action-taking to improve the understanding of how different stakeholders frame issues, opportunities, and future directions of the system. For this reason, the thesis consists of a series of qualitative analyses used to answer the two research questions. In order to narrow down the results and the insights deriving from the analysis, the thesis will focus on food processing companies operating in the EU and on two methods of data collection and analysis based on two research questions.

The thesis is thus an **exploratory case study** (Lucas et al., 2018): this definition is the most suitable because despite having been studied in a number of papers (as the literature review shows), the combination of stakeholder theory and frame theory has not been used to analyze stakeholders' perspectives in the context of scope 3 disclosure and action-taking. In particular, the case study is exploratory both in its methodology (theoretical frameworks used) and in its method (case study chosen and choice of resources for the analysis). The rationale for the choice of the methodology is given by the novelty of the study (based on the literature review on which the thesis is based). The rationale for the method is provided below and is connected to the limitations of a master's thesis and to the aim of analyzing different perspectives in a qualitative study. The research design is based on the two research questions, where the second builds directly upon the first:

RQ1: How do different stakeholders frame the impacts of Scope 3 emissions disclosure and action-taking in the food processing sector in the EU?

RQ2: How do these frames inform shared or conflicting views around Scope 3 emissions disclosure and action-taking in the food processing sector in the EU?

RQ1 is also accompanied by a sub-question, which is necessary to provide a contextual foundation of the analysis of the two RQs:

- **What is the current state of Scope 3 emissions disclosure** in the food processing sector in EU14?

In particular, the structure of the analysis will start by answering the sub question, to then move to the two research questions. The case study for sub-RQ is more restricted compared to the overall case study of the thesis, and it consists of food processing companies operating in the European Union with either headquarters or subsidiaries. In particular, the case study stems from RQ1 and the need to filter the high number of companies in the EU for its specific analysis. Given the time frame allocated for thesis-writing, the focus had to be restricted to provide consistent and timely results. For these companies, an analysis of the sections related to scope 3 emissions (specifically looking at category 1: purchased goods and services) of CDP questionnaires (if present) and/or sustainability reports will be carried out. This document analysis will serve to understand the current state of scope 3 disclosure and action-taking for the companies analyzed and will also provide the basis for the qualitative analysis of RQ1 and RQ2.

The second part of the study, related to RQ1 and RQ2, aims at understanding how different stakeholders in the EU frame scope 3 disclosure and action-taking and the information that these frames can give to the stakeholders involved.

4.2 Data collection and analysis

4.2.1 Data collection and analysis for the sub-question

The data collected for the sub-question analysis is based on a list of companies compiled using the Orbis database, with the following inputs:

1. Status	Active companies, Unknown situation
2. World region	European Union [14]
3. NACE Rev. 2 (Primary codes only)	10 - Manufacture of food products
4. Listed/Unlisted companies	Formerly publicly listed companies, Unlisted companies, Publicly listed companies
5. Number of employees	min=500

The companies chosen are thus active companies (unlisted and publicly listed) operating in the EU14 in the manufacture of food products with more than 500 employees. The top 50 companies in terms of operating revenue were chosen. After this first filtering, some companies were excluded since their operations was not directly connected with food processing. Then, companies with no CDP report or sustainability report were excluded from the analysis. A total of 38 entries represents the final case study (see [Appendix III](#) for the list of companies). The database already presented some limitations regarding the identification of some food processing companies as retailers, which did not appear in the final list.

After the creation of the final list, CDP questionnaires and Sustainability/annual reports referring to 2022 were gathered for each company. The data thus refers to 2021, in order to gather results for all companies in the list. The methodology of analysis will follow a similar one to those of Hansen et al. (2022) and Reavis et al. (2022), whose research has already been mentioned in the literature review. In particular, the analysis follows a series of key steps inspired by these two papers, to gather information on:

- The percentage of companies disclosing scope 3 emissions (both in CDP questionnaires and in sustainability reports).
- The percentage of companies with SBTi approved targets including Scope 3 emission reduction (absolute and intensity-based).
- The average percentage of scope 3 emissions over total GHG emissions
- The average percentage change in scope 3 emissions
- The average percentage of scope 3 emissions coming from raw materials (pertaining to Category 1: Purchased Goods and Services).

The results will then be discussed in relation to previous research and to data from the World Benchmarking Alliance's 2023 Food and Agriculture Benchmark data set³, and they will also be tied with a more qualitative analysis of a set of 15 Sustainability Reports chosen among the 38 reports of the dataset, to identify a connection between the quantitative results and the way companies report and discuss their performance on scope 3 disclosure and action-taking.

4.2.2 Data collection for RQ1 and RQ2

The data collected for the two RQs are derived from interviews (primary sources) and documents. In order to ensure the coverage of the majority of stakeholders, a proportional number of documents and interviews were collected, so that stakeholders' opinions were represented equally. The data sources complement and expand the information of the current literature because of the qualitative nature of the research and the opinions emerging from the interviews. The data sources (12 interviews, 38 Sustainability/Annual Reports, 8 Reports, 1 Webinar, 5 Podcasts, 18 Websites and the observation of a conference; see [Appendix IV](#) for the full list of documents) were triangulated to ensure the validity of the results. Figure 4.1 (see [Appendix II](#)) shows the result of the stakeholder analysis aimed at identifying relevant stakeholders.

The documents chosen are reports of sustainability practitioners operating in the food and agricultural sector, as well as news articles covering scope 3 disclosure and action-taking in the food sector. They serve as a foundation for more specific media. Podcasts and webinars were included to have a more thorough insight into the issues and solutions discussed among different stakeholders operating in different areas of the GHG disclosure framework. Because of time constraints, the document review was conducted before and during the interviews period, to ensure the improvement of the questionnaire with more specific questions, and to enable effective interviews despite the time constraint.

Interviews are a valuable tool to collect information which may be difficult to capture through an analysis of written documents cite. The interviews were conducted to gain insights from representatives of the majority of stakeholders involved in scope 3 emissions disclosure and action-taking, the positions that they hold as representatives of a company/organization along with their ideas and opinions which may not be captured without specific questions. It was chosen to provide anonymity to informants: anonymity allowed for a more relaxed environment during the interviews, as well as the capturing of unfiltered opinions. As this thesis aims to understand shared and conflicting frames, the information emerging from interviews regarding controversial aspects of scope 3 disclosure and action-taking – which will be discussed in the next section – provided some interesting insights regarding the future of this framework.

The observation of the Conference on The Future of Food and Beverage organized by Innovation Forum (IF) was a final addition to the information gathered from documents and interviews. The conference was held in Amsterdam on the 14th and 15th of May, with a series of panel discussions on relevant topics affecting the future of the food and beverage sector, with a focus on Europe and on EU regulations affecting the sector. The aim of the observation was to capture how stakeholders interacted between each other in the collaborative environment that the conference was able to create, as well as capturing insights from the panels which were directly and indirectly related to scope 3 disclosure and action-taking. The conference was centered on the discussion of crucial topics from a variety of stakeholders across the food supply

³ For more information on the dataset: <https://www.worldbenchmarkingalliance.org/research/2023-food-and-agriculture-benchmark-data-set/>

chain, and was held under Chatham House Rule⁴, meaning that opinions and information emerging through panels and discussions can be shared but not attributed to a specific person. The conference was attended by over 200 sustainability professionals, and information on the panelists can be accessed on the website of Innovation Forum⁵.

12 interviews with sustainability professionals from different stakeholder groups were conducted for this thesis (see [Appendix V](#) for a summary of interviewees' roles, stakeholder group and type of organization). The selection of sustainability professionals was based on two criteria:

1. The thesis scope and case study (as outlined in section 4.1). The aim was to select professionals with knowledge of the food sector and its role in the EU.
2. The aim to cover the majority of perspectives coming from internal (working within a company) and external (working with companies or evaluating companies' actions) stakeholders. In order to reduce the weight of biased opinions related to the stakeholder's affiliation with their specific company/organization, more than one stakeholder per stakeholder group was interviewed.

Interviews were conducted in semi-structured form for comparability and reliability, allowing some flexibility for additional questions which varied depending on the depth of the conversation and type of stakeholder. The questions were also adjusted when necessary, depending on whether the interviewee was an internal or external (primary or secondary) stakeholder. Information from documents and from companies'/organizations' websites was used to add specific questions. The length of the interviews varied between 30-60 minutes depending on the sustainability professional's availability. Questions were phrased in an objective, unbiased way, prioritizing vague wording when asking for examples of issues without listing possible drivers. The questionnaire was pre-tested with two participants who had no specific knowledge of scope 3 disclosure and action-taking in the food processing sector to test the level of comprehension and adequacy of the questions. As mentioned above, the questions were adjusted as more interviews and documents were analyzed, given the exploratory nature of this thesis. The final questionnaire is provided in **Appendix VI**. Subsequently, interviews were recorded according to the interviewees' consent, and transcribed for data analysis. A transcription software was used to facilitate the transcription process.

4.2.3 Data analysis for RQ1 and RQ2

For data analysis, a qualitative content analysis was conducted using the software NVivo. The coding framework (see [Appendix VII](#)) was developed deductively based on coding categories emerging from the literature review and from the analysis of some initial documents, considering the theoretical framework of framing theory, which provided the main coding groups. The literature review gave rise to 5 main codes, while the subcodes created during the analysis of some of the documents and interviews. The deductive identification of new codes was a process that continued throughout the analysis, as new stakeholder groups were interviewed and analyzed. The categories were then analyzed again to check for redundancy and repetitions, and some codes were expanded or deleted when necessary.

⁴ For more information regarding Chatham House Rules: <https://www.chathamhouse.org/about-us/chatham-house-rule>

⁵ For more information on the conference: <https://www.innovationforum.co.uk/conferences/the-future-of-food>

4.3 Limitations

Limitations of the methods employed are related to the time constraints of a master's thesis: given the limited amount of time for data collection and analysis, the number of companies analyzed for the sub-question is limited, along with the inferences analyzed for the purpose of the thesis from this dataset. Regarding interviews, finding an appropriate number of professionals willing to be interviewed is a complex endeavor, with the risk of incurring in low response and acceptance rates. The number of interviewees has been motivated by both the lack of time to interview a higher number of practitioners and the low response rate of the professionals contacted. Around 60 stakeholders were contacted, with an acknowledgement that a small percentage of them would answer positively to the request, and 13 agreed to be interviewed. Moreover, interviews may incur in a higher number of biases related to the personal opinions of the stakeholders interviewed, and cognitive biases represent a limitation associated with information shared during interviews. To limit this, questions covered both past, present and future expectations regarding scope 3 disclosure and action-taking and covered different aspects of the process (e.g. data collection, disclosure, target-setting, supplier engagement etc.).

On the other hand, while grey literature and written documents may provide a less biased and broader view of the topic, it may also be more superficial. Thus, podcasts, webinars were all aimed to complement the information of grey literature and interviews, striking a balance between the formalization of reports and the biases of interviews. Documents, podcasts, and webinars are safer to handle as the negative aspects related to sensitive information and privacy issues are less present. Interviews, on the other hand, may present limitations regarding both the issue of anonymity and the complexity around eliciting sensitive information from interviewees. To mitigate these issues, information concerning how the data is stored, anonymized, used and published was provided at the beginning of every interview. Interviewees were also asked to sign a consent form in accordance with the General Data Protection Regulation (GDPR) 2016/679 of the European Union, which entered into force in May 2018.

5 Findings and analysis

This section presents and analyzes the results from the sub-question and the qualitative analysis conducted in NVivo (see **Appendix VII for final coding framework**). As described in the method chapter, the stakeholders included for the analysis were divided into three main groups (internal, primary external, secondary external, see [Figure 4.1](#)), and the data was triangulated from **12 interviews conducted for this thesis (see Appendix V for list of interviewees), 38 Sustainability/Annual Reports, 8 Reports, 1 Webinar, 5 Podcasts, 18 Websites and the observation of a conference (see Appendix IV)**. Information from interviews is referenced in square brackets, with interviewees coded with capital letters. Information gathered from the conference will be mentioned explicitly (e.g., “A practitioner at the conference highlighted...”; “Conversations during the conference showed...”) or will be accompanied by a citation in square brackets [The Future of Food and Beverage, IF, 2024].

This chapter is structured as follows: Section 5.1 will present the results of the sub-question analysis, making the case for a focus on raw materials in the food supply chain as the hotspot of scope 3 emissions for companies in the food processing sector and highlighting the criticalities of the system as shown by the literature review. Section 5.2 will then provide an answer to RQ1, outlining the different frames identified in the analysis and how they relate to the various stakeholders. Finally, section 5.2 will relate to RQ2, highlighting shared and conflicting frames emerging from the analysis across and within stakeholder groups.

5.1 Findings from the sub-question

This section provides an overview of the findings from the sub-question of RQ1: **What is the current state of Scope 3 emissions disclosure** in the food processing sector in EU14? As mentioned in section 4.2.1, the methodology of analysis will follow a similar one to those of Hansen et al. (2022) and Reavis et al. (2022). Table 1 displays an overview of the quantitative results from the analysis:

Table 1 Summary of scope 3 disclosure and action-taking for the companies analyzed

Disclosure	
% of companies disclosing scope 3 emissions over total (top 50)	48%
% of companies disclosing scope 3 emissions over reporting companies (38)	63%
Target-setting	
% of companies with SBTi-approved targets over reporting companies	66%
% of companies with supplier targets over reporting companies	58%
% of companies with scope 3 reduction intensity targets over reporting companies	55%
% of companies with scope 3 absolute reduction targets over reporting companies	16%
Scope 3 emissions overview	
Average % of scope 3 emissions over total	92.3%
Average % of emissions coming from Purchased Goods and Services	74.5%
Average % change in scope 3 emissions	5.5%
Average negative % change in scope 3 emissions (reduction of scope 3 emissions)	-5%
Average positive % change in scope 3 emissions (increase in scope 3 emissions)	28.3%

The table provides an overview of the main quantitative results, divided in terms of disclosure, target-setting, and an overview of scope 3 emissions. The aim is to contextualize the relevance of scope 3 emissions and the focus of the thesis on Purchased Goods and Services, which makes up 74.5% of total emissions for the companies analyzed.

5.1.1 State of scope 3 disclosure

The results of the analysis show that out of all companies analyzed (top 50), 48% disclosed scope 3 emissions. When accounting only for the companies disclosing ESG information through Sustainability, Annual or CDP Reports, the figure goes up to 63%. This result is in line

with the literature (Hansen et al., 2022; Reavis et al., 2022) and with the 2023 Food and Agriculture Benchmark of the World Benchmarking Alliance⁶, showing that 53% of companies met the scope 3 disclosure target, while the remaining 48% did not meet the target. Both datasets used for the analyses show that around half of companies in the food and beverage processing sector do not disclose scope 3 emissions. However, an analysis of reports shows that 7 out of the 26 companies not disclosing scope 3 emissions are in the process of calculating scope 3 emissions for future disclosure. This indicates a positive trend in terms of disclosure, which may be associated with the future entry into force of the CSRD (see section 2.2 for more information), which will mandate scope 3 disclosure for a series of companies based on their size, revenue, and total asset (European Commission, n.d.).

A first observation is that despite the low percentage of scope 3 disclosure, when accounting only for companies disclosing ESG information, the figure rises from 48% to 63%. This suggests that pressures from ESG disclosure may be associated with more transparency, as shown by some research on the matter (Belkhir et al., 2017; Hummel & Schlick, 2016; Matisoff et al., 2013). Moreover, of the companies disclosing scope 3 emissions, 63% do so through CDP reports, showing that disclosure of climate change information may lead to disclosing scope 3 emissions too (despite it not being mandatory). The role of the CDP as an MSI which leads to higher levels of transparency regarding GHG emissions is confirmed by this figure.

With regards to the data used to calculate scope 3 emissions, there is high variety among companies: the majority of companies use average product methods or spend-based methods, which are easier to access for companies but are also highly variable. Some companies use hybrid methods with a percentage of emissions coming from supplier (supplier-specific). The different data used for calculation is a prime example of the variability of the process leading to scope 3 disclosure. Evaluating the quality of this disclosure beyond transparency and the performance after disclosure beyond target-setting is a complex endeavor given the extreme variability of data used.

5.1.2 State of scope 3 action-taking: target setting and supplier engagement

This section will analyze the state of scope 3 action-taking, with a focus on target setting and supplier engagement. Because the aim of the sub-question is also to draw insights from the companies disclosing scope 3 emissions, figures from target-setting onwards represent the percentage over the reporting companies (38), showing more 'positive' results over the total.

Data regarding SBTi targets were gathered from the database of the SBTi⁷. The SBTi is the main reference to understand whether companies have set targets for GHG reduction. 66% of companies analyzed have set SBTi-approved targets, with 58% of them disclosing scope 3 emissions have SBTi-approved supplier engagement targets. However, there is a scarce amount of information in reports: companies mostly mention commitments and willingness to engage, with few information regarding measures to actually reduce emission, and when mentioned they refer to small-scale projects (e.g. milk premium program by Arla, agroecology program by Mars, agroforestry by Barry Callebaut). The issue of scalability of such programs will emerge in the qualitative analysis. Moreover, **not all companies set reduction targets that go beyond scope 1 and 2**. 55% of companies have scope 3 reduction intensity targets, meaning a reduction of scope 3 emissions over generated revenue or products sold. Committing to an intensity reduction means that companies focus to reduce the carbon intensity of their products and

⁶ For more information on the dataset: <https://www.worldbenchmarkingalliance.org/food-and-agriculture-benchmark/>

⁷ <https://sciencebasedtargets.org/target-dashboard>

operations, while still allowing an increase of overall emissions in the future. This commitment is less ambitious compared to an absolute reduction of emissions. When looking at companies committed to an absolute reduction of their scope 3 emissions, the figure drops to 16%. Only 10 companies have SBTi-approved targets which include an absolute reduction of scope 3 emissions. This figure suggests that the path from disclosure to taking action to reduce emissions is still complex for many companies, and that low percentage of commitments to absolute scope 3 reduction may be connected to a variety of issues that need to be further explored.

Overall, the current situation shows that the trend for both target-setting and supplier engagement is a positive one. However, transparency issues remain, with low levels of information regarding what happens after targets are set and commitments are expressed in sustainability and annual reports.

5.1.3 Scope 3 emissions overview: increase in emissions and the role of raw materials

The sample analyzed confirms what had been shown in previous research: by comparing scope 3 emissions to the total of the companies' GHG emissions, scope 3 represents on average 92.3% of a company's GHG emissions. Moreover, of the 21 companies disclosing additional information on the distribution of scope 3 emissions, on average 74.5% of emissions are related to Category 1. The result of this analysis has made the focus of the qualitative analysis on Category 1 emissions a definitive one. Despite commitments to reduce emissions, scope 3 emissions from the sample have been rising of an average of 5% from 2020 to 2021. However, the aim of this overview is not to discuss extensively rising emissions, since these numbers do not show a complete and contextualized picture of the EU's food processing sector: the companies analyzed are extremely different, with different emission portfolios and different commodities in their supply chain. This adds another dimension of complexity when wanting to compare across companies.

5.1.4 Discussion of results

The analysis reveals the increasing intention among companies to disclose their scope 3 emissions, indicating a positive trend in transparency and accountability, with clear frontrunners in scope 3 disclosure. However, scope 3 emission disclosure is still lagging behind among more than half of the companies included in the sample. Ultimately, there is an increasing acknowledgement of the importance of scope 3 emissions, with more companies committed to disclose, but many issues are still present. Supplier engagement is vaguely mentioned by many companies, while actions taken by frontrunners to implement more sustainable practices in agricultural supply chains remain small-scale projects and scalability remains a critical issue. Moreover, the lack of data comparability and transparency hinders an analysis that focuses of the process that led to disclosure beyond its results; this lack of transparency is present also when evaluating SBTi-approved targets. Finally, scope 3 emissions are on average still rising among the companies analyzed, highlighting the complexity of tackling scope 3 emissions as opposed to scope 1 and 2.

Overall, these results are in line with what is discussed in the literature. The choice of not delving into the reasons behind disclosure and the causal relationships between the types of companies and their actions (through a more thorough quantitative analysis) is motivated by the fact that there are already a series of scientific articles discussing and inferring on the causes of corporate disclosure (Marlowe et al., 2022; Reavis et al., 2022; Xia & Cai, 2023). The results of this analysis have shown that understanding how companies and external stakeholders deal with scope 3 emissions is essential to advance solutions to bridge the gap between the current

situation and what needs to be done to reduce emissions across the food value chain. The next sections will thus focus on the application of framing theory to understand how stakeholders frame scope 3 emissions disclosure and target-setting, and whether there are some shared understandings of how to advance solutions both in terms of scope 3 disclosure and in terms of the actions to be taken to reduce emissions in the value chain.

5.2 Stakeholder Frames of Scope 3 Emissions Disclosure and Action-taking

As mentioned in the previous section, the sub-question has shown the importance of scope 3 emissions from raw materials in the agricultural supply chain. For this reason, **the focus of the qualitative analysis is on Category 1 emissions. The term 'Scope 3' mentioned in the next sections will thus refer to these emissions specifically.**

The following chapter will present the results of the analysis of stakeholder frames of scope 3 emissions disclosure and action-taking. The sections are divided based on the four macro-frames mirrored and expanded after the literature on framing theory and the results of the literature review (see section 2.3.2). The latter showed a particular focus on **Key Issues** and **Solutions**, which informed two of the macro-frames. Moreover, given the qualitative nature of the research, two more frames were added:

- **Moral judgements/current situation:** the aim of this code was to identify how the stakeholders frame the current system of disclosure and action-taking in relations to the food sector, and how they connect this judgement with problems and/or solutions.
- **Envisioning the future:** the aim of this code is to understand how stakeholders imagine the evolution of the system, and whether this evolution is informed by a positive and/or negative vision of the current system, of its problems and its solutions.

Within each section, different specific frames emerging from the analysis will be analyzed and discussed in relations to the three main groups of stakeholders (internal stakeholders, primary external stakeholders, secondary external stakeholders). These specific frames relate to scope 3 disclosure and/or scope 3 action-taking: the analysis of these two dimensions will be performed jointly because of the connection emerging between them. Therefore, some frames are shared among the two dimensions, while others specifically relate to either disclosure or action-taking. The connection between disclosure and action-taking emerging from the analysis is in line with the theory of change, which is the theory on which MSIs like the CDP base their objective: according to the theory of change, you cannot manage what you do not measure, meaning that carbon disclosure is necessary to unlock decarbonization strategies (CDP, n.d.). Moreover, when opinions by both primary and secondary external stakeholders will present similarities, their insights will be aggregated under the term 'external stakeholders'.

5.2.1 Scope 3 disclosure and action-taking contextual to the food system

Before delving into the insights emerging from the frames, the frames emerging were all connected by stakeholders to some characteristics of the food system which were deemed important to highlight. The analysis will thus start with an overview of which characteristics emerged as specific of and contextual to the food system.

The first characteristic relates to the way the food industry is built: food supply chains are mostly characterized by short-term relationships, short-term contracts with an inherent transient nature of the relationships between different tiers, which makes it difficult to monitor GHG emissions long-term, and also to calculate emissions and engage to reduce them. The food supply chain is a commodity-based supply chain [J, G]. This has consequences across all levels of the supply chain: the volatility of this commodity-based supply chain is connected to the

farming system, which is *'very site-specific and very complex'* [L]. This has resurfaced multiple times in interviews [A, B, E, L, S], podcasts and reports (Coller FAIRR Climate Risk Tool 2023 Report, 2023; Marion Verles, n.d.-a, n.d.-b).

Food supply chains are also extremely complex, diversified and long, with lots of actors involved (Thomas Day et al., 2024): raw materials are usually aggregated through middlemen (e.g. crop, dairy, meat resellers), which make it difficult for companies to trace the raw material back to the origin farm and therefore monitor, account and reduce emissions. Companies are asked *'to understand their supply chains and the regions from where they are sourcing independently of the middlemen of the big traders. This is really complicated because it all gets mixed'* [L]. Internal stakeholders are aware of this characteristic, which clashes with the GHG Protocol's focus on traceability, which many supply chains do not possess (Marion Verles, n.d.-a). This lack of transparency and traceability is a characteristic of the food system, which causes consumers to have a lack of understanding of where food comes from, how it is produced and the impact it has on the economy, on society and on the environment [M, A, J].

These impacts also relate to the **power structure of food supply chains**, which sees food processing companies and retailers holding the most power compared to farmers upstream in the supply chain. Moreover, the knowledge gap reduces consumers' power to change the system, but the power imbalance across the supply chain is mentioned by stakeholders particularly with regards to farmers: the space of maneuver in which farmers operate, along with how food processing companies deal with farmers in the context of scope 3 disclosure and action-taking, needs to be considered [C, I, G, F, B, J, K, E].

As in many other sectors, **GHG accounting tries to quantify climate impacts, trying to fit an ecological system into a numeric structure**. Interviewees from all stakeholder groups recognize that quantifying the impact of crops and farming *'isn't perfect because life isn't perfect, and nature isn't perfect. It was never meant to be perfect and fit into our square or counting boxes'*. (Marion Verles, n.d.-b). This characteristic ties with another one: many stakeholders, both internal and external, recognize that climate is not the only impact that the food system has on nature (role of biodiversity loss, water use, waste, antibiotics, use of pesticides), and also that GHG emissions are 'only' a driver of those impacts and a metric to assess anthropogenic impacts on the environment [J, L]. Scope 3 is recognized as one tool among many to reduce anthropogenic impacts on nature [I, J], with some stakeholders focusing more on the limitations of this framework [L, H].

Many stakeholders mention how general the term 'food sector' is, and how **different sub-sectors have different risks and solutions** [J, M, H]. These differences also extend to SMEs and big companies, and on the way different issues and solutions may play out for them. As mentioned in section 2.2, SMEs are a crucial component of the food processing sector in the EU: 99.2% of European food and drink businesses are SMEs, accounting for 40.5% of the sector's turnover and 58.4% of employment (Luc Schmerber et al., 2022). Finally, **the role of the public sector** highlighted, especially in relation to the issue of the subsidization of the food system in the context of the EU (see section 2): subsidies are considered by external stakeholders as a huge issue (Marion Verles & Thomas Blackburn, n.d.; Morgan Gillespy, 2024). This topic will be discussed thoroughly in the Solutions section.

To sum up, there are a series of context-specific characteristics emerging from the analysis:

- **Complex and Transient Supply Chains**, with volatile contracts closely tied to agriculture and farming practices and based on commodity-based supply chains.
- **Lack of transparency and traceability in the food system and of consumer knowledge of the food system.**

- **The role of farmers and the power imbalances in the food supply chain.**
- **Quantification of ecological systems and broad environmental impacts beyond GHG emissions**, impacting stakeholders' perspectives on the effectiveness of scope 3 disclosure as a framework for capturing climate impacts.
- **The breadth of the food sector and the existence of many sub-sectors** also impacts the variety of drivers for change and actionable solutions within the sector.
- **Differences Between SMEs and Large Companies** exist at every step of a company's action, from disclosure to the actions taken to reduce emissions.

5.2.2 Moral Judgements/Current Situation

To understand how problems and solutions are framed it is necessary to understand how the current situation is framed by stakeholders. The aim of the current section is to identify moral judgements around scope 3 disclosure and action-taking, with three frames of analysis emerging:

1. **Opportunity/Risk**
2. **Lack/Presence of External Pressure**
3. **Disclosure and Guidelines' System in Evolution**

Opportunity/risk

Internal stakeholders mostly frame scope 3 as an opportunity to avoid further risks. Big companies consider scope 3 disclosure as an opportunity to make strategic relationships, to advance products with sustainable portfolios, to become the frontrunners in scope 3 disclosure. The insights from interviews add another layer: opportunities in terms of financial benefit for the companies were not mentioned by the sustainability consultants interviewed. One of them mentioned that the current situation does not allow their company to reap the benefits of disclosure through price premiums, since customers and consumers are *'not ready to discuss if this would give a price premium. Or they discuss, but they will refuse it, basically, or the premiums are ridiculously low in relation to the cost.'* [B]. More than opportunity to act scope 3 was framed as a risk not to act, especially given the future development of the CSRD in the EU and the risk of lagging behind. [A]

Primary and secondary external stakeholders both mention risks of not disclosing and reducing scope 3 emissions but focus more on the opportunities that engaging with scope 3 brings about: reducing costs, growing market share, building new businesses, mitigating supply chain risks (Charlotte Bricheux et al., 2024; Olivia Bertham, n.d.). Neglecting scope 3 disclosure is identified as 'a triple-natured risk: Reputational, financial, operational' (Sofia Pyrgioti, 2023). There is also an opportunity to learn and show progress: one consultant mentions the opportunity that scope 3 disclosure gives company to learn and to identify hotspots [H, I], this opportunity to learn is identified also by data providers (Marion Verles & Thomas Blackburn, n.d.). Finally, companies can move from measurement into action through data in line with the theory of change [F, J, C]. *'Disclosure can drive action, which is the ultimate goal'* [L], and this opportunity to act and improve *'is one of the other key reasons why we need to do this and why'*, since *'improved scope 3 reporting is an essential foundation for any of those initiatives to really show and gain credibility on the impact, because at the end it has to add up to a reduction in the scope 3'* [C].

To sum up, all stakeholders seem to share the idea that scope 3 is necessary, either because it is an opportunity to act or because it is a risk not to. Scope 3 disclosure and action-taking is framed as an opportunity by external stakeholders, but as a risk by internal ones, which still fail to see the benefit of embarking in scope 3 disclosure in the first place.

Lack/presence of external pressure

All stakeholders identify a variety of pressure sources pushing companies to disclose. **MSIs are an important source of pressure**, particularly the CDP, which as the research has shown

(Anastasia Volkova, 2022a; Anay Mridul, 2024; Olivia Bertham, n.d.), it was able to leverage on investors to pressure big companies to disclose GHG emissions. This source of pressure is recognized to be more applicable to big MNCs, as one sustainability manager also highlights [A], but it is also identified by many interviewees as a general pressure for all companies to engage more [H, C, I]. **Pressure from investors** is also identified as a stand-alone pressure source by internal and external stakeholders (Guillaume Boinnard et al., 2023). However, there are different opinions regarding the extent of investor's pressure: investors' organizations such as FAIRR highlight the role of investors' pressure (Philippa Thornton, 2020, 2021), however some interviewees are skeptical regarding the influence of investors at the current level [E].

Pressure from future government regulations (in particular the CSRD in the EU) is mentioned by both interviewees [A, B], pushing companies to 'not do it by choice anymore' [A]. This is backed by a recent survey by SustainCert, showing that respondents believed that *'changes to the legal environment will have implications for how their businesses ensure their interventions have accurate and credible results'* (Blakeney LAB, n.d.). **External pressure from retailers** is also mentioned, with particular relevance for SMEs: the sustainability manager from the SME interviewed has highlighted that the reason the company started disclosing emissions was because they contributed significantly to a series of supermarket chains' scope 3 emissions [A]. This pressure from retailers is also identified by external stakeholders [J, I]. **Lack of pressure from consumers** is also mentioned by all stakeholders, highlighting a consensus around the fact that the reason for disclosure does not come from consumers [M, G, J], (Helena Wright et al., 2022).

To sum up, several actors are identified in connection to presence or lack of pressure: **MSIs; Governments and regulatory requirements; Investors; Retailers and Consumers**. External pressure is generally framed positively, which suggests that stakeholders are determined to improve the system rather than discard it altogether. Pressure points coming from MSIs, and regulations are deemed the most significant for food processing companies. Pressure for retailers is also important, with a significant cascading effect leading less engaged companies in the value chain to adhere to disclosure requirements (especially relevant for SMEs). Some stakeholders are more skeptical of investors' pressure, and all stakeholders identify a lack of pressure for consumers.

Disclosure and guidelines' system in evolution

Despite the issues associated with the current framework of disclosure (as will be outlined in the Key Issues section), all stakeholders recognize that the system of scope 3 disclosure is a system in evolution, meaning that it is not fully set up yet [A, B, D, F, H, M]. In particular, **both internal and external stakeholders** frame their role and actions with regards to this constant evolution of the system: **internal stakeholders** recognize that the disclosure system is improving, providing a more coherent outline for companies on how to navigate the system, and levels the playing field for companies in case of policies like the CSRD aimed at mandating scope 3 disclosure [A, B]. **Both internal and external stakeholders**, however, also highlights the limits that companies might have in adjusting to this rapidly evolving field [A], both in terms of the actions taken by companies and the accuracy in reporting emissions [H]. Moreover, there is a shared understanding that the focus on disclosure might negatively impact actions: the tradeoff between better disclosure and actionable and scalable solutions is mentioned by both internal and external stakeholders (Marion Verles, n.d.-a, n.d.-b; Marion Verles & Thomas Blackburn, n.d.) [B, C, E, I], and will be discussed in the Key Issues section.

External stakeholders share the idea that this evolving system will lead to more disclosure, which is backed up by the increasing numbers of companies reporting (Blakeney LAB, n.d.) and more action, allowing us *'to understand what actions work and what actions don't work'* [C]. Regarding guidelines to drive action, one interviewee frames the current system as being in a pilot phase [E]. Stakeholders across all three groups also mention the evolution of data available [B, E, H].

This characteristic presents both issues and opportunities to improve (as discussed in the following sections).

Shared and conflicting frames of Moral Judgements/Current Situation

To sum up (see [Table 5.2](#) for overview), stakeholders across various sectors acknowledge the importance of Scope 3 emissions, viewing them either as an opportunity for action or a risk if not addressed. External stakeholders emphasize the benefits of Scope 3 disclosure, highlighting financial, reputational, and climate-related risks of inaction, while internal stakeholders perceive it more as a risk. Pressure from multiple sources, including MSIs, regulations, investors, retailers, and consumers, is recognized as crucial for driving change, particularly in the food processing industry. However, there are concerns about regulatory issues, the effectiveness of disclosure pressure in prompting action, and power dynamics within the supply chain. The evolving nature of the system is seen both positively and negatively, presenting opportunities for sector-specific approaches but also raising uncertainties and challenges in implementation. There is a recognized **tradeoff between data accuracy in disclosure and action**: the system is evolving but many stakeholders recognize that companies cannot wait to solve the accounting challenges before enacting action on the ground.

5.2.3 Key Issues

The following section will present how stakeholders frame the issues associated with scope 3 disclosure and action-taking, with four frames of analysis emerging:

4. **Data Issues**
5. **Cost and Administrative Burdens**
6. **External Pressure/Lack of internalization**
7. **Lack of Knowledge to Operationalize Change**

These four frames are connected to each other and cause stakeholders to doubt the effectiveness of the system. After explaining the main characteristics of each frame, these doubts will be presented, along with a summary of shared and conflicting frames for Key Issues.

Data Issues

Issues regarding data quality are recognized by all stakeholders to be a relevant barrier to scope 3 disclosure, in accordance with a lot of the literature (Blanco et al., 2016; Busch et al., 2022; Stenzel & Waichman, 2023). Data issues are related to **(1)** the complexity of the process of data-gathering and of accessing high-quality data, **(2)** the use of secondary data and its lack of transparency and interoperability, and **(3)** the high variety of data used by companies along the supply chain. As shown by many reports, data quality and accessibility currently represent the biggest obstacle for scope 3 disclosure (FAIRR Initiative, 2024; Guillaume Boinnard et al., 2023; Silvana Paniagua Tufinio et al., n.d.). Data for raw materials along the supply chain is considered extremely difficult to access, along with being cost and time intensive. Currently, most of the data used are secondary data based on different emission factors (Hansen et al., 2022; Reavis et al., 2022; Stenzel & Waichman, 2023; Wenning et al., 2022), and companies calculate emissions mostly through spend-based methods, which is not considered to be the most reliable and representative method to assess a company's GHG emissions (Stenzel & Waichman, 2023).

Internal stakeholders are mostly concerned with the complexity of the process. The data is considered “not very stable and reliable” [A], and the process of data-gathering is seen as a cumbersome exercise when the situation regarding data is still unsolved (Marion Verles & Thomas Blackburn, n.d.). Interviews have shown that the concern is shared by both multinational companies and SMEs. The different emission factors yielding different results lead to a lot of uncertainty among companies, and the data which is then gathered through secondary methods do not materialize the issue for some companies [A,B], for which this is still seen as a

bureaucratic exercise with no effect on the company's awareness towards its climate impact, as mentioned by one interviewee: *"right now with the data I have there's never going to be any difference in my scope 3 emissions when I don't have the real data and it's all an estimate"* [A]. The Conference has highlighted the fact that most companies still use secondary data, but that primary data are seen as better performing [A, B]. Given the current situation and the primacy of secondary data, the issue of data transparency thus becomes a relevant one [B].

Primary external stakeholders also identify data issues as relevant for companies' scope 3 disclosure and action-taking. For sustainability consultants, data is considered inconsistent, leading to partial scope 3 inventories (Olivia Bertham, n.d.) and recognize the reluctance of companies to gather data and the fact that *"some clients are scared about the amount of data they have to collect"* [G]. Data and tech providers frame the lack of transparency in terms of the accuracy gap between companies and the source of the data they use (Marion Verles & Thomas Blackburn, n.d.). Spend-based data are recognized as an issue due to their lack of precision, along with accessing more transparent data due to the existence of a series of black boxes at different levels of data access (Marion Verles & Thomas Blackburn, n.d.), slowing down progress on accurate disclosure. The problem for many primary external stakeholders lies in the use of secondary data which lack granularity. Secondary data are seen as insufficient [F] (Anay Mridul, 2024), while primary data present stronger incentives for farmers to reduce emissions. However, while the importance of primary data is advocated by many [I, G], there are a lot of internal stakeholders that still problematize the access to primary data [A, B] (Marion Verles, n.d.-a, n.d.-b), and the results of the previous analysis (see section 5.1) shows that companies still use secondary data to disclose scope 3 emissions. **Secondary external stakeholders** share similar insights regarding data issues, albeit being more critical regarding the way data is used, shared, and owned in the scope 3 framework. They express different opinions regarding primary data: for some (as for internal stakeholders), it is considered a complex endeavor, and does not seem to be considered a solution [L]. However, others recognize the importance of primary data [C, D, J], recognizing the issue of outdated emission factors [L] (Guillaume Boinnard et al., 2023).

To sum up, all stakeholders recognize data quality as a significant barrier to scope 3 disclosure, including concerns about the complexity of data-gathering processes, lack of transparency, and the use of inconsistent data. Moreover, accessing primary data is extremely difficult, costly, and time-intensive, while secondary data, which are commonly used by companies, are considered problematic due to uncertainties, lack of transparency, and inconsistencies, leading to different scope 3 estimates. Internal stakeholders are primarily concerned with the complexity of the data-gathering process and the reliability of the data. They perceive data issues as hindering their ability to accurately assess their scope 3 emissions and take meaningful action. External stakeholders, while recognizing the issues related to data gathering, advocate for better ways to deal with data and highlight the importance of primary data and of data-sharing among companies.

Cost and Administrative Burdens

The process of scope 3 disclosure and action-taking is also framed in terms of cost and administrative burdens for companies. **All stakeholder groups** recognize the process as a burden for companies, from the cost of setting up the process of accounting and disclosure, to gathering data and then to ultimately reducing emissions.

The cost is not framed as one worth pursuing for an improvement of the company, but only as a result of external pressure [A, D]. The cost of gathering data is also recognized by data and tech suppliers [F, J, M] (Marion Verles & Thomas Blackburn, n.d.), and it is exacerbated by the need for more investment to improve the whole system (David Burrows, 2022). **External stakeholders** are more positive, highlighting how the field is improving, but also mentioning disadvantages for SMEs in terms of budget constraints for sustainability projects [A, G, H].

Moreover, they consider the risk of not acting (both in terms of regulatory frameworks but also risks for the companies because of climate degradation) as a good driver. Internal stakeholders are generally aware of both risks, as shown by interviewees [A, B], with regulatory frameworks being a stronger driver to act and disclose emissions.

In terms of administrative burdens, all stakeholders focus on data-gathering but also on setting up the whole system, and the uncertainty on what to do afterwards. These uncertainties are contextual to the food sector (as mentioned in the previous section): the existence of big supply chains in which raw materials get aggregated limits traceability of raw materials to the farms of origin, therefore limiting the possibility of accounting for emissions and acting on them [E, L] (Guillaume Boinnard et al., 2023; Guillaume Bône et al., 2024). Both **internal stakeholders** [B] and **external stakeholders** highlight these barriers to traceability in the supply chain [D, J]. The complexity of engaging with a high number of suppliers was a common issue raised by companies during the conference [The Future of Food and Beverage, IF, 2024]. It is necessary for companies to develop capabilities that they had never had to develop before [A] (Marion Verles, n.d.-a). Moreover, **external stakeholders** also recognize that the cost and burden that scope 3 disclosure and action-taking exist for all actors in the supply chain, with a particular focus on farmers [G, L, E, J, F]: the power imbalance in the supply chain risks shifting the burden towards farmers, with companies requesting data and raw materials with specific characteristics. **In the conference**, the issue emerged in relation to both scope 3 disclosure and action-taking. A member of a UK Farmers' Association highlighted the lack of trust that farmers have in projects implemented by companies, which are usually short-term and lack the necessary distribution of risks [The Future of Food and Beverage, IF, 2024]. The relationship between companies and farmers (B to F, business to farm) is a crucial dimension in which engagement is needed, and external stakeholders are shown to be steering frontrunners' attention towards it.

Overall, there is a general consensus that scope 3 emissions represent a financial and administrative cost for food processing companies. These costs are connected to data issues and are contextual to the food supply chain and the lack of transparency and traceability of raw materials back to the farm of origin. **All stakeholders** see mandatory disclosure forcing companies as an important driver, but **internal stakeholders** frame it as a burden, apparently failing to recognize that the cost of not disclosing is also a physical risk for food companies due to the effect of climate change of raw materials' supply chains. Moreover, while companies mainly focus on internal costs, **external stakeholders** also focus on costs for farmers during the process of data gathering and the actions taken to reduce emissions. It is important to address how to shift the perception of companies with regards to viewing scope 3 disclosure mainly as a financial burden while making sure that disclosure incentivizes GHG reduction efforts.

External Pressure/Lack of Internalization

As mentioned in the previous section, **there is a shared understanding** that external pressure is not inherently bad: however, there is a recognized risk that external pressure might hinder the ultimate action of scope 3 disclosure, which is to reduce emissions. As expressed by one interviewee: *'We're at danger of hitting the goal but missing the point [...] there is a danger with disclosure, with reporting, that you're so focused on that that you missed the point of what we're trying to do, which is to build a more resilient, healthy food system'*. [I]. There is a shared consensus that external pressure might fail in its objective due to a lack of internalizing the process and the final aim of the process.

For internal stakeholders, mandating ESG disclosure through a regulation such as the CSRD is seen as a push to disclose: however, stakeholders also express while they may solve the issue of disclosure in the long run, in the short run they will redirect resources towards accounting,

away from action [A, B]. The way stakeholders are acting is by *'trying to be compliant without doing anything because it's so much work and we have such a broad supply base that it's not really possible to engage with all those suppliers that you would have to take into consideration.'* [A]. Sustainability managers present at the conference raised the issue of bringing the long-term perspective within the company's behavior. Scope 3 disclosure, and more importantly the actions to reduce emissions are not internalized by companies because the way the system works prioritizes short-term gains as opposed to long-term securitization of a company's supply chain. Implementing this long-term vision of resilience is seen as an obstacle by many, despite the recognition that it is a necessary shift [The Future of Food and Beverage, IF, 2024].

Some external stakeholders also recognize the facet presented by internal stakeholders: one sustainability professional mentions the risk that disclosure might lead to companies being *'hammered down by regulations'* [E], and another expresses the concern that regulations such as the CSRD might play out to be counterproductive if not internalized by companies [L]. Moreover, **external stakeholders** also recognize that this lack of internalization leads companies to shift the external pressure further up the value chain: theoretically, the regulation aims at pushing companies to act within their supply chain to reduce emissions, but according to two primary external stakeholders, the way companies approach the issue is by putting high demands on farmers with too little remuneration, treating it as a revenue model with funds flowing to the company and not to farmers, causing farmers to lose the motivation to participate [C, D]. This lack of internalization can become a vicious circle affecting the willingness to act of the company at the end of the supply chain and of the farmers at its beginning.

The way stakeholders frame this external pressure shows that they all recognize positive aspects in terms of increasing accountability, but that it also needs to be accompanied and directed appropriately to avoid two things:

- **That companies just disclose and set targets because they have to without changing their operations.** So we need pressure to be directed towards accountability but also towards action and rewarding companies that act, by creating an environment that does so.
- **That companies shift the pressure towards farmers and actors with less power in the supply chain.** So we need pressure to push companies to act, to make it profitable for farmers to collaborate and to create a more collaborative supply chain

Balancing external pressure to provide more incentives rather than obstacles, while avoiding that the negative pressure is shifted to farmers up the value chain, is considered crucial by stakeholders to allow actions to take place.

Lack of Knowledge to Operationalize Change

All stakeholders mention that both disclosure and action-taking are characterized by a lack of knowledge to operationalize change. In particular **internal stakeholders** emphasize how this lack of knowledge becomes an obstacle to reduce emissions because after disclosure happens, there is no clear strategy on how to use disclosure to enact change [B, A] (Marion Verles, n.d.-a, n.d.-b). Companies risk to focus on the wrong things since the system is *'completely under construction'* [A]. This lack of knowledge also affects action-taking, and is attributed by internal stakeholders to a general aversity to change within the food sector [A] (EcoVadis, n.d.; Marion Verles, n.d.-a). In particular, it is complex for companies to change operations that have been the core of a company's revenue: as one stakeholder mentions, the company produces a specific kind of product, *'that's what we do at the end of the day, we make food and we sell it to customers'* [A], while disclosing and reducing scope 3 emissions impose a fundamental shift in the way a food company operates.

External stakeholders also recognize this lack of knowledge connecting it to the food sector as a whole and to its *'opacity'* [E] and lack of traceability [I] (Corrina Filipović, n.d.). There are

many ways to interpret the guidance on scope 3 disclosure, and there is no 'silver bullet' for a lot of commodities 'other than just decreasing the amount of some of the commodities that we know have a larger footprint' [J]. Despite recognizing the role that organizations such as the GHG Protocol and the CDP had in promoting GHG disclosure, many external stakeholders highlight the complexity of following the guidance for a lot of different players in the sector (Marion Verles & Thomas Blackburn, n.d.), highlighting the need for more specific guidance [J] (Guillaume Boinnard et al., 2023). However, they also highlight that food processing companies can mitigate the issue through increasing transparency within the supply chain (as will be discussed in the solutions section) [D, C, J, L, E] (Guillaume Boinnard et al., 2023; Silvana Paniagua Tufinio et al., n.d.; Thomas Day et al., 2024).

Overall, we can see that all stakeholders recognize the lack of knowledge as a barrier to operationalize change in the supply chain. The main focus of all stakeholders is connected to the lack of knowledge to reduce emissions after they have been disclosed: this issue is explicitly connected to the food sector as a whole, to its adversity to change and to its opaque supply chains. There is a focus on improving the guidance, especially for actions: companies want more information on what can be reported as action, so tackling the guidance is fundamental to push companies to act. **External stakeholders** seem to have a more positive attitude. They focus on the need for transparency in the supply chain, and on the role that food processing companies need to have by engaging farms and middlemen in the supply chain. Acting on these two areas can reduce barriers regarding traceability of raw materials and complexity of engaging with farmers. However, like internal stakeholders, external stakeholders recognize that the current food system needs to change as companies' behaviors change in order for this knowledge gap to be overcome.

Doubts on System's Effectiveness

All mentioned issues converge into a final issue: all stakeholders highlight that they have some doubts regarding how effective the concept and idea of scope 3 emissions is for food processing companies. Some stakeholders fear that disclosure and reporting will not lead to the actions needed to reduce emissions. This fear is motivated by the fact that the focus for companies and regulators is still on reporting, while **what happens between reporting and setting targets is still clouded by doubts**, [B, A, I]. Many stakeholders are unsure on whether these targets will be reached, an issue connected to how targets are set and the lack of communication of the path that companies intend to take to reach the targets [B, J, L], showing that despite target-setting, doubts are still widespread across companies. This issue is mirrored by the food system, which focuses on the commodities (the results) and not on what happens in the farm to grow those commodities (the process). This connection shows that scope 3 disclosure and action-taking for food processing companies is intertwined with the food supply chain, and that issues and solutions are connected.

Shared and Conflicting Frames of Key Issues

There is a common thread connecting all of the issues (see [Table 5.3](#) for overview): data issues and cost and administrative burdens influence the lack of knowledge to operationalize change in companies' supply chains (problem for action-taking specifically). This lack of knowledge is also caused by a lack of internalization of both scope 3 disclosure and actions to reduce emissions, which are mostly perceived as coming from outside (external pressure). While external pressure was framed positively by all stakeholders – as shown in the previous section – here we can see how pressure which is not accompanied by knowledge-building within and across companies creates obstacles for an increase in disclosure and the uptake of actions reducing emissions across the supply chain. All of these issues feed doubts on whether the system is actually able to do what it is meant to do, which is ultimately achieve a more sustainable and climate-neutral food system. These doubts can circle back to the initial issues fueling more

uncertainty (see [Figure 5.1](#) in Appendix II). It is thus important to understand how these issues link to each other to envision solutions and contextualize them.

Looking at shared frames, we can notice the general focus on the lack of transparency of the food supply chain, which complicates data-gathering processes and exacerbates the knowledge gap for food companies. There is a need for improvement and standardization of secondary data across companies and within the supply chain. This lack of knowledge is present both during disclosure and action-taking processes, with action-taking being more crucial and facing the biggest knowledge gap. Moreover, all stakeholders agree that regulatory compliance drives companies to disclose, as the cost of not disclosing is high. However, external pressure to disclose may prioritize reporting over emissions reduction, hindering the ultimate goal of the system.

Looking at conflicting frames, for some internal stakeholders the nature of the food sector creates limits to the level of transparency and traceability achievable: they express doubts regarding the role of primary data, while external stakeholders disagree on issues related to data ownership and data sharing. The cost of disclosure and action-taking is also framed more narrowly by companies, prioritizing internal costs, while external stakeholders also focus on the cost for farmers. This shows that scope 3 disclosure is not an internalized process: for external stakeholders, the issue lies with companies viewing the process only as a cost in the present and not as an opportunity to reduce climate-related costs in the future. Finally, all stakeholders recognize the mismatch between disclosure and action-taking. Pressure needs to be directed towards accountability but also towards action and rewarding: however, external stakeholders fear that companies might shift the pressure towards farmers and actors with less power in the supply chain.

5.2.4 Solutions

The following section will present how stakeholders frame the solutions associated with scope 3 disclosure and action-taking, with four frames of analysis emerging:

1. **Accessibility/Affordability of Data**
2. **Standardization for transparency**
3. **Financing, Incentivizing, and Scaling Up**
4. **Public and Private Sector**

These four frames will ultimately connect to the issues highlighted in the previous section, showing how to advance actionable solutions for the food processing sector, how different solutions affect the actors involved and which solutions still need further research to understand how to shift from conflicting to shared frames. After an in-depth explanation of the 4 frames, the final section will present shared and conflicting frames for Solutions.

Accessibility/Affordability of Data

As shown in the previous section, stakeholders identify data quality and availability as an important issue to address, recognizing the issue of accessing primary data, and the uncertainties that still characterize secondary data. **For internal stakeholders**, the first step to solve the issue of data-gathering is to have better and more affordable data. One sustainability manager mentions this in relation to the complexity of calculating emissions every year to update the process of disclosure [B]. A solution was seen in automating data collection, and using technology to speed up the process, hence reduce the cost associated with data-gathering. Companies involved in accurate data-gathering processes, such as HowGood, Regrow and Normative, already provide more accurate databases for companies to engage in their value chain with a clearer picture of their scope 3 emissions. In order to solve the issue of the variety of data sources and emission factors, internal stakeholders propose to have shared data across the supply chain through the use of public databases [B]: this is also shared by external

stakeholders [H, J, L]. The use of public databases could also redirect companies' resources towards action rather than on calculation, speeding up the process of GHG reduction [B]. Therefore, affordability is seen as a driver for action, although reliable data are still seen as necessary by all stakeholders to drive action [B, C, E, F, G, I].

All external stakeholders share many of the concepts expressed by internal stakeholders. As mentioned in the Key Issues section, both primary and secondary data have their limitations, and choosing between primary and secondary data has a trade-off, between obtaining higher quality data and allocating more time and resources to do so [I, C]. Therefore, while primary data are recognized to be of higher quality, access to reliable secondary data is important to allow all companies to disclose emissions which can then be acted upon. For many external stakeholders there is potential to ultimately reduce emissions using both data sources by establishing a 'data journey' and calculating primary data when specific raw materials require more effort [F, D] (David Burrows, 2022): this concept is seen as having the potential to shift companies' perception of data gathering. Frontrunners share this idea, showing commitment to increasing data quality and having the advantage of having started the journey before the rest of the sector (Anastasia Volkova, 2022b): according to General Mills, *'data collection and a cost effective analysis methodology that is aligned with carbon accounting standards'* is a critical component of the company's sustainability journey (Anastasia Volkova, 2022b).

However, it is important to recognize SMEs' and non-frontrunners' concerns regarding data accessibility [A]. This is why **secondary external stakeholders** also consider making emission factors of important raw materials public at the national level and sharing data across companies in the value chain. The latter is important to create a network within a company's value chain that starts with data-gathering and strengthens through collaboration to reduce emissions (Can tech help us). **Both primary and secondary external stakeholders** also mention the role of technology to automate, reduce costs and make disclosure scalable, accessible and helping all companies in the supply chain [F] (Sofia Pyrgioti, 2023). Stakeholders working with farmers mention the role of technologies for data gathering in farms [C, D, E, F]: *'encouraging the adoption of innovative technologies such as using farm management software for more efficient crop management can enable farmers to optimize inputs, reduce waste, and improve overall efficiency.'* (Corrina Filipović, n.d.). Automation is also seen as an important resource to reduce the burden of primary data collection on farmers, thereby reducing the power imbalance across the supply chain and allowing more space for collaboration [F, I]. Moreover, automation will also allow SMEs to track emissions in a cost-effective way [F]. However, all stakeholders recognize that these initiatives are not moving fast enough for companies to be able to wait for definitive solutions coming from technology [F, B] (Sofia Pyrgioti, 2023). This is where the role of regulators might come in, as highlighted by Stenzel and Weichmann (2023). Public regulators could ease the process of data access and data sharing across companies, aside from providing public databases for reliable emission factors and incentivizing common data platforms across a company's supply chain to avoid sensitive data-sharing (Stenzel & Waichman, 2023).

Finally, in order to allow companies to report on actions using granular data while accounting for the transient nature of supply chains (described in section 5.2.1), **mass balance is discussed by external stakeholders** [F, I, D,] as a way to align the guidelines on reporting actions to the reality of the supply chain: given the complexity of sourcing the origin of a crop back to the farm in which it was grown, companies can account for emissions reduction actions carried out within a supply shed, meaning a specific group of suppliers growing a similar crop in proportion to the volume of goods produced (Alexi Ernststoff, 2023). Using mass balance allows companies to be recognized for actions in the supply chain even if traceability is currently not high, incentivizing actions through accountability.

To sum up, there is a consensus on the role of the public sector in facilitating data-sharing by easing regulations and establishing public databases, as mentioned by Stenzel and Weichmann (2023). **All stakeholders** share the idea that technology is a crucial enabler for both primary and secondary data collection processes. In particular, primary data has the potential to become more accessible thanks to automation of in-farm data gathering, with positive outcomes for both companies and farmers by reducing burdens and improving efficiency. **External stakeholders** recognize that frontrunners will initially benefit more from these technological advancements, and that SMEs will struggle more to access granular data. For this reason, **internal stakeholders** ask for reliable public databases to allow free access to reliable emission factors to ease the initial process of data collection. Additionally, achieving data granularity while accommodating the concept of mass balance is emphasized to enable companies in the food sector to monitor emissions effectively, even in the face of volatile supply chains. Finally, there's a shared understanding that despite data imperfections, action remains the final objective: external stakeholders emphasize that the discourse around the trade-off between data quality and action needs to be shifted to a more positive one enhancing a data journey for companies, whose destination is the reduction of GHG emissions in the food value chain.

Standardization for transparency

The focus on the following frame is on solutions to increase transparency through standardizing scope 3 disclosure. **Standardization through mandatory disclosure is seen as an important driver to lead to higher levels of disclosure.** This idea is shared by all stakeholders: **internal stakeholders** recognize that mandatory disclosure will help level the playing field and force everyone, and not only the companies already committed to sustainability, to disclose scope 3 emissions [A, B]. Standardization is thus mainly framed as mandatory disclosure by stakeholders across all groups [A, B, L, C, G, I, J] (ClientEarth, 2019; Morgan Gillespy, 2024; Sofia Pyrgioti, 2023). For companies standardization is also important to be able to claim action (EcoVadis, n.d.; Marion Verles, n.d.-a, n.d.-b; Morgan Gillespy, 2024), and a mandated disclosure will allow frontrunners to claim better performance with regards to disclosure.

In order to claim action, **internal stakeholders** also call for exhaustive guidance, given the above-mentioned mismatch between disclosure and the actions taken to reach the targets set by companies. **Among all stakeholders** interviewed and the documents analyzed, a specific concept is presented as a potential solution, albeit with many different opinions on the matter: allowing market-based mechanisms to be accounted for in scope 3 disclosure. **Market-based mechanisms** are already allowed to account and disclose scope 2 emissions, to account for the purchase of renewable energy and the eventual reduction of the emission intensity of the company's operations because of the use of renewable energy (GHG Protocol, n.d.). The implementation of market-based mechanisms for agricultural emissions is currently debated by the GHG Protocol (GHG Protocol, 2024): this would allow companies to account for actions aimed at reducing scope 3 emissions for commodities purchase from common pools with other companies, and in which direct contracting with suppliers or traceability are not possible (GHG Protocol, 2024). Stakeholders have mentioned market-based instruments in the interviews, but no consensus has emerged on the implementation of the measure. In particular, different measures regarding its implementation have been mentioned (inset credits, supply shed interventions, mass balance certifications) [C, E, F, G, H].

However, there are different opinions regarding market-based mechanisms. The framework is still a debated one, however there is a recognition that market-based mechanisms could solve the difficulty of accessing the specific origin of some raw materials in the food supply chain, along with allowing companies to report actions from a supply shed even when supply chains are changing every year. The concept emerged as a solution in the making and needs more research to understand which type of mechanism could benefit the most the food system as a whole. Market-based mechanisms are mentioned specifically by MNCs, which

because of their complex and tentacular supply chains could benefit from such a framework (Barry Callebaut, Nestle, Mars, General Mills). Particularly, collaboration between companies in the food processing sector to define a feasible framework [I] (Marion Verles, n.d.-a) could solve the issue of allocating emissions and emission reduction in supply chains in which companies source from the same middlemen. Some stakeholders are more skeptical with regards to market-based mechanisms [B, L, N, M]. These issues are related to the issues brought forward by many stakeholders after market-based calculations were allowed for scope 2 emissions: one stakeholder mentions the controversial effects that this mechanism has had in pushing for a faster adoption of renewable energy [L], and it is backed by some research on the matter (Brander et al., 2018). Moreover, they mention the possibility that such a mechanism could backfire, becoming a market for profit rather than a market for reductions: *'are we able to control these markets to produce the type of output that they need to produce, and not just trade'* [L]. Looking at the current discussion brought forward by the GHG protocol, along with the doubts expressed, there is still not a general consensus on how to implement and regulate such a framework.

Regardless of market-based mechanisms, **some internal stakeholders** advocate for companies in the food processing sector to collaborate to standardize monitoring and calculation processes to create a more collaborative and standardized environment [B] (Marion Verles, n.d.-a, n.d.-b; Morgan Gillespy, 2024) to then compete for impacts. **According to external stakeholders**, these collaborative structures can also benefit SMEs through the creation of consortiums: one sustainability manager mentions this as a solution to standardize disclosure across a series of small companies engaged in the same sector, to also overcome the issue associated with cost [G], while both internal and external stakeholders see consortiums as a way to also generate impact in SMEs' supply chains through collaborations and engagement with common suppliers [B, E, I].

To sum up, all stakeholders recognize the role of mandatory disclosure as an important driver for standardization. Internal stakeholders highlight not only the need to push, but also the need to guide: the concepts of mass balance and market-based instruments are discussed as potential drivers. However, they still lack a consensus across all three stakeholder groups, but there is the acknowledgement that the food sector is a specific sector which needs specific solutions. Moreover, **some stakeholders** put emphasis on collaboration across companies to achieve consensus on reporting practices, encouraging competition on actions rather than reporting.

Financing, Incentivizing, and Scaling Up

All stakeholders recognize financing as the most important measure to act and reduce emissions. A recent Climate Policy Initiative (CPI) study indicated that agriculture has traditionally received low investments when it comes to climate mitigation (2.5% of total climate finance in 2020), and that the sector would need 26 times more annual funding (USD \$423 billion in annual investment by 2030), to align with the low-carbon trajectory. In addition, the investment gap in nature-based solutions remains exceptionally high (Daniela Chiriac et al., 2023).

To achieve the necessary reductions in the agricultural supply chain, **stakeholders** recognize the need to increase in-farm projects to shift to more sustainable practices: the solution identified by most stakeholders lies in the financing of regenerative agriculture⁸ (RA), which is

⁸ **Regenerative agriculture** is an alternative means of producing food identified as having lower or even positive social and environmental impacts. In a paper by Newton et al. (2020), the authors recognize that there is still no legal or regulatory definition of the term. The authors identify process-based and outcome-based definitions, with a rapidly growing research field. Schreefel et al. (2020) reviewed 28 peer-reviewed articles to provide a definition of Regenerative Agriculture: the term relates to environmental themes such as resource management, water quality and availability, alleviate climate change, with a strong focus on

mentioned as the go-to solution by **internal stakeholders** (EcoVadis, n.d.; Marion Verles, n.d.-b, n.d.-a; Morgan Gillespy, 2024) To achieve the necessary level of implementation, farmers need to be incentivized through economic schemes (premiums) which can make regenerative agriculture a preferred alternative [C]. **The conference** highlighted the need to understand how to implement RA beyond pilot products, to reshape the way the food system works and to put farmers at the center: companies need to establish implementation strategies that put farmers at the center of the conversation, to support them through the implementation of RA. However, as the literature also shows (Newton et al, 2020; Schreefel et al., 2020), RA has been adopted as a concept by all stakeholders, however the strategy and actions to implement it are still embryonal also because there is no common definition of what RA is. The different metrics used by companies to define RA present challenges for upstream suppliers: it is necessary to align on a common framework (Morgan Gillespy, 2024).

Creating financing schemes is also discussed in conjunction with implementing a mechanism of penalties for unresponsive suppliers [A, B, D, E] (Sofia Pyrgioti, 2023). This is identified as a solution by some stakeholders, but also as an issue: a sustainability manager mentions that switching suppliers may present risks in securing commodities for the company [A], while an external stakeholder also mentions that switching suppliers will not solve the issue within the farm, and it will just lead to a different company sourcing from it [I]. The issues brought forward by these stakeholders show that penalty measures are not seen as a solution by all. Finally, **the conference** brought forward the discussion on whether companies have the necessary financial resources to drive change. A particular finding is that the biggest companies see the private sector as ready to act: the role of business financing is seen as crucial, however they recognize that a disaggregated financing is not the solution to drive change. **Frontrunners** highlighted the need for all companies to finance action so as to allow farmers to receive financing from multiple sources to bridge the lack of trust that the latter have in companies' commitments. Moreover, it was highlighted as a necessary step to build resilience in the supply chain and for the future of the company [The Future of Food and Beverage, IF, 2024].

External stakeholders highlight the power structure of the food system and the role of business financing. According to them, companies need to ensure that farmers who have already put in the effort to adopt sustainable practices are not overlooked in terms of accessing available financing [C]. Farmers need continuous advisory support throughout their sustainability journey (Webinar). Farmers do face challenges in terms of how to navigate the system, with low access to information about carbon markets and sustainability frameworks. Therefore, companies must educate farmers to ensure that all farmers have equal opportunities to participate in and benefit from sustainable practices [L, C]. **What emerged from external stakeholders' insights** is that financing is also framed in terms of a **shift to more sustainable products** (plant-based), and the fact that most companies are reluctant to address this portfolio change [E, F, G]: according to an analysis by Carbon Market Watch, among the biggest food processing companies, only Danone and Nestle discuss their actions in term of switching to more plant-based products (Thomas Day et al., 2024). Moreover, no company in FAIRR's engagement has set time-bound, board-endorsed commitments to transition towards low-carbon ingredients and products (Jo Raven, 2020). External stakeholders consider the shift to plant-based products a solution and a necessary action, given extensive research on the need for dietary shifts in order to feed a growing population within planetary boundaries (Tim Searchinger et al., 2019). **The topic was not mentioned extensively during the conference** by companies until advocates for plant-based diets brought it to the table. There is still a reluctance to think about this necessary shift.

improving soil quality, with the soil being the base of RA and that RA strongly focusses on the environmental dimension of sustainability.

The main reason brought forward by companies is that the lack of pressure from consumers in shifting to plant-based diets fast enough does not push companies to invest.

The issue of consumers' role in pushing for companies' action emerged during the conference, with a shared consensus that consumers are not going to drive the change that is needed in the food sector. According to one sustainability manager, consumers do care about the environment, however they expect companies to move first, to increase commitment while keeping food affordable and nutritious.

Scaling up is characterized by uncertainty, many stakeholders are unsure on how to effectively scale up solutions to the level needed [A, B, C, D, E]. **Discussions during the conference** highlighted the need to get buy-in for the whole supply chain, from farmers to the board. **Farmers**, as mentioned above, need financial support, but also social and agronomic measures are needed to support them during the shift to more sustainable practices: addressing farmers with a different focus, focusing on better quality, better management of the land and the positive role of technology rather than a one-dimensional environmental perspective is considered a solution to unlock more long-lasting collaboration. **The board**, on the other hand, needs to understand how environmental risks affect the company on a financial level: this risk management perspective is much more impactful compared to the environmental and social one. **Overall**, there is a need to push for a holistic perspective, acknowledging the connection between the environmental and social dimension for farmers, and of the risk management dimension for the board. This also means going beyond the financial aspect of farmers' support, and the need to build relationships which are long-term, built on trust, and that reduce the distance between farmers' and companies' needs.

This holistic narrative leads all stakeholders to highlight the role of collaboration, which was discussed extensively during the conference. **Collaboration within the supply chain** means investing in farmers to build resilience, framing actions as programs and not as projects. Stakeholders highlighted the need to end small-scale pilot projects to focus on long-term programs (4-10 years). To do so, companies must collaborate with external partners as well, leveraging the know-how of NGOs and experts from academia. **Collaboration across companies** is considered crucial in order to finance scope 3 reductions. Stakeholders from all groups mention the need to bring companies together in a pre-competitive fashion [B, D, E, F, H], something highlighted also by podcasts and the webinar (Marion Verles, n.d.-a, n.d.-b; Marion Verles & Thomas Blackburn, n.d.; Morgan Gillespy, 2024), and during the conference. In particular, organizations such as SAI Platform and TRACT aim to create a space for collaboration between companies to achieve a shared vision of what it means for companies to disclose and action scope 3 emissions. External stakeholders also mention these collective and pre-competitive frameworks for farmers and SMEs, through the creation of cooperatives fostering collaboration. **Collaboration between public and private sector** was also highlighted [C, F]. This collaboration inserts into the holistic vision that the food sector needs, and it will be discussed in the following frame.

To sum up, all stakeholders highlight the need for increased investments in agricultural projects, with regenerative agriculture seen as a potential driver to scale up sustainable practices. However, to achieve this it is necessary to incentivize farmers through economic schemes. **Collaboration is recognized by all** as a crucial driver. Despite uncertainties surrounding how to implement and scale up solutions, stakeholders see collaboration as an important catalyst, coupled with financing efforts. On the other hand, conflicting frames emerge concerning how to direct financing. External stakeholders advocate for shifting from a commodity-based system to a process-based system, prioritizing actions within farms over products leaving the farms. In contrast, internal stakeholders are more reluctant in envisioning radical changes in the food sector. Additionally, external stakeholders emphasize how financing schemes must acknowledge

the power imbalances in the food supply chain, and advocate for transitioning to plant-based products as part of sustainable practices, compared to companies' hesitancy in committing to such a shift, citing concerns about consumer preferences and potential risks.

Public and Private Sector

While all solutions mentioned above have focused on the role of food processing companies, the focus of this is on the role of the public and private sector in pushing for solutions mentioned above and where to draw the line. In particular, how can companies' actions and EU policies lead us to implementing the solutions mentioned above? As mentioned above, there is consensus among stakeholders regarding the importance of the collaboration between the public and private sector.

CSRD and mandatory scope 3 disclosure has already been mentioned extensively, with a consensus that the role of regulators will be beneficial: regulators can ease the process of data gathering and data sharing and incentivize companies to disclose and subsequently to act. However, as mentioned in previous sections, the conference also highlighted two sides of increasing regulations on disclosure:

1. **Accountability for all companies**, therefore leveling the playing field for companies that are acting beyond industry average.
2. **Taking resources away from action.**

Moreover, the transformative potential of the CSRD will mostly be for companies lagging behind. Data harmonization and the role of regulations has also been discussed: companies hope that regulations will help but the space that regulations leave for interpretations (by different companies, by regulators themselves) is an obstacle. In order to solve this harmonization needs to happen across stakeholders' ideas on what to bring forward (pre-competitive environment).

There are also **a number of policies indirectly connected to scope 3 disclosure and action-taking** for food processing companies discussed by stakeholders, which however lack a widespread consensus across all three stakeholder groups:

- **Corporate Sustainability Due Diligence Directive (CSDDD)**⁹: insights from the conference have shown how the CDDD has been framed as having transformative potential to push companies to act in order to implement sustainable practices in their supply chain.
- **Carbon pricing**¹⁰: in particular, frontrunners consider future public policies on carbon pricing a risk, focusing on implementing internal carbon pricing mechanisms to build capacity before an eventual regulation is put in place.
- **ETS for agriculture (AG ETS)**¹¹: insights from the analysis have shown how the idea of an ETS system for agriculture has surfaced among all stakeholder categories. The system

⁹ **The CSDD** is an EU directive requiring companies operating in the EU and covered by the scope of the directive to engage in due diligence to identify, prevent and mitigate negative social and environmental impacts within their operations, subsidiaries, and value chains. Large companies must also develop a trajectory to reduce emissions and align to the 1.5° threshold set by the Paris Agreement. This framework ensures both compliance with regulatory requirements and the promotion of sustainable and ethical business practices (**SOURCE EU COMMISSION**). For more information, visit the website of the EU Commission (https://commission.europa.eu/business-economy-euro/doing-business-eu/corporate-sustainability-due-diligence_en)

¹⁰ **Carbon pricing** is an instrument that captures the external costs of greenhouse gas (GHG) emissions—the costs of emissions that the public pays for, such as damage to crops, health care costs from heat waves and droughts, and loss of property from flooding and sea level rise—and ties them to their sources through a price, usually in the form of a price on the carbon dioxide (CO₂) emitted' (**SOURCE WORLD BANBK**). For more information, visit the website of the World Bank (<https://carbonpricingdashboard.worldbank.org/what-carbon-pricing>)

¹¹ **An Agricultural Emission Trading System (ETS)** applies the polluter pays principle to agricultural emissions, pricing emissions and allowing emission allowances to be traded among polluters. Ideas regarding the application of

would be based on carbon pricing mechanisms, and if implemented it would give credit to frontrunners' evaluation of future risks for companies. In particular, some external stakeholders have mentioned how the system could lead to lower emissions in the agricultural sector in the long term: a policy analyst highlighted the role an ETS system targeting scope 3 emissions of food processing companies could increase accountability without shifting the burden on farmers [K], and the opinion is shared by other external stakeholders as well, who see it as a solution to push companies to implement large-scale emission reduction strategies [C, D]. However, not all stakeholders see an ETS system as beneficial, highlighting how it will inevitably impact farmers as well, causing the anti-institutional sentiment shared among farmers across Europe to exacerbate even more [J, L].

Overall, these regulations need more research to be given a precise role in the context of scope 3 emissions, as these policies are either not implemented yet or not yet envisioned as future policies.

Despite these uncertainties, external stakeholders still consider the role of the EU food policy as crucial to achieve a more sustainable food system and to impact food companies' scope 3 reduction strategies. In particular, the role of subsidies is discussed, and the need for the EU to embark in a radical transformation of the food sector by redirecting subsidies towards more sustainable practices (Marion Verles & Thomas Blackburn, n.d.; Morgan Gillespy, 2024): however, external stakeholders also highlight the complexity of changing the system of subsidies allocation in a system whose power imbalance is fueling farmers' protests, directing their concerns towards environmental protection policies [E, L]. Insights from stakeholders show that while the role of food policies can be transformative, social, and political issues make the path a complex one.

To sum up, there is a consensus on the role of the CSRD as a positive driver in terms of increasing disclosure, despite some concerns regarding unintended consequences. Regarding other policies mentioned, there is not a shared consensus on which policies will be more beneficial and easier to implement, as they are all characterized by doubts. The role of the EU food policy is highlighted as a core policy influencing the agricultural supply chain. The evolution of EU food policies will thus be an important leverage to increase or reduce companies' commitment to reduce emissions in their agricultural supply chain.

Shared and Conflicting Frames of Solutions

All stakeholders identify actionable solutions to mitigate the issues associated with scope 3 disclosure and action-taking. These solutions are connected to the emerging themes from Key Issues (see [Table 5.4](#) for overview).

Solutions connected to data issues, the lack of transparency of the system and the knowledge gap limiting actionable choices relate to the role of the public and of sector-specific guidance in easing regulations on data-sharing and creating public databases to standardize the process, benefiting SMEs and non-frontrunners who are approaching the issue of scope 3 disclosure. Technology is acknowledged to be an important driver to automate data collection, with the potential to benefit both companies and farmers. Stakeholders mention new concepts to be adopted to favor companies' adoption of scope 3 disclosure, with particular emphasis on **mass-balance** (to monitor emissions given the volatility of food supply chains) and **market-based instruments**. However, the role and effectiveness of the latter is still characterized by a

the policy are diverse, and it can operate at different points in the agri-food chain (On-farm ETS, Upstream ETS, Downstream ETS) (SOURCE TRINOMICS REPORT). For more information on current ideas and potential applications, see [https://ieep.eu/publications/applying-the-polluter-pays-principle-to-agricultural-emissions/#:~:text=An%20emissions%20trading%20system%20\(ETS,on-farm%20mitigation%20measures%20available](https://ieep.eu/publications/applying-the-polluter-pays-principle-to-agricultural-emissions/#:~:text=An%20emissions%20trading%20system%20(ETS,on-farm%20mitigation%20measures%20available).

variety of opinions, highlighting the need for more dialogue across stakeholder groups. **Moreover, there are conflicting opinions regarding the feasibility of scaling up solutions,** especially regarding the role that technology and automation. All stakeholders agree on the necessity of taking actions to reduce emissions, however the tradeoff between data quality and action is still hindering progress. There is a necessity to overcome this tradeoff by shifting the way solutions are thought of in a system that is inherently volatile and imperfect.

Stakeholders also emphasized the need for disclosure to lead to actions and the risk that regulatory compliance would stop at disclosure. All stakeholders recognize mandatory disclosure (EU CSRD) as a driver for emissions reduction, since it will increase transparency and accountability among the food processing companies covered by the regulation in the EU, along with a cascading effect on the supply chain. A solution to avoid the risk of disclosure becoming the goal of the system instead of a driver for GHG reduction is the focus on creating more specific guidance for companies. To push for action, companies need to collaborate not only within their supply chain, but also between each other to reach a consensus on how to act jointly within shared supply sheds, understanding how to allocate emissions and reductions between them and how to push for more sector-specific guidance. Collaboration to standardize in-farm emissions reporting is an important driver to focus the majority of resources on financing transitions within farms. Regenerative agriculture is seen as a potential solution, along with the use of economic schemes that make the transition truly a better option for farmers. Like for technology and automation, the way to scale up these processes needs more attention, however more financing and collaboration are seen as relevant drivers.

Stakeholders identified farmers as important actors to tackle scope 3 emissions, highlighting the risk for the cost to shift towards farmers and the need to address emissions within farms. Stakeholders see the collaboration between the private and public sector as a way to balance the power structure in the supply chain in favor of farmers. As mentioned above, the evolution of the disclosure framework prioritizing in-farm emissions will lead to a heightened focus on farms, unlocking financing for farmers. Financial incentives are just one of the solutions: companies need to build knowledge within the supply chain, allowing farmers to benefit from regenerative agricultural practices (a solution mentioned by all stakeholders) and carbon removals.

The public sector has a role to play beyond mandating scope 3 disclosure, despite there are still a series of doubts on the effectiveness of policies coming from the EU. Stakeholders see subsidies as an obstacle to the transition: public financing needs to be redirected towards regenerative agriculture and context-specific policies based on the location of farms. However, the process to shift subsidies needs further research on the socio-economic context of EU food policies. **These policies provide interesting insights** into the potential of regulators in influencing scope 3 disclosure and action-taking beyond direct regulations on the matter, showing how scope 3 disclosure and action-taking operate within a holistic system – the food system – whose impact on the environment goes beyond GHG emissions. However, they still need further research regarding their feasibility and applicability.

5.2.5 Envisioning the Future

The following section will briefly present how stakeholders frame the future of scope 3 disclosure and action-taking, with three frames of analysis emerging:

1. **Benefits/Hindrances for the food system**
2. **Extending Commitment (Mandatory/Voluntary)**
3. **Fragmentation of the Food Sector**

These frames are closely tied with the solutions envisioned by stakeholders, highlighting how enacting specific solutions might impact the future of the system and of the food sector in the EU.

Benefits/Hindrances for the food system

Internal stakeholders predominantly view the benefits in financial terms, particularly for entities involved in the emerging disclosure market, such as consultants, data companies, and third-party verifiers. This perspective aligns with the notion that many companies still perceive scope 3 as an external factor that does not directly benefit them. While some frontrunners acknowledge potential benefits for companies, it's important to note that these viewpoints may not fully represent the broader spectrum of European food processing companies.

In contrast, external stakeholders offer a more nuanced perspective on the potential beneficiaries, focusing in particular on three actors. **Frontrunners** stand to gain not only from enhanced disclosure but also from actions taken to reduce emissions, including the opportunity to scale up regenerative agriculture. **SMEs** might be negatively affected by the evolution of the system of disclosure and action-taking, highlighting the need for targeted policies on SMEs and for them to create collaborative structures (e.g. cooperatives) to share and withstand the financial burden of the transition [G, I]. Finally, external stakeholders express hopes that the system will benefit **farmers**. Collaboration with farmers is seen as essential, offering them the opportunity to leverage carbon removals and insetting to increase their bargaining power.

Overall, while internal stakeholders focus primarily on financial benefits, external stakeholders adopt a more holistic perspective, recognizing the broader implications for three categories of stakeholders. This difference in framing highlights how companies still frame scope 3 as a financial issue and the complexity in assessing the long-term benefits of the system.

Extending Commitment (Mandatory/Voluntary)

As mentioned in previous sections, **all stakeholders** recognize the role of mandatory disclosure. At the same time, stakeholders question whether increased disclosure will effectively lead to action, highlighting the need to focus on actionable outcomes.

However, external stakeholders express uncertainty regarding the impact of future European elections on climate policies, recognizing the political nature of these decisions [C, L]. Despite these uncertainties, many stakeholders view scope 3 disclosure as a social norm that will continue to drive companies towards transparency, regardless of political shifts [C, D, F, L]. Policies such as carbon taxes and Agricultural Emissions Trading Systems (AG ETS) are discussed as potential incentives for emissions reduction, although there is a lack of consensus on their effectiveness. Additionally, the role of consumers in driving demand for sustainable products is highlighted as an important future policy direction: policies aimed at increasing consumers' knowledge are seen by some stakeholders as a necessary future development to exert pressure on companies to prioritize emissions reduction throughout their supply chains [K, L, M]. Finally, retailers – which are already identified as key pressure sources for scope 3 accountability – are expected to continue to be relevant players. Despite challenges and uncertainties, stakeholders remain optimistic about the trajectory of scope 3 disclosure and action-taking, highlighting the importance of advancing research and collaboration to address emerging issues and scale up solutions.

Fragmentation of the Food Sector

External stakeholders highlighted the evolution of the system of disclosure and action-taking as being more and more fragmented in its effects on food companies (FAIRR 2, Carbon Trust, E, F, H, I, L). In particular, according to external stakeholders, this fragmentation will happen on two different levels:

1. **Different food sub-sectors** will be affected in a different way, with dairy and meat having the most difficulty to decarbonize. This future direction aligns with what was highlighted by external stakeholders in the Solutions frame with regards to the reluctance of food companies to shift to plant-based portfolios (Jo Raven, 2020).
2. **Different path for MNCs and SMEs:** as mentioned in the previous frame, SMEs will have more difficulties in adapting to the system, and despite not being directly targeted by regulations regarding disclosure (e.g. CSRD), external stakeholders mention the cascade effect that scope 3 disclosure will have on SMEs due to retailers' pressure, lead more SMEs to disclose. This idea brought forward by external stakeholders [E, I] was confirmed by a sustainability manager interviewed, who highlighted that the pressure from supermarket chains led the company disclose scope 3 emissions.

Shared and Conflicting Frames of Envisioning the Future

Looking at how stakeholders envision the future of scope 3 disclosure and action-taking for the EU's food processing sector, **internal stakeholders** primarily focus on the financial benefits of scope 3 disclosure for consultants, data providers, and third-party verifiers, while **external stakeholders present** a more nuanced view, with hopes that the system will not only benefit frontrunner companies, but also farmers, highlighting how successful collaboration within the supply chain could benefit a wider number of stakeholders. **All stakeholders** foresee extending commitments for companies, particularly through the evolution of mandatory disclosure under the CSRD. External stakeholders are however more cautious regarding its effects, due to uncertainties on how the future political climate of the EU might affect the Union's commitment to environmental protection. Despite these uncertainties, **all stakeholders** view scope 3 disclosure as an emerging social norm albeit there is still no consensus on specific policies like carbon taxes or agricultural emissions trading systems, which – as shown in the solutions section – need further research.

Stakeholders also agree in viewing the future of scope 3 emissions becoming more fragmented in relation to the food sub-sectors: dairy and meat will face significant challenges in decarbonization, and the disparity between multinational corporations (MNCs) and small and medium-sized enterprises (SMEs) shows the need for a focused approach on SMEs within the EU. To conclude, the transition from target-setting to emissions reduction remains a contentious point. **External stakeholders** envision the need to shift to process-based approaches focusing on actions within farms rather than setting targets and reporting results, but many remain skeptical about the potential for meaningful emissions reduction in the short term. This highlights the need to focus on actions within the food supply chain and to set up process-based frameworks to effectively tackle emissions reduction challenges in the food supply chain.

5.3 Shared and conflicting frames emerging from the analysis

Insights from the qualitative analysis has identified four macro-frames, whose insights can be connected to identify a pattern of shared and conflicting frames. **Overall**, stakeholders universally recognize the importance of addressing Scope 3 emissions, albeit with varying degrees of urgency. External stakeholders view Scope 3 disclosure as an opportunity, emphasizing its potential financial and reputational benefits, while internal stakeholders perceive it primarily as a risk. Pressure from regulatory bodies and market forces is acknowledged as essential for driving change, particularly within the food processing industry. However, the analysis of moral judgements highlighted that all stakeholders are concerned regarding how to best implement regulatory frameworks, while external stakeholders also focus on the power dynamics within the supply chain. The evolving nature of the system presents both opportunities and challenges, and stakeholders recognize the schism between acting to reduce emissions and complying to the norms of disclosure and target-setting.

Key Issues show how data issues, lack of transparency, and knowledge gaps are interconnected, each one contributing to inhibit actionable solutions. While all stakeholders recognize regulatory compliance as a driver for disclosure, there's a risk of it stagnating at reporting, neglecting meaningful emissions reduction actions in the agricultural supply chain. Conflicting frames relate to the nature of the food sector, particularly regarding transparency and traceability, and to the perceived cost of disclosure and action-taking, with internal stakeholders focusing more narrowly on internal costs. External stakeholders also highlight the mismatch between reporting and action-taking, with concerns that external pressure may inadvertently shift the burden to less powerful actors in the supply chain, most importantly farmers.

Solutions encompass the role of the public sector in easing regulations on data-sharing, technology-driven automation, and achieving data granularity. All stakeholders recognize that collaboration within and between sectors is crucial, along with the need for specific guidance to bridge the gap between disclosure and action-taking. However, conflicting views persist regarding the feasibility of scaling up solutions, particularly concerning technology and market-based instruments. There's an emphasis on ensuring that disclosure leads to meaningful action, with attention to avoid regulatory compliance stagnating at reporting. Additionally, the importance of focusing on farmers and incentivizing regenerative agriculture is underscored, although uncertainties remain regarding the scalability of such practices. However, internal stakeholders fail to acknowledge the need to shift to plant-based portfolios to reduce emissions. Policy interventions beyond direct regulations are proposed, reflecting a holistic approach to addressing Scope 3 emissions within the broader food system.

The solutions highlighted also connect to **the future envisioned by stakeholders**: while internal stakeholders focus primarily on the financial benefits of the system, external stakeholders highlight benefits for frontrunner companies while hoping for farmers to benefit from the system as well. All stakeholders recognize the emergence of scope 3 disclosure as a social norm, despite some external stakeholders expressing caution regarding the effects of mandatory disclosure due to political uncertainties in the EU. Stakeholders foresee a fragmented future for scope 3 emissions across food sub-sectors and between MNCs and SMEs, with the latter requiring focused attention within the EU. Finally, the transition from target-setting to emissions reduction is contentious, highlighting the need for action-oriented frameworks and incentives.

The insights gathered from observing the conference have highlighted how collaborative environments characterized by stakeholders' interest to gather information from other sustainability professionals can unlock new possibilities to advance solutions for the food sector:

- **Focus on farmers** and on unlocking change through action.
- **Focus on the need to finance the transition** to a more sustainable food system
- **Focus on collaboration** within the supply chain and across the sector.
- **Projects building trust need to last longer**, long-term vision to be established from the farmer to the board.
- **Consumers cannot lead the transformation**: companies and policies must lead the way.

A summary and overview of the results of the analysis can be observed in Appendix II ([Figure 5.2](#))

6 Discussion

The aim of this chapter is to review the findings of this thesis and analyze them critically to build the foundation for its concluding remarks. First, the results are contextualized and analyzed in relation to their significance and relevance to the research questions and the sub question, to contribute to the current state of knowledge on scope 3 disclosure and action-taking. Second, the research method will be discussed in relation to its design, implementation, and considerations of validity, reliability, and generalizability, along with the acknowledgement of its limitations. The last section will discuss the implications for both research and practical applications, along with identifying potential directions for further research and implementation strategies.

The aim of this thesis is to provide stakeholders and the academic world with insights on which directions the system of scope 3 disclosure and action-taking in the EU's food processing sector might take in the future and the nodes to address. To do so, the thesis has identified shared and conflicting frames among stakeholders regarding the system, its current situation, its issues, its solutions, and its future direction. Research on scope 3 disclosure has largely been quantitative in nature, with a focus on assessing drivers and issues related to scope 3 disclosure (see Chapter 3). The qualitative nature of this thesis has aimed to go beyond this level of analysis and delve into what stakeholders working in the food processing sector think of scope 3 disclosure and action-taking, to identify not only issues, but also solutions and future directions, and how their understanding is shared or diversified. By highlighting shared and conflicting frames, this thesis highlights which solutions aimed at increasing companies' commitment to scope 3 disclosure and action-taking are characterized by a shared consensus and which ones need more collaboration and further research to provide the benefits that some stakeholders identify. The research questions addressed in this thesis are as follows:

RQ1: How do different stakeholders frame the impacts of Scope 3 emissions disclosure and action-taking in the food processing sector in the EU?

- **What is the current state of Scope 3 emissions disclosure** in the food processing sector in EU14?

RQ2: How do these frames inform shared or conflicting views around Scope 3 emissions disclosure and action-taking in the food processing sector in the EU?

6.1 Interpretation of Findings, significance, and relevance

Comparing the empirical results with the literature review, which reviewed research and grey literature focused on MSIs, carbon disclosure and scope 3 disclosure in the food sector, there are recognized issues associated with scope 3 disclosure and action-taking. These issues are related to the nature of scope 3 and the indirect influence that companies have on their value chains, and an analysis of the food sector shows that value chain emissions are particularly relevant for food processing companies. The literature highlighted the inaccurate emissions calculation of the agricultural sector, the inadequate level of disclosure of food companies, the issue with data accuracy and availability and the complexity of taking actions to reduce emissions, also providing a positive picture of the increasing number of companies disclosing and solutions to reduce data issues (Blanco et al., 2016; Hansen et al., 2022; Hertwich & Wood, 2018; Patchell, 2018b; Reavis et al., 2022; Stenzel & Waichman, 2023). However, the focus on quantitative studies have mostly highlighted **the issues of scope 3 disclosure without envisioning a way forward**. Understanding stakeholders' perspectives on the evolution of the system is important to capture how the issues emerging connect to the solutions and which solutions exist versus which ones still need more consensus among practitioners. Moreover, previous research has highlighted that increasing disclosure is not accompanied by a reduction of emissions, so understanding how scope 3 disclosure connects to the actions taken is also important.

The research has tried to answer these questions using qualitative research aimed at capturing stakeholders' perspectives of scope 3 disclosure and action-taking in the EU's food processing sector. In particular, different research questions were answered:

What is the current state of Scope 3 emissions disclosure in the food processing sector in EU14?

The sub-question has highlighted the increasing intention among companies to disclose scope 3 emissions, indicating a positive trend in transparency and accountability in the EU14, with clear frontrunners in terms of disclosure and target-setting. **Supplier engagement** is mentioned by companies, but **the term remains a vague one**, with few examples of actions to reduce emissions, limited to small-scale, pilot programs. Despite an increasing acknowledgement of the importance of scope 3 emissions, **more than half of the companies analyzed** still did not disclose scope 3 emissions. There is also a **lack of data comparability and transparency** hindering the analysis of the process behind disclosure and SBTi-approved targets. Finally, **action-taking remains problematic, with scope 3 emissions on the rise**, highlighting a complexity to address those emissions compared to scope 1 and 2. The results of the study have also highlighted the importance of emissions from the agricultural supply chain (Category 1: Purchased Goods and Services).

RQ1: How do different stakeholders frame the impacts of Scope 3 emissions disclosure and action-taking in the food processing sector in the EU?

Frames were shown to be contextual to the nature of the food system. Particularly, stakeholders highlighted the complex and transient nature of food supply chains, with volatile contracts and commodity-based supply chains. The complexity of food supply chains causes a lack of transparency and traceability in the system, which adds up to the presence of many sub-sectors within the system itself. Stakeholders also mentioned the role of farmers and the power imbalances in the food supply chain, the differences between SMEs and large companies and the role of regulations driving actions.

Given these characteristics, the thesis has highlighted **different ways in which internal and external stakeholders frame scope 3 disclosure and action-taking.** Internal stakeholders (sustainability managers) highlight the risk of not disclosing scope 3 emissions, focusing on the role of upcoming regulations in pushing for disclosure. Frontrunners, however, also highlight the opportunity to establish strategic relationships, advance sustainable products. They recognize the evolving nature of scope 3 disclosure, highlighting issues related to data quality, accessibility, and transparency, along with the cost of disclosure and the variability of data used along the supply chain. The issue of cost makes stakeholders frame scope 3 disclosure as a financial and administrative burden, with some acknowledging its importance in increasing transparency but failing to fully recognize the cost of not disclosing. Only frontrunners recognize the need to shift the perspective within the company to highlight risk management: to do so, a more long-term vision in companies' operations is needed at the board level.

Mandating ESG disclosure through regulations like the CSRD is seen as a push to disclose by internal stakeholders, although it's viewed as a bureaucratic burden that may redirect resources away from action in the short term. There is still lack of knowledge on how to use disclosure to push for actions to reduce emissions, highlighting the need for exhaustive guidance to encourage the shift in companies' long-term vision. In terms of solutions, increased investments in agricultural projects, particularly regenerative agriculture, are seen as essential by all stakeholders to achieve emissions reductions, along with collaboration within the supply chain and between public and private sectors. However, there are conflicting views on the

direction of financing and the need for radical changes in the food sector. Regulations, particularly through established policies like the CSRD and CSDDD, are viewed as a driver for increasing disclosure: however, stakeholders hope that these policies will align to companies' current actions and to international guidance, to avoid further confusion, aiming at standardization to allow for a focus on actions to reduce emissions.

There is a common thread connecting both primary and secondary external stakeholders, who emphasize the opportunities that engaging with scope 3 brings about, including reducing costs, growing market share, building new businesses, mitigating supply chain risks, and increasing transparency to appeal to customers and investors. Like primary stakeholders, they recognize the evolving nature of the scope 3 disclosure system, along with data issues. External stakeholders focus on the importance of standardizing secondary data and promoting the adoption of primary data leveraging technology. The complexity of the food supply chain leads to a focus on transparency and collaboration with farmers, which are mentioned much more compared to internal stakeholders. Financing schemes, long-term collaboration between companies in shared supply sheds to increase trust in companies' behaviors are seen as crucial actions to implement actions to reduce emissions. Overall, external stakeholders offer a more holistic perspective, connecting scope 3 disclosure and action-taking to the need to shift to an overall more sustainable food system: to do so, a shift from a commodity-based to a process-based system (from a focus on farm's outputs to a focus on sustainable management of agricultural systems) is highlighted. Moreover, they highlight the importance of switching to more plant-based products to reduce emissions from intensive sub-sectors (e.g. dairy and meat).

RQ2: How do these frames inform shared or conflicting views around Scope 3 emissions disclosure and action-taking in the food processing sector in the EU?

All stakeholders recognize the importance of addressing Scope 3 emissions, albeit with various degrees of urgency. **There is a shared consensus in recognizing that scope 3 action-taking is ultimately the objective of scope 3 disclosure**, and that reducing scope 3 emissions is what companies need to focus on in the short-term too, while increasing transparency through disclosure and identifying hotspots through better data. Data issues are also recognized as pressing by all stakeholders, along with a general lack of knowledge on how to operationalize change, particularly in terms of scaling up the necessary actions to reduce emissions. Disclosure needs to happen with better quality data: on-farm primary data are needed, along with better access to good-quality secondary data, easing data-sharing regulations within the supply chain, allowing access to public databases.

The insights have highlighted how **regulatory pressures are a crucial driver for change**, particularly within the food processing industry, however stakeholders also express concerns regarding regulatory directives and guidelines: companies risk stagnating at the reporting stage, neglecting meaningful emissions reduction actions in the agricultural supply chain. Moreover, stakeholders express concerns regarding the risk of the regulations not aligning with companies' actions on the ground. Harmonization between the public and private sector is needed, and it can be unlocked through collaboration between the two sectors. All stakeholders also recognize the need for **collaboration beyond public and private sector**, highlighting that collaboration is also needed within a company's supply chain, particularly targeting farmers, and across companies to advance solutions in shared supply sheds in a pre-competitive fashion.

The research has also highlighted some topics which lack consensus and are still framed differently by stakeholder groups. Internal stakeholders still fail to frame disclosure as an opportunity, unlike external stakeholders, framing it mostly as a risk. However, this framing does not appear in relation to the need to reduce emissions: external stakeholders have

highlighted the need to enhance the relevance of acting on emissions reductions across the whole supply chain, from the farmers to the board, and the **risk management frame** is an opportunity to unlock actions. Another characteristic not mentioned extensively by internal stakeholders relates to the power dynamics within the supply chain. While the mismatch between reporting and action-taking is recognized by all, external stakeholders highlight concerns that external pressure may inadvertently shift the burden to less powerful actors in the supply chain, particularly farmers. Uncertainties emerged also related to the best avenues to allow pre-competitive collaborative structures to flourish: while all stakeholders recognized collaboration across companies fundamental, frameworks to incentivize them are still needed.

Moreover, there is also a lack of consensus on the feasibility and implementation of market-based instruments to be accounted for in scope 3 disclosure. There are also conflicting views regarding the feasibility of scaling up solutions, especially related to regenerative agricultural practices: this lack of consensus also extends to the role of public policies and regulations. While consensus exists regarding the role of mandatory disclosure (CSRD), external stakeholders also mention additional policies, albeit with no consensus on their feasibility and on whether they will be beneficial for the system. Finally, internal stakeholders fail to mention the need to shift to more plant-based portfolios, a topic mentioned instead by external stakeholders, despite the scientific consensus that meaningful emissions reductions can only be achieved with a reduction of per capita consumption of meat and dairy products (Clonan et al., 2016; González et al., 2020; Stoll-Kleemann & O'Riordan, 2015; Westhoek et al., 2014). This reluctance to address such a crucial topic needs further attention within the system and by research.

Overall, these insights are important to understand the future direction of scope 3 disclosure and action-taking, along with which solutions are shared across the stakeholder groups and which ones still need dialogue to advance shared understandings. In the EU, the food processing sector will be pushed to disclose and to act on scope 3 emissions, so understanding the present and future direction as well as core debates regarding this direction is crucial for all stakeholders engaged to understand what is expected by companies covered by this framework.

6.2 Methodology and limitations

This section discusses the applicability of the research design, methodological rigor, and limitations. The research design was influenced by the findings emerging from the literature review, while the research problem showed the emergence of scope 3 emissions as an important focus for companies in the EU, and the relevance of the food processing sector in terms of GHG emissions in the agricultural supply chain.

This research design followed an exploratory approach based on a case study (Food processing companies operating in the EU) to investigate these shared and conflicting perspectives. The research design was restricted to focus on a specific area of the supply chain, that of food processing: the focus on food processing companies was motivated by the aim to highlight scope 3 emissions, which represent the highest share of GHG emissions for food processing companies. However, the views emerging from the analysis highlighted how solutions for the food processing sector are connected to other actors in the supply chain, both upstream and downstream. The broad focus on 'food processing' does not provide specific recommendations to specific sub-sectors, while the focus on a specific geographical and political entity (the EU) might impair generalizability to other geographies. However, the choice of not focusing on food subsectors lies in the exploratory nature of the thesis, which has highlighted how some subsectors require more specific research. Moreover, the EU is also an interesting case study to highlight the role that policies – both directly tackling scope 3 disclosure and action-taking or indirectly aimed at achieving a more sustainable food system – have and how they relate to companies' actions in the supply chain.

The present case study can be an interesting example of the evolution of companies' actions when policies are in the horizon and how to understand the role of private and public sector in a system which is becoming increasingly more regulated. The EU is where GHG disclosure is evolving faster, given the entry into force of the CSRD, thus providing an interesting first case to be analyzed for the evolution of future systems of disclosure in other geographies.

Regarding validity, the results would have benefitted from a larger sample: specifically, more interviews would have given better insights, especially with internal stakeholders beyond sustainability managers (procurement, CFOs, CEOs). Insights from stakeholders which are not as engaged in these issues as the sustainability managers interviewed would have provided additional insights on companies' process of internalization of the framework. However, this was ameliorated via perspectives gathered from the observation of the conference. Inserting farmers in the stakeholder analysis was an option which was reviewed, however the difficulty in accessing farmers and the variability of farmers' behaviors across the EU would have made it difficult to gather comprehensive opinions. More nation-specific studies on the matter might provide insights on farmers' behaviors towards food processing companies. To account for potential gaps, the analysis also covered **reports, podcasts, webinars, and websites**, which were able to give a more nuanced view and balance the potential biases that emerged during the interviews and the observation. Regarding the observation, the viewer's biases are in particular an important characteristic to address, however the results were cross sectioned with insights from the documents and the interviews to limit observation bias.

Regarding reliability, qualitative methods are prone to variability, however interviews all followed the same structure to limit excessive variability from the stakeholders' insights and were all analyzed using the same macro and micro frames. The interviews were still kept in a semi-structured format to be able to dive deeper into some concepts emerging during the discussion and contributed to expanding the richness of data. **There is no general**, one-size-fits-all result regarding solutions to scope 3 emissions disclosure and action-taking. This was however never the aim of the thesis: despite this, the research was able to highlight the connection between the climate dimension of environmental sustainability (focus on scope 3 emissions) to a more holistic perspective on food sector sustainability, in which climate is one of the many proxies to understand a company's impact on the environment.

Framing theory is the core theory of the thesis. While stakeholder theory is also performed to identify relevant stakeholders, framing theory applied to environmental management is not a common research methodology. Framing theory was able to provide insight behind the persistence of some issues, and whether existing or envisioned solutions show consensus from different stakeholders. It was also able provide an understanding of which solutions are shared and which ones are not and still need a shared perspective to be built around them. Critiques of framing theory, as it is mostly applied in political and science communication, relate to the push for biased perspectives on contentious issues and lack of generalizability (Entman, 1993). The latter has already been discussed, and while some issues related to generalizability may arise, the thesis has also provided some insight which can be applied and analyzed beyond the case study of the thesis.

The focus of the thesis has been on scope 3 emissions in the food processing sector in the EU, and it has provided a broad number of insights and topics to address and delve into. Because of the nature of the master's degree and given the author's background in international relations, the overall thesis is highly interdisciplinary, covering carbon accounting and disclosure, supply chain management, stakeholder engagement, policymaking, sustainability governance, development studies etc. Depending on the focus of the reader and on their background, some of the insights might appear more relevant and may be perceived as in need of further attention. Issues such as the role of specific public policies (CSRD, CSDDD, AG ETS, Food policies), the role of actions from the private sector (regenerative agriculture, financing schemes, internal

carbon prices, insetting), the role of actors in the supply chain and beyond (farmers, middlemen, retailers, consumers, NGOs), the power structure of food supply chains, collaborative structures and environments have all arisen. While the thesis could have delved into these concepts more, this was never the aim and scope of the research. The identification of these concepts was ultimately a consequence of embarking into an exploratory study: by looking at how scope 3 emissions disclosure and action-taking are evolving through the emergence of these frames pushed forward by different stakeholders, the final framework emerging provides a number of avenues to expand more through companies' actions, research and/or policymaking, with the next section providing an explanation of these different future directions.

6.3 Implications for practice and research

Concerning research implications, there are a series of research opportunities based on the relevance of different insights emerging from the shared and conflicting perspectives on scope 3 emissions disclosure and action-taking. **Regarding data issues**, research on the possibility for standardization of emission factors at the EU level in conjunction with the implementation of the CSRD is needed, to understand how companies will deal with mandatory disclosure given the existing issues regarding data reliability and issues of data variability within supply chains. Moreover, as the need for publicly available, reliable secondary data emerged, understanding how to unlock data access is crucial not only at the EU level (as emerging from **section 5.2.4**).

The role of farmers in the transition in the EU has also emerged as an important topic: farmers' actions to allow companies to report reductions, such as insetting measures, or the effect of a possible implementation of market-based mechanisms, are interesting avenues to explore (*Standardization for transparency* frame). In particular, the understanding of these measures may be analyzed from an economic and/or social perspective, to understand the financial benefits for farmers and the social constraints that these measures may imply, and the effects of these measures on scope 3 reductions for food companies engaged. **Facilitating collaborative structures for MNCs and SMEs** to harmonize the process of disclosure and act in shared supply sheds to reduce GHG emissions has emerged as a crucial topic. However, as highlighted in *section 5.2.4* by external and internal stakeholders, more research is needed in how to bring companies together in these pre-competitive structures, and the role that organizations such as SAI Platform and TRACT can have on the system of scope 3 disclosure and action-taking. Moreover, the integration of farmers in these collaborative environments brings an additional layer of complexity but may unlock new possibilities to reach a more equitable food system (*Financing, incentivizing, and scaling up* frame).

Research focused on food processing sub-sectors can also provide specific insights based on the commodities purchased by food processing companies: particularly, crops at risk of land use change (cocoa, coffee) and hard to abate sectors (dairy and meat) present specific characteristics which may benefit from specific research on the evolution of scope 3 disclosure and action-taking. For meat and dairy companies, these specificities are also related to the need to reduce global consumption of meat and dairy and to the effects that this has on companies. This research also highlighted the complexity of leveraging the power of consumers to steer companies' investments towards plant-based and more sustainable commodities, so future research might focus on understanding how to leverage change through public and private financing (see **sections 5.2.4 and 5.2.5**).

Another interesting avenue for research is the focus on the **feasibility of policies affecting scope 3 disclosure**. A future analysis of the first years of the implementation of the CSRD and the effect on companies' scope 3 disclosure and action-taking in the EU will provide an answer to whether an increase in disclosure will happen. Moreover, research on carbon pricing might also provide interesting findings, with a focus on the effects of private carbon taxes (within the

company) vs EU-regulated carbon pricing and the introduction of an ETS system for agriculture. Research might also be expanded to understand the feasibility of policies incentivizing regenerative agriculture in the EU, understanding how to achieve a legal definition of regenerative agriculture through a collaboration between private and public sector (*Public and private sector frame*).

What this thesis has highlighted is that there is **a need for more interdisciplinary research** which goes beyond the assessment of companies' level and/or quality of disclosure from a quantitative point of view. The focus on the social motives behind the barriers to disclosure and action-taking highlighted that the food system is an important variable that needs to be considered. This insight might also be applicable to other sectors, in which the focus should not only be on GHG accounting, but also on what enables or prevents this framework to be effective within the system. Particularly, the thesis highlighted that there needs to be more research on actions rather than disclosure. A body of evidence has been found on the need for more research on collaborative structures, social dimensions of supply chain relationships and context-based, actionable projects (regenerative agriculture, agroforestry, financing, and insurance schemes) if reductions in scope 3 emissions are to be achieved.

Practical implications of the thesis relate to how the conceptual framework can help stakeholders from all groups to understand how other stakeholders view and frame the framework of scope 3 disclosure and action-taking. The thesis has provided some important insights regarding what is shared among stakeholders and what needs to be discussed more to advance solutions beyond the context of the EU. There are contentious issues to be defined, but also actionable solutions that can be implemented through collaboration. The focus on collaboration has highlighted how all stakeholders are willing to share insights and harmonize disclosure and actions in the context of scope 3 emissions. Implications for companies relate to the need to focus efforts on scope 3 disclosure for the upcoming regulations on mandatory disclosure, while collaborating to harmonize data sources and to advance requests which can aid companies in reporting actions within the supply chain. Financing has shown to be crucial, along with collaboration across company groups to create a common front and compete on actions rather than on disclosure.

Policymakers can also draw interesting conclusions from the analysis. The role of policy in the EU is shown to be an important driver for disclosure, however harmonizing policies to companies' action is important to avoid disclosure to become the ultimate goal of this increasing transparency. Policies aimed at incentivizing actions to reduce emissions are needed, while easing data-gathering processes and involve actors from the whole supply chain in the discussion. The role of the EU's food policy can be a transformative one and scale up actions in the agricultural supply chain, and the thesis has shown how the complexity of the food sector needs to be tackled by companies' actions and by sound policies in a collaborative fashion.

To sum up, relevant considerations that can be drawn from this study and framework include: *Scope 3 disclosure is an important driver of transparency. Data policies are needed to ease the process of disclosure for all companies, from frontrunners to laggards. Scope 3 disclosure is not the ultimate goal, and actions are needed within the agricultural supply chain. Companies, through sustainability departments, need to involve all actors in the supply chain, especially focusing on farmers and on steering boards' decisions to highlight risk management for the company. Farmers are the core solution to unlock scope 3 emissions reductions, and trust needs to be built through long-term collaboration. Collaboration needs to happen across companies to act on common supply sheds, and between the public and private sector to scale up financing schemes. Policies need to incentivize disclosure without redirecting companies' resources away from actions, allowing companies to credibly report emissions reductions while working to solve issues within the EU's food system which go beyond scope 3 disclosure and action-taking.*

7 Conclusion

This thesis aimed to provide stakeholders and the academic world with insights on the current and future direction of scope 3 disclosure and action-taking in the EU's food processing sector, identifying stakeholders' shared and conflicting frames on the system. For this reason, this thesis hoped to contribute to a more informed perspective on which barriers are identified by stakeholders, consensus on solutions to overcome these barriers (shared frames) and the lack of consensus (conflicting frames) of some enablers. While a series of topics emerged at every level of the supply chain, the focus of this thesis was to highlight the topics and the stakeholders' perspectives on their feasibility rather than delve specifically into their specificities. For this purpose, qualitative empirical data was collected and analyzed with the application of framing theory, to answer the following research questions:

RQ1: How do different stakeholders frame the impacts of Scope 3 emissions disclosure and action-taking in the food processing sector in the EU?

- **What is the current state of Scope 3 emissions disclosure** in the food processing sector in EU14?

RQ2: How do these frames inform shared or conflicting views around Scope 3 emissions disclosure and action-taking in the food processing sector in the EU?

The sub-question highlighted a positive trend in scope 3 disclosure among food processing companies in the EU, indicating increasing transparency and accountability. However, supplier engagement remains vague, and actions to reduce emissions are limited to pilot programs. More than half of the companies still do not disclose scope 3 emissions, with persisting issues with data comparability and transparency. Scope 3 emissions continue to increase, and agricultural emissions (Category 1) were shown to be the most significant. Given these results, the focus on stakeholder's perspectives was deemed insightful to understand the framing of issues, solutions, and future direction of scope 3 disclosure and action-taking in the food processing sector in the EU.

The first research question (RQ1) has shown frames are contextual to the nature of the food system, particularly to its commodity-based supply chain, its lack of transparency and the transient nature of relationships between suppliers and customers. For this reason, internal stakeholders highlight the risk of not disclosing scope 3 emissions (see *section 5.2.2*), with frontrunners also highlighting the opportunity to establish strategic relationships; data quality, accessibility, and transparency, along with the cost of disclosure are shown to be crucial issues for internal stakeholders. Mandating ESG disclosure through the CSRD is seen as a push to disclose, but the system can also redirect resources away from actions. The lack of knowledge on how to reduce emissions, highlights the need for exhaustive guidance to encourage the shift in companies' long-term vision. In terms of solutions, internal stakeholders focus on increased investments in agricultural projects, along with collaboration between all actors involved. External stakeholders emphasize the opportunities of engaging with scope 3 emissions: cost reduction, market share growth, new business development, risk mitigation, and increased transparency. They also highlight data issues, stressing the importance of standardizing secondary data and adopting primary data, using technology to reduce costs and complexity. Collaboration with farmers and financing schemes are also seen crucial for emission reduction. A shift to a process-based system and a focus on plant-based portfolios are recommended to achieve a sustainable food system.

The second research question (RQ2) has highlighted how these frames inform shared and conflicting views around scope 3 disclosure and action-taking. There is a shared consensus that scope 3 disclosure is the core of GHG disclosure for food processing companies, and that external pressure is going to increase, pushing more companies to disclose. There is consensus

on the role of policies mandating scope 3 disclosure in increasing the level of transparency of food processing companies. Disclosure also needs to happen with better quality data, and that the focus needs to be on actions, avoiding that disclosure may cause a lack of resources being allocated towards actions to reduce emissions. To reduce emissions, financing farmers in the transition is crucial: collaboration is needed to build trust, and collaborative structures are needed also between the public and private sector and across companies. This direction is seen as necessary to build resilience in the supply chain, focusing on engaging actors from the farm to the board level. Regarding conflicting views, the research has shown that there are doubts on whether and how to implement market-based instruments to create a framework that incentivizes food companies to act. Moreover, the role of regenerative agriculture is recognized by all, but there are doubts on how to scale up in-farm projects. While collaboration across companies through pre-competitive frameworks is seen as a solution by all, the way to achieve this collaboration is still clouded by doubts. Finally, the reluctance of food processing companies of discussing the shift to plant-based portfolios highlights how companies are still grappling with how to deal with risky commitments.

The thesis' insights have contributed to highlighting the need for more research to unlock actionable interventions in the supply chain. It showed that in the EU, the food processing sector will be pushed to disclose and to act on scope 3 emissions; for this reason, understanding the present and future direction as well as core debates regarding this direction is crucial for all stakeholders engaged to understand how to push for more solutions to be adopted and for issues to be solved. It showed how going beyond an analysis of the state of scope 3 disclosure, understanding what motivates the framing of issues and solutions, can unlock connections, and provide a more holistic view of the food sector. Finally, it showed that – connected to the previous point – actions aimed at reducing scope 3 emissions are connected to a variety of social, economic, political, and environmental issues.

- **Social aspect:** the role of farmers in the transition and the role of collaboration.
- **Economic aspect:** the role of financing and the different financing streams (public and private).
- **Political aspect:** the role of policies beyond the ones directly mandating scope 3 disclosure.
- **Environmental aspect:** acting on scope 3 means also increasing the overall sustainability of the food sector, in which water, soil and biodiversity are all connected to climate issues.

The thesis achieved its aim, which was to provide insights on the current and future direction of scope 3 disclosure and action-taking in the EU's food processing sector through stakeholders' shared and conflicting frames, contributing to a more informed perspective on identified by stakeholders, consensus on solutions to overcome these barriers and lack of consensus around some enablers. Implications for research have shown the importance of focusing on researching ways solve data issues through data-sharing policies and the creation of public databases to ease disclosure. Research on the role of farmers and the social dimension of engagement is also important to incentivize large-scale projects to be implemented, along with understanding how to facilitate collaborative structures along the three dimensions identified by the thesis (within supply chains, across companies, between public and private sector). Research on the consequences of scope 3 disclosure and action-taking for food sub-sectors can also prove insightful, along with researching the effects of EU policies on scope policies on scope 3 disclosure and action-taking. The thesis has shown the relevance of interdisciplinary research beyond the quantitative assessment of companies' level and/or quality of disclosure, and the importance of increasing research on action-taking rather than disclosure.

Key practical implications include insights for all stakeholders on the way other stakeholder groups view and frame the framework of scope 3 disclosure and action-taking. The thesis has highlighted contentious but also actionable solutions to be implemented through collaboration.

Implications for food processing companies are connected to the role of mandatory disclosure policies increasing companies' transparency and financing the transition through collaboration within the supply chain, across companies and with the public sector. Implications for policymakers relate to the role of policy in the EU and the need to harmonize disclosure policies to companies' actions to incentivize large-scale reduction strategies.

In **conclusion**, scope 3 disclosure and action-taking in the food processing sector in the EU has shown to be an established framework which will evolve, incorporating more companies in the sector. Issues curbing scope 3 disclosure must be solved to allow companies to focus on actions more extensively, and collaboration across all steps of the value chain can unlock solutions to increase financing of large-scale projects, easing the process of reporting scope 3 reductions, allow farmers to gain from a shift to a more sustainable food system and companies' boards to understand the risks of not implementing reduction strategies in the agricultural supply chain. The insights gathered for this research have shown that in the EU, there is momentum for companies to act. Allowing for these actions to take place is up to future implementation of the solutions identified, while it is up for future research to go beyond the first step of this research to delve more into the many avenues which will not only achieve scope 3 reductions in the food processing sector, but a transition to a more sustainable food system.

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Appendix

7.1 Appendix I – Tables

Upstream Scope 3 emissions	
Category	Category description
1. Purchased goods and services	Extraction, production, and transportation of goods and services purchased or acquired by the reporting company in the reporting year, not otherwise included in Categories 2 - 8
2. Capital goods	Extraction, production, and transport- action of capital goods purchased or acquired by the reporting company in the reporting year
3. Fuel- and energy- related activities (not included in scope 1 or scope 2)	Extraction, production, and transportation of fuels and energy purchased or acquired by the reporting company in the reporting year, not already accounted for in scope 1 or scope 2
4. Upstream transportation and distribution	Transportation and distribution of products purchased, and transportation and distribution services purchased by the reporting company in the reporting year between a company's tier 1 suppliers and its own operations (in vehicles and facilities not owned or controlled by the reporting company)
5. Waste generated in operations	Disposal and treatment of waste generated in the reporting company's operations in the reporting year (in facilities not owned or controlled by the reporting company)
6. Business travel	Transportation of employees for business-related activities during the reporting year (in vehicles not owned or operated by the reporting company)
7. Employee commuting	Transportation of employees between their homes and their worksites during the reporting year (in vehicles not owned or operated by the reporting company)
8. Upstream leased assets	Operation of assets leased by the reporting company (lessee) in the reporting year and not included in scope 1 and scope 2 – reported by lessee
Downstream Scope 3 emissions	
Category	Category description
9. Downstream transportation and distribution	Transportation and distribution of products sold by the reporting company in the reporting year between the reporting company's operations and the end consumer (if not paid for by the reporting company), including retail and storage (in vehicles and facilities not owned or controlled by the reporting company)
10. Processing of sold products	Processing of intermediate products sold in the reporting year by downstream companies (e.g., manufacturers)
11. Use of sold products	End use of goods and services sold by the reporting company in the reporting year
12. End-of-life treatment of sold products	Waste disposal and treatment of products sold by the reporting company (in the reporting year) at the end of their life
13. Downstream leased assets	Operation of assets owned by the reporting company (lessor) and leased to other entities in the reporting year, not included in scope 1 and scope 2 – reported by lessor
14. Franchises	Operation of franchises in the reporting year, not included in scope 1 and scope 2 – reported by franchisor
15. Investments	Operation of investments (including equity and debt investments and project finance) in the reporting year, not included in scope 1 or scope 2

Table 2.1 Description of scope 3 categories. Source: Own table based on GHG Protocol (2015)

	Shared frames	Conflicting frames
Opportunity/risk	<ul style="list-style-type: none"> Scope 3 disclosure offers financial benefits and strategic advantages. It is seen as a risk not to act, particularly in light of regulatory developments. Scope 3 disclosure can drive action and improvement, ultimately contributing to reducing emissions. 	<ul style="list-style-type: none"> Internal stakeholders focus more on the risk of not acting, while external stakeholders emphasize the opportunities associated with engagement. Internal stakeholders prioritize building strategic relationships and sustainable portfolios, while external stakeholders stress financial benefits, market share growth, and supply chain risk mitigation. Internal stakeholders may not emphasize the potential financial benefits of scope 3 disclosure as much as external stakeholders.

Lack/presence of external pressure	<ul style="list-style-type: none"> • External pressure recognized as a driver for disclosure • Significant role of MSIs and regulatory pressure • Pressure from retailers and cascading effect on the supply chain • Lack of pressure from consumers 	<ul style="list-style-type: none"> • Internal stakeholders identify issues with regulatory pressure, which is shared by some external stakeholders • Conflicting views on whether pressure to disclose leads causes pressure to act and reduce emissions • Power structures in the supply chain recognized as relevant by all external stakeholders but not by all internal stakeholders
Disclosure and guidelines system in evolution	<ul style="list-style-type: none"> • Tradeoff between perfection and action 	<ul style="list-style-type: none"> • Positive and negative framing: evolving field means more opportunities; however internal stakeholders also highlight the uncertainties and the issues for companies

Table 5.2 Summary of shared and conflicting frames (Moral Judgements/ Current Situation)

	Shared frames	Conflicting frames
Data Issues	<ul style="list-style-type: none"> • Recognition data quality as a significant barrier to scope 3 disclosure. • Complexity of data-gathering processes and the lack of transparency. • Secondary data need improvement and standardization across companies and within the supply chain. 	<ul style="list-style-type: none"> • Internal stakeholders express reluctance to rely on primary data due to its complexity and cost. • Primary external stakeholders are more positive and highlight the important role of data-sharing within the supply chain. • Secondary external stakeholders highlight the issues of data ownership and competition hindering data-sharing among supply chain players. • Differing opinions on the importance and feasibility of primary data.
Cost and Administrative Burdens	<ul style="list-style-type: none"> • Cost and admin burdens recognized by all and connected to data issues. • Cost and admin burden contextual to the food supply chain (with differences based on food sub-sectors). • Cost of not disclosing due to regulatory compliance as a driver to disclose. 	<ul style="list-style-type: none"> • Cost-sharing within the supply chain emphasized by both, with internal stakeholders focusing on internal costs while external stakeholders highlighting costs for farmers. • External stakeholders emphasize the cost of not reducing emissions. Companies need to connect this cost to their actions to truly internalize the process and view it in a more positive light.
External Pressure/Lack of Internalization	<ul style="list-style-type: none"> • External pressure to disclose might hinder companies' actions to reduce emissions, leading to disclosure for the sake of reporting, rather than, reducing, emissions. 	<ul style="list-style-type: none"> • Pressure needs to be directed towards accountability but also towards action and rewarding: however, external stakeholders fear that companies might shift the pressure towards farmers and actors with less power in the supply chain.
Lack of Knowledge to Operationalize Change	<ul style="list-style-type: none"> • Lack of knowledge during both disclosure and action-taking, with the latter being more crucial to tackle given the biggest knowledge gap. • Lack of knowledge exacerbated by the food system's lack of transparency across the supply chain. • Mismatch between reporting and action-taking, so focus on companies' guidance is needed. 	<ul style="list-style-type: none"> • Internal stakeholders highlight the complexity to change a business model based on the current food system. • More positive attitude of external stakeholders: focus on farms and middlemen and on the need for a more collaborative environment within the supply chain and across companies to bridge the knowledge gap.

Table 5.3 Summary of shared and conflicting frames (Key Issues)

	Shared frames	Conflicting frames
Accessibility/Affordability of Data	<ul style="list-style-type: none"> • Role of the public sector in facilitating data-sharing through regulations and public databases • Crucial role of technology for both primary and secondary data • Benefits of automation for in-farm data-gathering • Achieving data granularity through mass balance 	<ul style="list-style-type: none"> • Disagreements on the extent or reliance on public databases and the level of intervention of regulators • Varying perspectives on whether to facilitate SMEs' adoption of disclosure capabilities • Trade-off between data quality and action perceived differently by stakeholder groups, with external stakeholders aiming to overcome the idea of a trade-off as a negative characteristic of scope 3 disclosure
Standardization for transparency	<ul style="list-style-type: none"> • Mandatory disclosure is a driver for standardization, albeit risk for it to divest resources from implementing actions 	<ul style="list-style-type: none"> • Lack of consensus for the implementation of market-based instruments

	<ul style="list-style-type: none"> • Need for sector-specific guidance to report on in-farm actions (supply sheds, mass balance, market-based instruments) • Collaboration between companies to achieve consensus on reporting practices • Emphasis on bridging the gap between reporting and actions 	<ul style="list-style-type: none"> • Offsets vs insets: some external stakeholders highlight competition risks for food companies in case offsets are allowed for all companies disclosing • Internal stakeholders: mandatory disclosure as a means to report progress vs external stakeholders: focus on tangible action.
Financing, Incentivizing, and Scaling Up	<ul style="list-style-type: none"> • Financing seen as crucial to reduce emissions • Increased investments in agricultural projects (potential of regenerative agriculture) • Incentivizing farmers through economic schemes • Collaboration between companies and within supply chains is necessary to scale up efforts 	<ul style="list-style-type: none"> • External stakeholders: need to shift from a commodity-based to a process-based system, while internal stakeholders are still reluctant in envisioning solutions that can bring about such radical change • External stakeholders: transition to plant-based products. Internal stakeholders show reluctance to discuss or commit to such a shift (consumer preferences and potential risks)
Public vs. Private Sector	<ul style="list-style-type: none"> • Regulations are needed to drive progress in emissions reduction efforts • Positive impact of the EU CSRD • Role of EU Food Policies in driving action and redirect financing efforts 	<ul style="list-style-type: none"> • Lack of consensus on the benefits of policies beyond the CSRD

Table 5.4 Summary of shared and conflicting frames (Solutions)

7.2 Appendix II – Figures

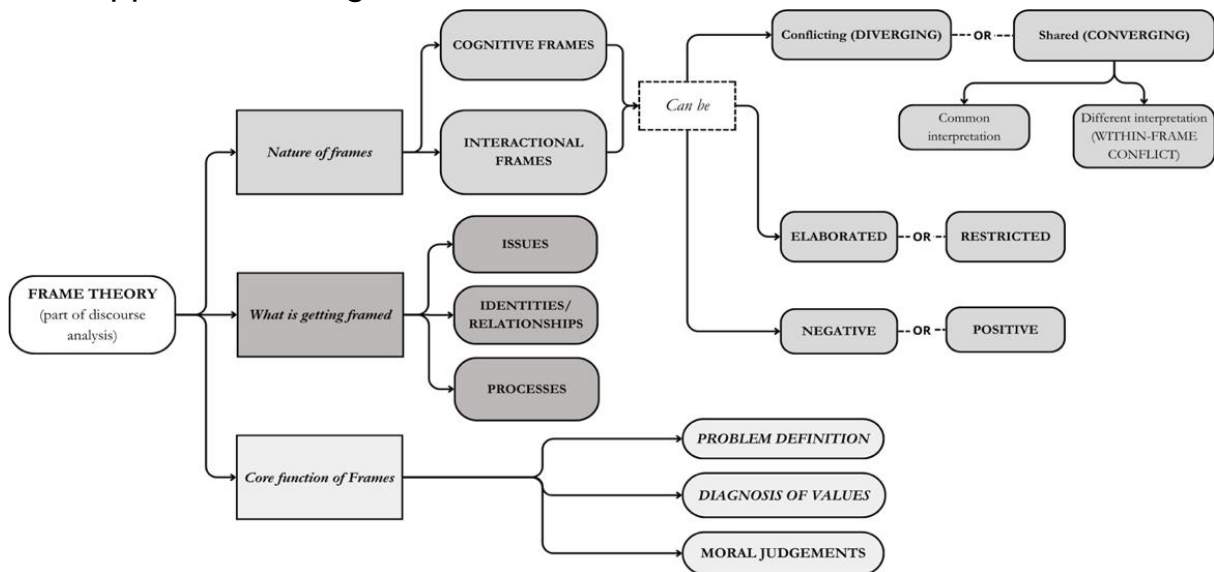


Figure 2.8 Overview of frame theory. Source: Own visual, based on Dewulf et al. (2009), Entman (1993), Eriksson & Reischl (2019), Zimmermann et al. (2022).

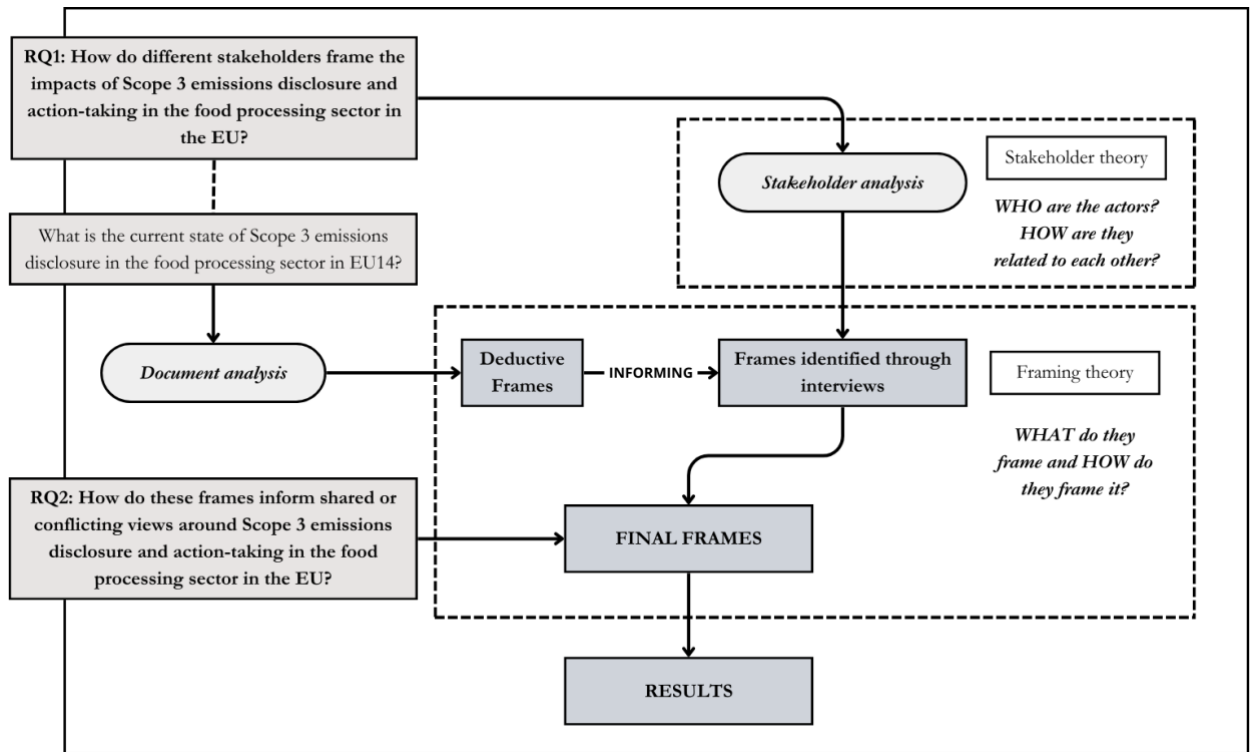


Figure 2.10 Visual representation of the theoretical framework synthesizing stakeholder and framing theory and connection with the thesis' RQs

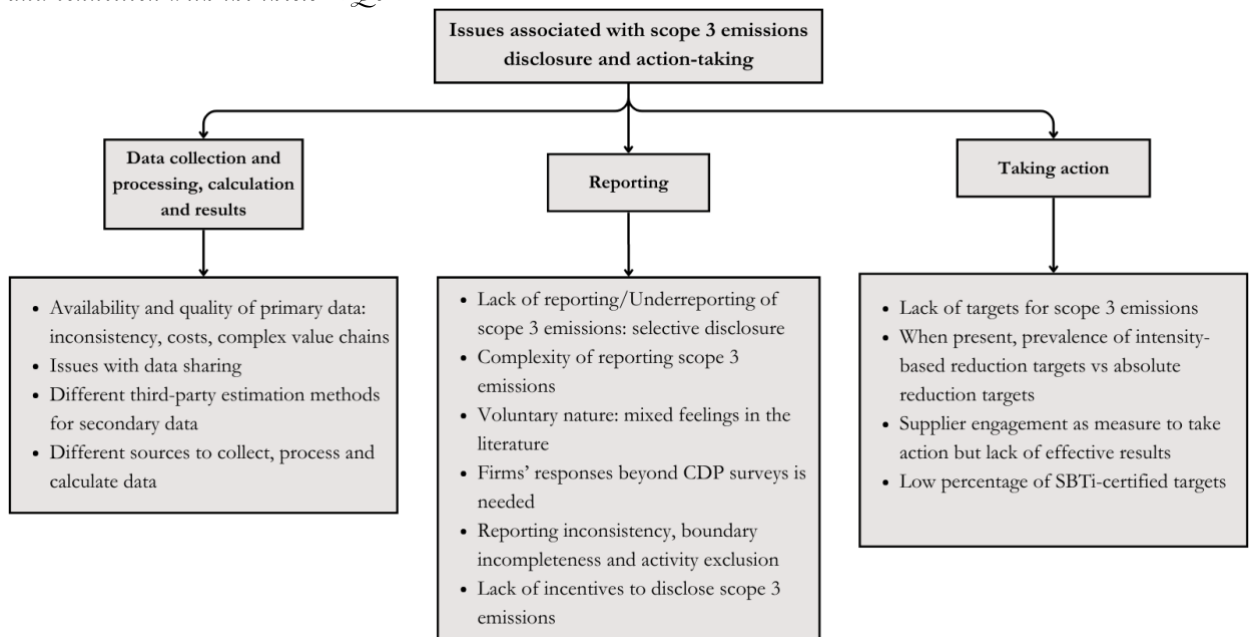


Figure 3.1 Visual representation of the issues associated with scope 3 emissions disclosure and action-taking. Source: Own visual.

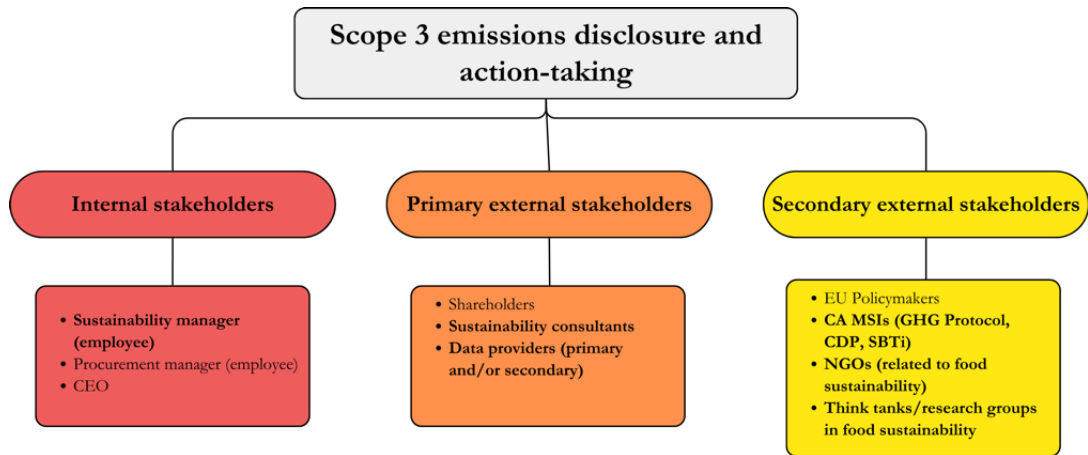


Figure 4.1 Table showing the result of the stakeholder analysis. Source: Own visual. Stakeholders in **bold** were part of the data analysis.

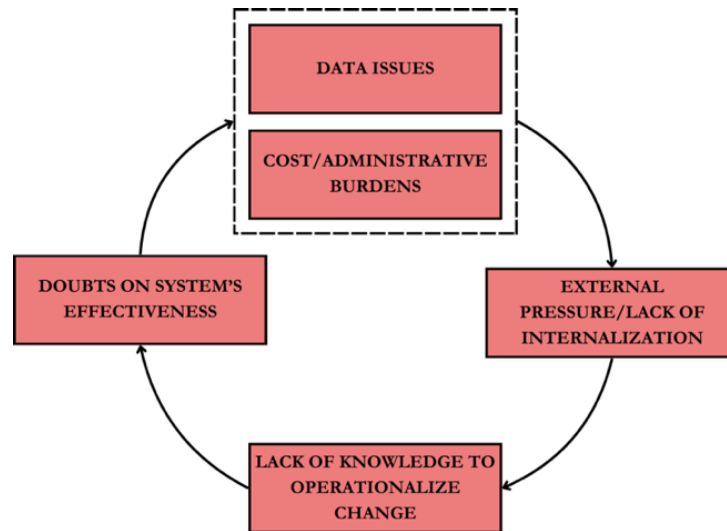


Figure 5.1 Visual representation of the emerging connection between the Key Issues frames.

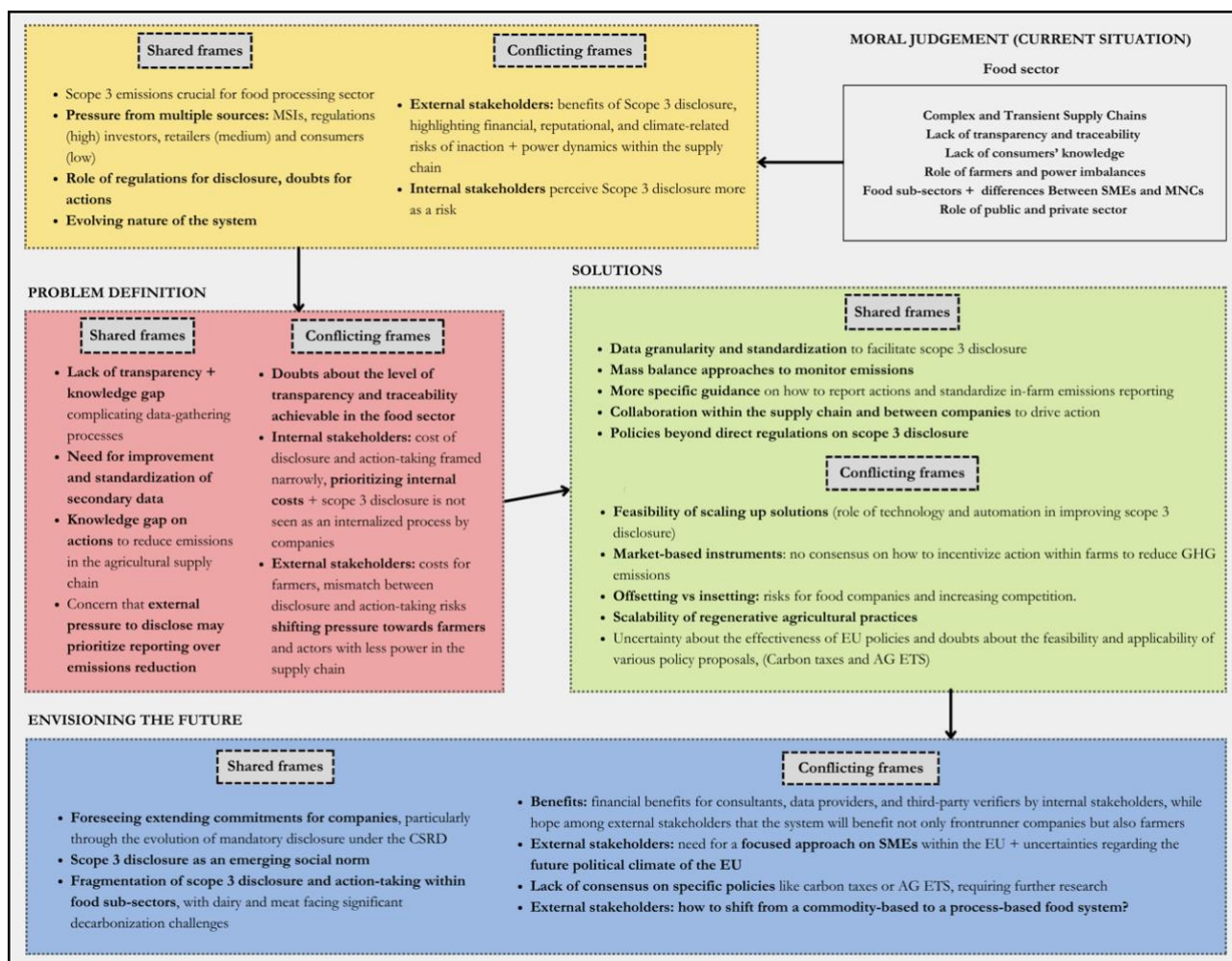


Figure 5.2 Overview of the emerging frames from the analysis

7.3 Appendix III – Initial list of companies analyzed

1	Unilever Group	20	Barilla
2	Danone	21	Nestle
3	Royal Frieslandcampina	22	Cosun
4	Arla	23	Barry Callebaut
5	Cargill	24	Ebro Food S.A.
6	Lactalis	25	Inalca Societa' Per Azioni
7	Nutreco	26	Lavazza
8	Kerry Group	27	Bonduelle
9	Jde Peet's	28	Nordzucker
10	Savencia	29	Greencore Group
11	Dmk Deutsches Milchkontor	30	Granarolo
12	Glanbia	31	Corbion
13	Roquette Freres	32	Mars
14	Greenyard	33	Aviko Holding B.V.
15	Aak	34	P/F Bakkafrost
16	Danish Crown	35	Lotus Bakeries Nv
17	Dr. August Oetker	36	Fleury Michon
18	Agrana	37	What's Cooking Group Nv
19	Unibel	38	Oatly Group Ab

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7.4 Appendix IV – List of documents used for the sub-question and qualitative analysis

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7.5 Appendix V – List of interviewees

Stakeholder type	Organization type	Stakeholder classification	Code for in-text reference
Sustainability manager	SME operating in the food sector	Internal stakeholder	A
Sustainability manager	Multinational food company	Internal stakeholder	B
General manager	Data provider for on-farm emissions	Primary external stakeholder	C
Technical manager	MSI for scope 3 emissions reduction guidance	Primary external stakeholder	D
Regulatory strategist	Soil carbon program organization	Primary external stakeholder	E
VP of product	Data provider for scope 3 emissions calculation	Primary external stakeholder	F
Sustainability consultant	Sustainability consulting company	Primary external stakeholder	G

Independent sustainability advisor	-	Primary external stakeholder	H
Sustainable Agriculture, Climate, and Food Systems Specialist	Not-for-profit organization promoting sustainable agriculture	Primary external stakeholder	I
Research associate	Standard-setting MSI for corporate GHG reporting	Secondary external stakeholder	J
Policy analyst	European Think Tank	Secondary external stakeholder	K
Member and collaborator	Standard-setting MSI for corporate ESG reporting	Secondary external stakeholder	L
Secretary general	Environmental NGO	External stakeholder	M

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7.6 Appendix VI – List of interview questions

1. What is your experience with sustainability and what led you to become a sustainability professional?
2. How long have you been working in your field?
3. What is your experience dealing with carbon disclosure?
4. In the world of carbon disclosure, have you dealt specifically with scope 3 emissions?
 - *(If yes)* 4a. What was your experience with scope 3 emissions? How does your company deal with scope 3 emissions?
 - *(If not)* 4b. Are you aware of other organizations/people you have encountered which have dealt with scope 3 emissions?
5. Scope 3 emissions in the food processing sector represent a high percentage of GHG emissions, however according to a report by the Alliance of Corporate Transparency 71.6% of companies in the Food and Beverage sector do not report Scope 3 emissions. What do consider to be the main reasons that keep food companies from calculating scope 3 emissions in their supply chain?
6. As a [type of stakeholder], which step of disclosure do you consider to be the most complex and why?
7. (Given your experience) What do you think would be a solution to allow more companies to disclose scope 3 emissions?
8. What do you think is the ultimate goal of disclosure? Does your idea coincide with what you see happening in companies after disclosure?
9. Let's talk about supplier engagement (in case of a company, how they deal with it, in case of organization depending on the organization):
 - 9a. Does your organization engage suppliers along its upstream value chain? Are there any obstacles associated with supplier engagement?
 - 9b. Do you think that supplier engagement has changed the way companies deal with scope 3 emissions?

10. Let's talk about target-setting (in case of a company, how they deal with it, in case of organization depending on the organization)
 - 10a. Does your organization set targets for scope 3 emissions reduction? Are there any obstacles associated with target-setting?
 - 10b. What is your opinion on target-setting in the food processing sector? Do you think that target-setting has changed the way companies deal with scope 3 emissions?
11. How do scope 3 disclosure and the actions taken after disclosure tie in with (depend on/support) other sustainability practices in the supply chain? Which factors do you consider to be most important to make full use of scope 3 disclosure and action-taking?
12. How do you imagine the future of scope 3 disclosure and action-taking to be? Whom do you think it will benefit the most?
13. How will the new FLAG Guidance impact disclosure and actions in the system?
14. The food sector has specific value chains and suppliers. How does this characteristic impact the actions companies may take in their supply chains?
15. Does your vision (connected to a more sustainable food system) align with this future direction?
16. Two important directives will affect the food processing sector in the EU: the Due Diligence Directive and the Corporate Sustainability Reporting Directive. In your opinion, what will be the impact of these directive on scope 3 disclosure and action-taking? Will these impacts be positive and/or negative?
17. Imagine you get called as a representative of your company to change the current system of disclosure and action-taking in the EU. What would be one thing you would change about the system?

7.7 Appendix VII – Coding framework

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Initial coding structure (no subcodes):

1. Moral judgements/Current situation
2. Key Issues
3. Solutions
4. Envisioning the future

Final coding structure (with subcodes):

1. Moral judgements/Current situation
 - i. Opportunity/risk
 - ii. Lack-presence of external pressure
 - iii. Disclosure and guidelines' system in evolution
2. Key Issues:
 - i. Data Issues
 - ii. Cost and Administrative Burdens
 - iii. External Pressure/Lack of internalization
 - iv. Lack of Knowledge to Operationalize Change

3. Solutions
 - i. Accessibility/Affordability of Data
 - ii. Standardization for transparency
 - iii. Financing, Incentivizing, and Scaling Up
 - iv. Public and Private Sector
4. Envisioning the future
 - i. Benefits/Hindrances for the food system
 - ii. Extending Commitment (Mandatory/Voluntary)
 - iii. Fragmentation of the Food Sector