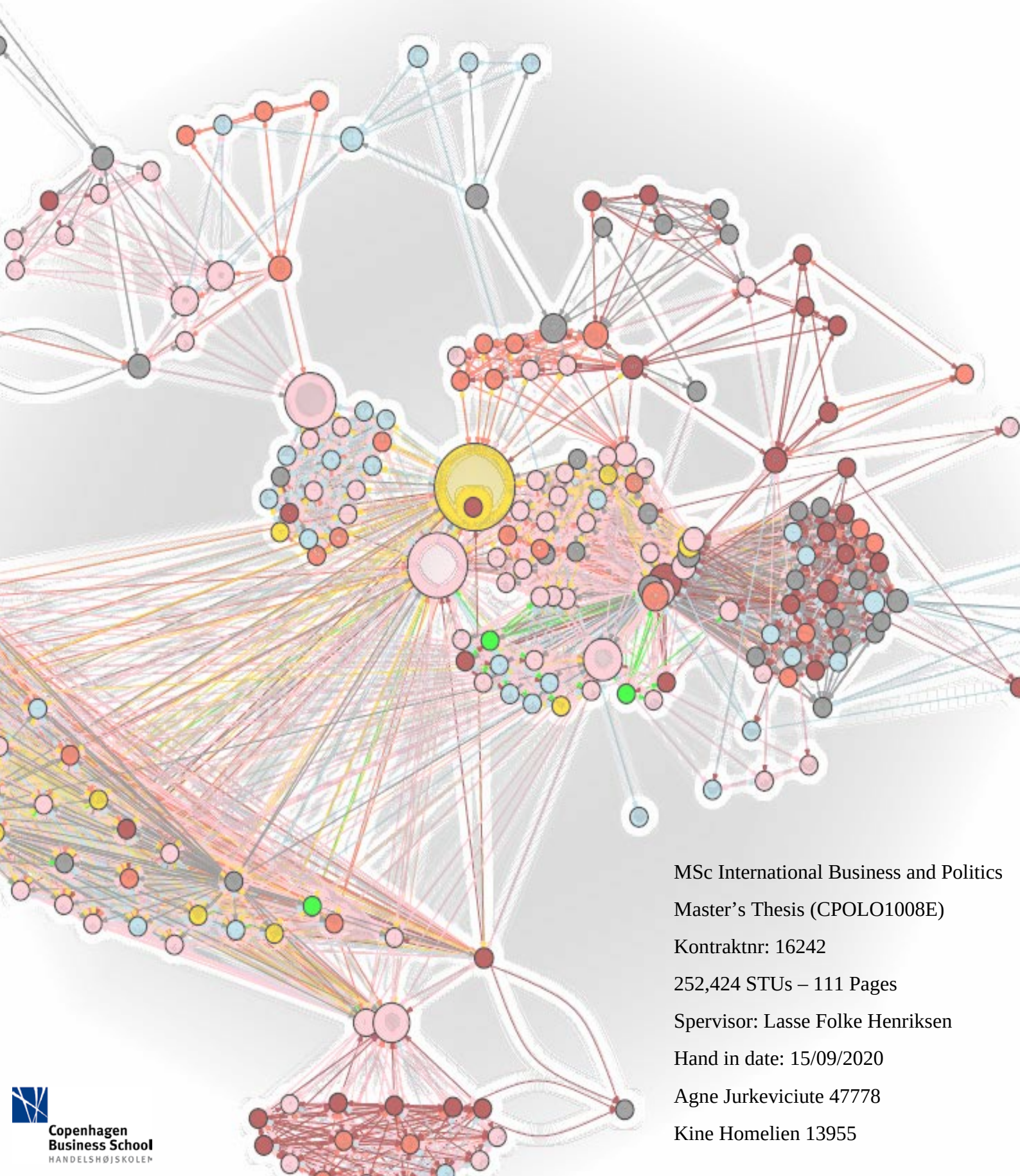
MAINSTREAMING SUSTAINABLE FINANCE: A STUDY OF AN EMERGING INSTITUTION AND THE ORGANISATIONS THAT SHAPE IT



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Abstract

Climate change is the most challenging issue of our time. The extreme weather events that are the outcome of global warming is predicted to cause major financial damage creating financial crisis, which will impact the living standards if we do not reduce the emissions. Sustainable Finance (SF) has a vital role to play in mobilising the funds for the green transition and ensuring that the future investments are focused on sustainable assets and renewable energy. SF is an emerging institution where the ideas that construct it differ widely.

This contribution sets out to identify the current SF ideas and map the organisations attempting to exercise the control over the emerging issue, guided by the research question "*How does Sustainable Finance discourse appear in the different Scandinavian countries and the EU, and who are the actors that influence the creation of these ideas?*" As the field under study is highly nascent, understanding the current discourse as well as organisations shaping it will provide insight to how do emerging institutions form. To get individual perceptions, the EU and three Scandinavian countries will be analysed separately, and eventually joined in the overall network. To discover the discourse this thesis employs Topic Modelling to identify the ideas in the documents collected, and then qualitative means to explore those ideas through the key words produced by the Topic Modelling. Furthermore, to provide an understanding of which organisations are at the core of shaping the ideas and are brokers or epistemic arbiters the study employs a Social Network Analysis where 223 actors are connected through 5681 ties in the space of the SF discourse.

Four main findings stand out. First, we discover that the common trait between the EU and the three countries is a tendency to focus on the economic growth, and that this usually evolves around the energy sector as having the biggest potential within sustainability. Second, the three Scandinavian countries present different ideas for the energy solutions. This is argued to be because of different institutional contexts in the countries. Denmark has a well-established infrastructure for the wind energy solutions, which is ought to increase their competitiveness in the international energy market. Norway is using the existing expertise in oil technology to develop new energy solutions, inter alia, carbon capture storage. While Sweden is phasing away from nuclear power and looking into wind and hydro power solutions. Third, we experience private sector dominance in the SF discourse. Lastly, we find that the emerging nature of SF creates space for manipulation and conflict in the issue control, thus leading to incoherence and confusion in the institution.

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Abbreviations

Abbreviation	Definition
BI	BI Norwegian Business School
CICERO	Centre for International Climate and Environment Research
DGIF	The Danish Green Investment Fund
DI	Danish Industry
DIFDC	Danish Investment Fund for Developing Countries
DNB	Den Norske Bank (The Norwegian Bank)
DSB	Direktoratet for samfunnssikkerhet og beredskap
DSFS	Design of Sustainable Financial System
DSGV	German Savings Banks Association
EACB	European Association of Co-operative Banks
EBRD	European Bank for Reconstruction and Development
ECB	European Central Bank
EEA	European Energy Agency
EFFAS	European Federation of Financial Analysts Societies
EIOPA	European Insurance and Occupational Pensions Authority
ESG	Environmental, Social, and Governance
ESMA	European Securities and Markets Authority
ESRB	European Systemic Risk Board
EU	European Union
EUROSIF	European Sustainable Investment Forum
FFI	Finance Finland
GHG	Green House Gas
GRI	Global Reporting Initiative
GSFCG	The Green and Sustainable Finance Cluster Germany
HLEG	High-Level Expert Group on sustainable finance
ICMA	International Capital Market Association
KU	Copenhagen University
LKAB	Luossavaara-Kiirunavaara Aktiebolag (Swedish Mining Company)
LORC	Lindø Offshore Renewables Center

LSE	London School of Economics
MSCI	Morgan Stanley Capital International
NBIM	Norges Bank Investment Management
NGFS	The Network of Central Banks and Supervisors for Greening the Financial System
NHO	The Confederation of Norwegian Enterprise
NUPI	The Norwegian Institute of International Affairs
NVE	The Norwegian Water Resources and Energy Directorate
OECD	The Organisation for Economic Co-operation and Development
PFA	Pension Forsikring Aktieselskab Danmark (Danish Pension Company)
PKA	Pensionsadministrationsvirksomheden (Danish Pension Company)
PRI	Principles for Responsible Investment
RICS	Royal Institution of Chartered Surveyors
SCOR	Supply-chain operations reference
SDG	Sustainable Development Goals
SEB	Skandinaviska Enskilda Banken
SEI	Stockholm Environmental Institute
SF	Sustainable Finance
SMHI	Swedish Meteorological and Hydrological Institute
SNA	Social Network Analysis
SOMO	The Centre for Research on Multinational Corporations
SRC	Stockholm Resilience Centre
SSAB	Svenskt Stål AB (Swedish Steel)
SSDA	Swedish Securities Dealers Association
SSE	Stockholm School of Economics
SSFC	Stockholm Sustainable Finance Centre
TEG	Technical expert group on sustainable finance (TEG)
TM	Topic Modelling
UN	United Nations
UNEP	United Nations Environment Programme
UNEPFI	UN Environment Programme Finance Initiative
WWF	World Wildlife Fund

Introduction

Since the early 1990s, climate change has been a significant issue on the global agenda. Climate change is considered to be the greatest threat to civil existence and is worsening with the continued consumption and increasing greenhouse gas emissions (GHG) into the atmosphere (IPCC 2018). It can be seen that the change is inevitable! Climate change is set to be a formidably complex and difficult policy challenge, which will require widespread changes in governance structures at both national and international levels. In 2015, just before the Paris agreement, the Mark Carney, the governor of Bank of England, has warned that climate change will lead to financial crisis and impact living standards unless there would be done more to reduce the current and future carbon emissions (Carney 2015). He continued, "the challenges currently posed by climate change pale insignificance compared with what might come" and emphasised the need to do more to address the problem (Carney 2015: 2). The adoption of the Paris Agreement even further contributed to the establishment of national climate protection laws worldwide (NetZero 2050). The clear, long-term objectives and global participation have prompted many governments to adopt dedicated governance frameworks. The financial sector ought to have a key role in mobilising the necessary capital to deliver on the policy objectives.

Sustainable Finance (SF) is not a new concept. However, it just recently gained popularity within mainstream finance. The evidence is mounting on human's role in climate change. The inflation-adjusted insurance losses from these events have increased from an annual average of around USD 10 billion (DKK 62,8) in the 1980s to around USD 50 billion (DKK 314) over the past decade. For example, hurricane Sandy, which hit New York in 2012, caused GBP 37 billion (DKK 297) in damages (BBC 2015). Such extreme weather events might become even more common, and the effects on the world economy could be profound. The sharp warnings of climate change might have had influence that SF started emerging within mainstream finance.

Despite the increased political salience of SF, the literature review presented a somewhat limited and under-developed area of research. There are definitions provided of what SF is, but the lack of scholarly work presents a challenge to fully understand the issue (UN 2020d; EC 2020). We can see the problems arising from climate change, as well as we can see the financial sector trying to create solutions. The SF discourse presents many ideas of how solutions should appeal, however, the lack of academic work in this area leaves one in confusion as to why the institution is emerging in this particular way. The motivation and inspiration for this thesis thusly stems from our need to

understand the ideas and the reasons for their formations in the SF discourse. This is addressed through the following research question:

"How does the Sustainable Finance discourse appear in the different Scandinavian countries and the EU, and who are the actors that influence the creation of these ideas?"

To answer the research question, we employ a mixed-method approach, where we combine qualitative and quantitative means. Firstly, we identify the initial documents through snowballing sampling, followed by a search for documents through the key words identified in the previous documents. Secondly, we apply Topic Modelling (TM) to our corpus of documents – an algorithm to identify which ideas are creating the discourse in the EU, Denmark, Norway, and Sweden. After analysis of the discourses, we conduct a Social Network Analysis (SNA) encompassing 223 actors that are connected through 5681 ties in the SF discourse. The analysis is utilised to determine which actors are creating the discourse in the SF space. Combining TM and SNA allows as to get an insight into what are the discourses in the Scandinavian countries, and the EU, and who are the actors that shape them.

The core of our study is ideas: what ideas create the Sustainable Finance discourse, and who creates and shapes those ideas. To analyse the ideas and actors we employ a theoretical framework that encompasses ideas, ideational power, structural holes, and epistemic arbitrage. Discursive institutionalism provides us with a foundation for the study, namely analysing the discourse of an emerging institution and the ideas that shape it. Furthermore, the ideational power allows us to determine how the actors exercise power to shape these ideas. The Social Network Analysis (SNA) is increasingly being used in the political and social sciences to portray who has the control over the issue (Henriksen & Seabrooke 2015; Seabrooke & Tsingou 2014; Green 2013). SNA is a powerful tool that shows particular strength when authority over an emerging issue is not based on formal authority and is fragmented. The use of network analysis will uncover the underlying structures of organisations that influence and shape the ideas in the SF discourse. The emerging ideas are then put in the light of the most central actors, and a combination of these methods informs about the issue context and authority over it. Burt's notion of structural holes is used to determine which organisations act as brokers in the network, and the concept of Epistemic Arbitrage is incorporated to discover the actors who circulate between different pools of knowledge. To summarise, the contribution combines quantitative and qualitative analysis to identify the substantive ideas emerging in the SF discourse,

and then SNA shows the structural relations in the current issue network, emphasising the central actors using betweenness centrality measure.

The thesis is structured in seven sections. Firstly, a literature review is provided, together with the definition of sustainable finance. Secondly, the theoretical framework is presented where we summarise Discursive Institutionalism, Ideational Power, and Social Network Theory. This section builds upon the theoretical concepts of Schmidt, Schmidt and Carstensen, Burt, and Seabrook. Section three will discuss philosophical considerations, while section four will explore the theoretical and practical backgrounds of the methodology employed. Topic Modelling and Social Network Analysis are seen to be the best methods to identify the underlying ideas in the SF discourse and map the actors creating them. Section five consists of analysis, which embodies the core of this study. The empirical data will be analysed applying the theoretical frameworks to understand why the actors create the discourse the way they do. The analysis consists of separate analysis for the EU, Denmark, Sweden, and Norway, followed by analysing the overall network, and finishing with a summary for the entire analysis. Lastly, section seven is a discussion where we conclude on our findings and discuss who exercises issue control, how and why these actors have shaped the dominant forms of ideas in the network, and the probable implications of such discourse, followed by suggestions for future studies and thesis limitations.

Literature Review

Climate finance refers to local, national, or transnational financing drawn from public, private, and alternative financing sources to support mitigation and adaptation actions that will address climate change (UNFCCC 2020). Sustainable Finance generally refers to the process of taking due account of environmental, social, and governance (ESG) considerations when making investment decisions in the financial sector, leading to increased longer-term investments into sustainable economic activities and projects. Sustainable Finance at the EU level aims at supporting the delivery on the objectives of the European Green Deal by channelling private investment into the transition to a climate-neutral, climate-resilient, resource-efficient, and just economy (EC 2020d). While reviewing the literature, we noticed that the term "Sustainable Finance" is used more often than "Climate Finance," which we argue might also be due to establishing the over-encompassing UN SDG's, where we also see the term sustainable becoming more mainstream. We also identify that even though "Sustainable Finance" is used as a term, in many cases, it leads back to the energy sector, the most polluting sector, and in the end, it is "Climate Finance." Since the term sustainable is adopted more

frequently in our documents, we will use Sustainable Finance (SF) as our primary term throughout the paper.

To familiarise ourselves with the current work on the SF issue, we researched several databases with key words including, inter alia, Climate Finance, Sustainable Finance, Climate Finance Discourse, Sustainable Finance Network. Several of the most relatable scholarly works will be discussed in this section to give an overview of the existing (even though limited) literature on the subject. Fisher and Leifeld (2012) and their 2019 follow-up studies concern climate change policy rather than SF. However, they combine qualitative and quantitative means in their analysis. They use a Discourse Network Analyser (DNA), a computer program that allows for the qualitative coding of articles and statements and prepares the data for the network analysis and visualisations. In this way, they can map the ideological relationship between the actors on each policy issue, and the ties' strength can be quantified (ibid). The method enables them to have a picture of changes within US climate politics over time and allows to assess shifting positions within the US Congress. Nonetheless, the research method is not something we would use, as it is a toolbox only for the analysis of actor-based debates, such as policy debates or political discussions where actors make statements about, inter alia, policy instruments, solution concepts, in the media or other arenas, and where these tend to support or contradict each other.

A recent work by Kuhn (2020) discuss sustainable Finance in Germany by mapping discourses, stakeholders, and policy initiatives. The work sheds light on the new trend – sustainable Finance – by interviewing three mainstream banks and one asset management group. They further qualitatively look at policy initiatives, investment practices, and the role of different stakeholders involved in shaping or providing sustainable financing (ibid). The paper finds that many initiatives from different types of stakeholders, including civil society organisations, contribute to broadening and deepening discourses and debates, and in this way promote the mainstreaming of SF in Germany. They analyse SF as the actions and intentions that different stakeholders write on their webpages, their investment portfolios, and what banks argued in the interviews. However, the research is limited to one country and focuses on the individual discourses rather than on the discourse of SF as an emerging institution.

Another very recent study is an inquiry made by the UNEP to Design of a Sustainable Financial System (DSFS) to advice policy options to improve the financial system's effectiveness in mobilising capital towards sustainable development (UNEP 2020). The study analyses an SF network of 115

partnerships, 5181 constituent members, and more than 10000 connections internationally. They conclude that the network is relatively small as the length of the path from any two network participants is 3.67 on average. This highlights the role that the IO's with a broad geographical presence play, to connect and scale up the reach and impact of the current SF network (ibid). Nevertheless, the research is extensive and does not address the SF discourse, nor does it discuss individual organisations or their involvement in the SF issue.

While limited literature concerning our study area exists, we could not find research where the SF's as an emerging institution's discourse would be traced in Scandinavia, and further on would be drawn to the actors who create it. Furthermore, we did not come upon a study where a quantitative and qualitative text analysis was combined with quantitative network analysis in the issue of SF. We, therefore, believe that we could contribute to the existing scholar work on the Sustainable Finance issue by creating our own theoretical framework that encompasses Discursive Institutionalism theory, Social network analysis, and Epistemic Arbitrage. Such a framework will allow us to trace the ideas that are prominent in the SF issue and reflect on why these particular actors are so involved in the creation of the SF institution.

Theory

Overview of the Theoretical Framework

Our study's core lies in the understanding that ideas and discourse play a significant role in explaining institutional change or continuity. Based on the discursive interaction processes actors create, deliberate, and legitimatise ideas within particular institutional contexts. Their actions, motivated by desire for issue control, shape new institutional practices that may trigger a shift in the existing order of interpretation and action. Our theoretical framework is based on the pre-assumption that social life is an ongoing process in which social structures and positions are in a continuous motion. By focusing on the concept of ideas to address how the SF discourse appears differently nationally and internationally, and what actors influence the creation of the ideas, we will start out by describing Discursive Institutionalism (DI) that provides a theoretical explanation for how ideas and discourses encourage institutional change. Ideas are related to the political concept of power in which actors can exercise power both through and over ideas. On the other hand, power in ideas is found in the production of knowledge and discursive practices. Further, we will exemplify the role of actors and their interactive processes in which new ideas are constructed and exchanged through Social Network

Theory. Due to actors' desire for issue control, ideas are usually constructed and manipulated in a manner so that the actor can occupy a central position within the network. Actors tend to create ideas by exploiting different knowledge pools to push forward a particular understanding of an issue. Therefore, we will address the theory of Epistemic Arbitrage to explore how actors use their expertise to influence the discourse formation of the SF issue.

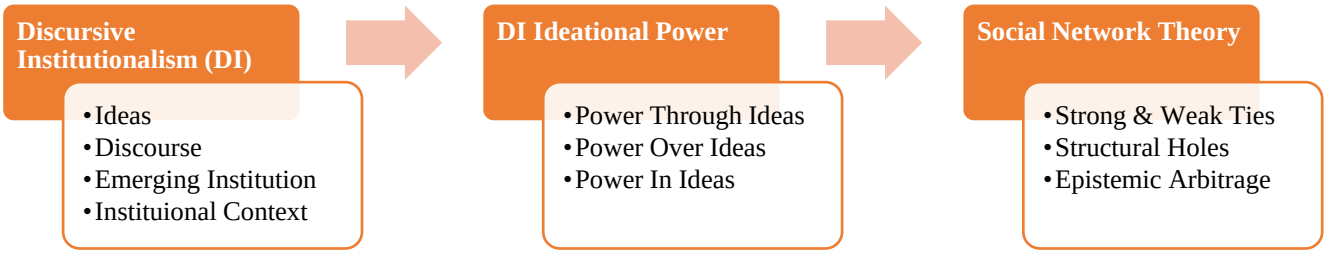

Figure 1. Overview of the Theoretical Framework

New Institutionalism

In our paper, we will use the theory of discursive institutionalism to show how nations adapt to new ideas, pursuing different strategies, and reorganise political-economic activity in ways that are fundamentally different from what has previously been the case. The turn to ideas has among many political scientists helped explain change, in which the three types of 'new institutionalism' cannot fully clarify. New institutionalism emerged in the 1980s and brought back the concept of institutions as a response to the narrow way of understanding agency without structure. However, they took the institutional term too far by treating it as something static. They treat institutions as given and external to actors where institutional logic - "interest-based logic of calculation, norm-based logic of appropriates, or a history – based logic of path dependency" (Schmidt 2008: 314) - constrain thought and behaviour. The three types are divided into rational choice institutionalism, historical institutionalism, and sociological institutionalism (Carstensen and Schmidt 2015, Hope and Raudla 2012). The three approaches are better at explaining continuity rather than change in which ideas are used to encounter the deterministic nature of institutions and their logics (Schmidt 2008). In the former approach, objective interests guide action but fail to explain how these interests have been shaped and formulated within the institutional context. The second approach explains how institutions structure actions and outcomes by looking at the historical development of institutions,

paying particular attention to critical occasions that may lead to unexpected outcomes and incremental change of institutional structures (Hope and Raudla 2012; Fioretos 2011), but has difficulty in explaining how actors get around institutional obstacles or create new institutional structures (Schmidt 2002). In the latter approach cultural norms and meaning structures shape human action but are often excluding the actors who produce and reproduce those sets of actions (Hope and Raudla 2012).

Rational-choice Institutionalism

Rational-choice institutionalism (RI) is based on some limited assumptions about the agency where the actors are understood as rational self-interested trying to maximize their preferences. Institutions are seen as neutral structures of incentives that lessen the uncertainty and are made to solve actors' problems of exchange, such as reducing transaction costs and handling principal-agent relations (Schmidt 2010; Campbell & Pedersen 2001). The approach's economic determinism of instrumental rationality and utility-maximization is unable to explain how preferences are formed and how institutions and ideas are created and changed.

Only a few RI scholars have addressed ideas when objective interests cannot by itself explain institutional construction, and they have done so in four different ways in which ideas concern interests. First, ideas occur before the interests and function as a guide for what goals actors set themselves and constrains what strategies to choose from in reaching the goals. Second, ideas are interest-driven; ideas follow interests in which they are picked to help the actor choose in situations where there are similar and equal alternatives. Third, ideas do not matter to the agent due to their embeddedness in institutions. Fourth, ideas are used to legitimize the actors' interests. What is problematic with the pursuit of ideas is that it becomes difficult to separate objective interests and subjective ideas about interest grounded in beliefs and desires. Therefore, the rational-choice approach loses its objective nature that explains the fixed preferences of agents and the neutral institutional incentive structures. How DI scholars would go about it is to replace objective interests with subjective interests where ideas determine interests and must be explained within the given *'meaning context*'. Institutions and ideas are in constant change and should not be treated as neutral structures of incentives (Schmidt 2010).

Historical Institutionalism

From a historical institutional (HI) perspective, institutions are viewed as "a set of regularised practices with rule-like qualities" that organise actions and outcomes and are external to actors (Schmidt 2010: 10). Different from RI, HI lacks agency where the institutional structure constrains the actors. Institutional change is often understood through critical movements that lead to new paths – those historical paths are what constitute human action - "processes of change are often unconscious – as people may act without any clear sense of what they are doing, creating new practices as a result of 'bricolage' and destroying old ones as a result of 'drift'" (Schmidt 2010: 13). For some historical institutionalists, ideas are shaped and originate from institutions, whereas others see institutions as constitutive of ideas.

Sociological Institutionalism

Ideas are at the core of the Sociological Institutionalism (SI) approach. They are understood as meaning systems or normative frames that construct the institutions and lead human behaviour through the logic of what is appropriate (Schmidt 2010: 13). Social agents act according to this 'logic of appropriateness' within political institutions, defined as socially constituted and culturally framed norms and rules (ibid). In this sense, ideas have always been at the basis of the approach and are always analysed in relation to their cultural context (ibid). SI and RI are argued to be incompatible, and that is because RI assumes that individual decisions and interests in the institutions are based on self-interest, whereas SI argues that the values from the institutions are transferred to the individuals. In the SI tradition scholars see identity and interests as endogenous and socially constructed and could be argued to "cut into the problem of ideational causation at the level of 'collective representations' of ideational social facts and then trace the impact of these representations on behavior" (Schmidt 2008: 320). In SI, institutions create meaning for the individuals and structure and develop their perceptions and interests. In contrast, in DI ideas are more dynamic and norms, frames and narratives not only establish how actors conceptualize the world, but also "enable them to reconceptualize the world, serving as a resource to promote change through 'structuration'" (Schmidt 2010: 13). While in the SI institutions are structures external to agents and serve mainly as constraints, in DI, they are internal to the sentient agents. They serve not only as structures that constrain action, but also as constructs created and changed by those actors (ibid).

Discursive Institutionalism

Compared to the older 'new institutionalism', discursive institutionalism (DI) is a more dynamic approach to institutional change where ideas and discourse play a significant role in explaining how institutions change or continue. DI scholars pay attention to discursive interactions in which actors communicate ideas within the particular institutional context (who, where, how, and when they communicate). In other words, discourses are not only about what is being said, but is also context-dependent, referring to both structure and agency (Schmidt 2008). The definition of ideas and discourses differ in academia. However, the two concepts are of great importance for the very reason that they enable the scholars to explain institutional change by showing how ideas and discourses are not just talked about, but also enacted upon by actors based on their preferences, cultural norms, and social position within the specific "*meaning context*" (Schmidt 2010: 304). Ideas play a central role in the political debate framing political interests and values and are the foundation for political action. This paper will pay attention to identified ideas framing the emerging institution of SF and the discursive interactions for how actors generate and communicate ideas about SF within and outside of the country-specific institutional context. Scholars who tend to only focus on ideas usually leave out the interactive processes for how ideas are created, deliberated, and legitimated and who are framing the ideas, whereas scholars who tend to focus on discourses pay attention to these processes (Schmidt 2010). Since we are interested in what and how actors interact and exchange ideas on the SF issue, we will follow the latter approach. In the following sections, we will explain the concepts of ideas, discourse, and institutional context.

Ideas

Ideas have historically been discussed in detail among Western philosophers resulting in various forms of definitions. Consequently, a fixed understanding is non-existent. Some scholars view them as strategic constructions or strategic weapons used to achieve control, whereas others understand ideas as narratives for how actors make sense of themselves and their surroundings (Schmidt 2010). To identify and address the ideas concerning the SF issue, we will use Carstensen (2011) and Schmidt (2008) 's conceptualization of ideas. Based on the assumption that societal uncertainty and complexity characterize the lives of actors, an idea can be understood as a "*web of related elements of meaning*" that function as "*heuristics and interpretive filters*" actors construct and use to reduce the complexity while achieving political influence (2011: 600). The constructed nature of ideas is closely related to the discursive way of understanding the language system. The elements of our language cannot be

understood independently but need to be interpreted in relation to the rules that associate the elements in a specific way. To understand an idea's content, we need to pay attention to the elements of meaning and how these elements are combined - "*the internal determinate of ideational meaning*" (Carstensen 2011: 600). In principle, political actors can construct an idea by adding and combining elements of meaning. Some elements may have more importance compared to the other elements. Furthermore, an idea is dependent on existing ideas in achieving meaning. Carstensen (2011: 600) refers to this as the "*external determinant of meaning*" in which a new idea can only gain support as long as it relates to already existing ideas. In this way, ideas will only become meaningful when "interpreted as part of a particular discursive system of meaning" (Campbell & Pedersen 2001: 221). For example, an actor can only make sense of a new idea if it connects with the actor's belief system. Additionally, external challenges caused by unpredicted events or social practices may affect the content of the idea. This illustrates how an idea is not a "*closed system of fixed meanings*" (Carstensen 2011: 602), but rather dynamic with a changing identity. To conclude, if we want to understand the meaning of an idea, we have to pay attention to the elements of meaning, the relationship between the elements, and how it is related to existing ideas.

According to the DI scholars, ideas come in various forms with changing content, which usually unfolds through one of the "*three main levels of generality*" (Schmidt 2008: 306). The first level embodies the policies proposed by policymakers. The second level embodies programmatic ideas or paradigms, that is often the policy programme supporting the specific policy idea. The programmatic ideas lie in between the political actors' worldview and the specific policy ideas, and structure the way problems are framed set the condition for what methods and instruments to use in achieving the following policy solutions. At the third level, the deeper core of philosophical beliefs underpins both policies and programmatic ideas. They unify ideas, values, and knowledge typologies that most actors take for granted and rarely question except when a crisis hit (Schmidt 2008; Schmidt 2010). The three levels of generality contain ideas that are divided into cognitive ideas and normative ideas. Cognitive ideas consist of logics and necessities and are the guidelines/roadmaps for policy action. The ideas state "*what is and what to do*" (Schmidt 2008: 306) and are used to justify policies and policy programs through "interest-based logics and necessity" (Schmidt 2010: 3). The justification is usually based on principles and norms derived from scientific disciplines and professional practices. Still, for policies and policy programs to be successful, citizens need to support the policy solutions. To gain support, normative ideas are used by playing on national values and appropriateness. The policy ideas

are constructed to match with public interests, aspirations, and ideas (Schmidt 2008). In that way, the first and second levels of generality resonate with society's values, norms, and principles.

Ideational Power

Our emphasis on ideas as an explanatory factor for our analysis of SF is related to the political concept of power. In policy research, scholars have traditionally viewed power as compulsory, structural, and institutional. Compulsory power regards the relation of interaction where an actor has direct control by shaping/influencing the actions or circumstances of other actors. Power can be analysed through the actor's material resources, values, attitudes, and expectations. Structural power has often been addressed through Marxist theory. Power is found in the hands of a minority capitalist 'ruling class' in which ideas are used to further their dominance. More recently, structural power has been used to explain business power. The state's dependency on capital has led governments to adopt policies that are in favour of businesses and industries. Institutional power is when actors exercise power over others through formal and informal institutions that mediate between the actors. The importance of ideas has been addressed in relation to institutional power, but never treated as an analytical unit. Using discursive institutionalism as our analytical framework, we stress the central role of ideas in relation to power through Carstensen's and Schmidt's (2015: 320) concept of ideational power. They define ideational power as "the capacity of actors (whether individual or collective) to influence actor's normative and cognitive beliefs through the use of ideational elements" (Carstensen and Schmidt's 2015: 320). Their analytical concept is an agency-oriented approach where ideas are actively used to influence other actors about one's understanding of an issue. Distinguished from structural theories that emphasize ideas as structures constraining actors, Carstensen and Schmidt (2015) argue that actors can observe ideas and critically engage with the ones they want to promote. Ideational power is categorised into three types of power: power through ideas, power over ideas, and power in ideas (Carstensen and Schmidt 2015).

Power through ideas regards actors' ability to persuade other actors to think according to particular views using ideational elements. Persuasion can be done through cognitive and normative arguments where discursive achievement rest in the vagueness or ambiguity of the ideas, often based on scientific and technical argumentation, that makes it easy for different parties to interpret and adapt the ideas. It is essential for the actor(s) who want to exercise power through ideas to influence what is regarded as '*common'* knowledge among the policy elite and being able to pursue the public through normative argumentation. Therefore, it is crucial for that actor who exercises power through

ideas to have the influence over what is regarded as '*common knowledge*' among the policy elite, and is able to pursue the public through normative argumentation. Usually, this is done by focusing on narratives that resonate with the public in legitimizing the '*new*' ideas to existing institutions. How to do so could be to focus on the weaknesses of existing institutions or allowing new ideas to be mixed with already existing institutional set-up by redefining goals, functions, and purposes. To change existing institutional set-up through the persuasion of other ideas will demand to challenge actors' power over ideas, which lead us to the second type of ideational power.

Power over ideas is the ability to control how ideas should be understood. This can be done by actors who hold power to impose their ideas, by powerless actors to use shame to make actors confirm specific ideas or actors manage to resist specific ideas. Firstly, actors hold the traditional types of power - coercive, structural, and/or institutional - and can, therefore, stimulate their ideas by inducing the meanings they prefer while excluding other ideas. Secondly, actors often use shame together with ideational elements to pressure powerful actors to change their behaviour. This kind of ideational power does not require powerful actors to change their beliefs. We often find advocacy networks who use shaming tactics or raise concerns about particular issues to influence people who obtain traditional forms of power. Thirdly, power over ideas can be found in actors' ability to resist alternative/contradictory ideas due to their existing authority. In clustered and closed groups actors who already have enough legitimacy - often through intellectual dominance and common interests - can evade alternative ideas. Tsingou (2014) stresses how policymaking groups within finance in national and international settings had the power to front market-friendly ideas while diminishing market-sceptic ideas. Their ability to do so is explained by the transnational networks of experts where members of elite clubs helped each other promoting similar views about how to regulate financial markets. Their position in the network made it impossible for other actors to influence by addressing alternative views.

According to Carstensen and Schmidt (2015), power through ideas and power over ideas are both cases for how actors directly use ideas to influence others' belief systems. In contrast, *power in ideas* emphasizes the authority that specific ideas enjoy in "structuring thought at the expense of other ideas" (Carstensen and Schmidt 2015: 329). The ideas are usually the background knowledge constraining the institutionalization process in which policies and programmes are being debated, agreed, and implemented into the established institutional context. They shape the way actors understand the economy, the polity, and the society through their objective claims for what is seen as

acceptable. Actors practice these ideas to depoliticize their interests when, for example, a policy program is being constructed. Interests are in this way induced into the methods, instruments, and goals of the policy programme that the élite and the public perceive as objective and normatively *right*. Therefore, the power in ideas is found in the production of knowledge, discursive practices, and institutional setups constraining what we think, say and do, and explain why some ideas gain authority rather than others (Carstensen and Schmidt 2015). In the next section we will address how ideas are exchanged through Schmidt' (2008) way of understanding the discourse.

The Discourse

A discourse is represented by a set of ideas and values and contains an interactive process in which actors transfer ideas to create, justify, and legitimize a policy programme through communication. The interactive process can explain why some ideas are believed in and enacted upon while other ideas fail due to whom and where the ideas are proposed. The discourse has both a cognitive dimension providing the logic that justifies the policy programme and a normative dimension in which the policy programme's relevance and legitimacy are related to national values. Besides articulating levels of ideas (policy, programmatic and underlying beliefs) and types of ideas (cognitive and normative), discourses contain different forms of ideas – narratives, frames, scenarios, collective memories, scripts, and more – that can be understood as "institutionalized structures of meaning" (Schmidt 2015: 309) that direct political thought and action in a particular direction.

Discourses have *a coordinative function* by offering actors a common language and framework for how the policy programme should be constructed and represented. The coordinative discourse occurs in the policy sphere, where arguments may contain technical and scientific components to justify the policy and programmatic ideas. Actors who are at the centre of the coordinative discourse organise in various ways to construct, elaborate, and represent narratives, scientific arguments, guidelines that define the policy programme's technical purpose and objectives, identify problems to be solved, and define specific methods and instruments that should be applied (Schmidt 2002). Scholars have tried to explain these coordination patterns through the concepts of epistemic communities (a group of experts having knowledge consensus about a highly technical issue), advocacy coalitions (an elite group share the same ideas and has policy access), and advocacy networks (activists mobilize ideas at national and transnational levels). Other times, actors can be 'mediators' and 'issue entrepreneurs' that push various ideas within the policy sphere (Schmidt 2015).

Discourses not only reconstruct actors' interests and produce the idea for change in policies and practices guiding their actions within institutions, but they also legitimize change. Most often, change is done through a top-down approach, which means that policymakers and business elites that intend to promote change have to convince the public that change is needed and is correct. In this persuasion process, Carsten and Schmidt (2015) differentiate between the policy sphere and the political sphere. In the former, political actors engage in the coordinative discourse (entailing experts, organised interest groups, civil servants, activists, and public officials). In the latter, political actors engage in the communicative discourse (entailing politicians, spin doctors, public officials, campaign managers, government spokespersons, and party activists) by tapping into the deeper structures of national values and identity when translating, presenting, discussing and legitimizing political ideas with the general public. For a policy programme to be ideationally accepted, the discourse must at some level confirm the pre-existing national values while generating some new practices that the public find appropriate. The assembly of national values, identity, moral, needs and desires are under constant contest and change due to shifting attitudes and opinions among the public, and explains why discourses are different and often national-specific.

For a discourse to be successful depends on how the content of ideas are being communicated – whether or not the ideas are relevant to the issue at hand, if they are appropriate for a given type of action, and if the ideas can be applied to different institutional settings in which actors develop a shared understanding. This is way the institutional context is important to address because it influences the construction of the discourse at the same time as the discourse can encourage transformation of national values and the public's 'world views' (Schmidt 2015, Schmidt 2002).

Institutional Context and Institutional Change

Institutional context matters for DI scholars. If 'sentient' (thinking, speaking, and acting) agents are considered to be the drivers of change, and their ideas and discourse are the vehicle of change, "then the institutional context is the setting within which their ideas have meaning, their discourses have communicative force, and their collective actions make a difference" (Schmidt 2015: 183). The elements of ideas, discourse and institutions need to be considered in terms of institutional context (ibid). Schmidt (2015) argues that the context is firstly, the 'meaning context,' in which ideas and discourse ought to make sense, where the speakers should '*get it right*' by addressing their remarks to the '*right'* audiences at the '*right'* times in the '*right'* ways. She continues, that "this is why even where a term may be disseminated internationally, when it is taken up nationally, it is likely to be

used very differently, given differences in meaning context and all that that entails in terms of culture – economic, political, and social" (Schmidt 2015: 184). She then states that in the processes where the rules are not established yet, like international negotiations, actors bring their own national and local ideas even outside the negotiating context (ibid). Considering that SF is an emerging institution, there are various actors (sentients) that want to and are also able to shape it. According to Alasuutari (2015), DI researchers "have highlighted the processes through which global ideas are integrated into local contexts and emphasised the key role of conscious actors in shaping motivational discourses in their studies of local-global interactions" (Wahlström & Sundberg 2018: 166). Academics within the field of DI have also focused their interest in understanding the actual local practices through which global ideas are framed and translated into local contexts (ibid). It is argued that in the perspective of local processes, actors are not passive, but rather active global ideas adaptors (Alasuutari 2018). Actors exercise a very active role in promoting exogenous ideas in such ways that make these processes compatible with the culture of modernity, meaning that "the adoption of new institutional practices requires domestic 'policy entrepreneurs' with the interests and capacities to promote them in a new context" (Alasuutari 2018: 169). Kjær and Pedersen (2001) analysed the phenomenon of neoliberalism through a DI lens in a Danish context and tried to identify national or subnational translations. They define translation as a process whereby concepts and conceptions from different social contexts come into contact with each other and trigger a shift in the existing order of interpretation and action in a particular context (like locality) (ibid). They argue and conclude that "although we may find similar distinctions and models across discursive and institutional settings, the meaning and identity of neoliberalism is always local" (Kjær & Pedersen 2001: 242). There is a space for struggle and tension in politics around how institutions are defined or their content. Institutions pressure and actors are fighting over them by coming with new ideas and new frames. In our case, SF is an emerging institution - it is institutionalizing, but is not yet stable. There is still contingency and struggle, causing different ways of describing the issue because there is a struggle with the overall institution. Looking at the variation at the EU level and the country level should point to the discourse variations.

Social Network Theory

Our study explores how ideas about the SF issue are battled and manifested by actors through their social relations across and within country levels and the EU level. Drawing on network theory, we would like to show how social ties and actors desire for issue control affect the content of ideas that

constitute the emerging institution of the SF. The social network will tell us something about how different actors coordinate and compete to control how problems and solutions of SF are understood and addressed. In other words, to control means to have the ability to treat an issue in a certain way. Actor's central positions within the network able them the authority to influence the agenda and combat given rules on how the SF issue is treated (Seabrook and Henriksen 2017).

Social networks can be understood as a set of actors, or nods, that connect through social relations or edges. The social relations come in various types and interconnect through the network forming paths that directly or indirectly link actors to each other (Seabrook and Henriksen 2017). Social networks are asymmetric in nature, which means that information flowing in and between the social ties can vary in content and intensity where access to resources and knowledge depends on the actor's connection to others and if these connections are of weak or strong ties (Emirbayer 1997). Strong ties are the close contacts an actor has to other actors, often shown through cliques or smaller and more dense networks. Information that is being exchanged through social relations is redundant – an actor who receives information from actor A will receive the same information from actor B. In contrast, weak ties enable an actor to receive novel information and ideas beyond the actor's close network. Therefore, the social network of weak and strong ties determines actors' opportunities and their circumstances. Granovetter (1973) emphasizes that weak ties, where the actor has access to different ecologies, are essential because they provide better opportunities than strong ties in which the actors are likely to swim in the same pool of ideas.

Furthermore, it is not only the characterization of the ties that matters for the actor's ability to obtain novel information and ideas, but also where the tie is located. When new ideas appear, it is usually due to some actors' capability to occupy the space between two nodes in the network that generally would have been disconnected. Burt (1992) calls the actor a broker who is given the opportunity to take control over the flow of information and resources of a network because the actor occupies a region known as a 'structural hole'. The actor's control lies in the ability to bridge subgroups of the network where there would usually be no actor. The interest of a professional broker is to create and maintain structural holes to continue having their powerful position within the network. Therefore, being able to mobilise is important for an actor because it can lead to non-redundant ties to other organisations. The actor's position allows it to open or block the flow of information dependent on the interest the actor have. To take advantage of disconnections within the network can be a strategy used among organisations and professionals who have the intention of influencing the perception

on particular issues. By occupying ‘structural holes’ actors have the possibility to ‘get’ new ideas or new concepts in shaping the issue because of the access to different pools of knowledge. Being able to mobilise is important for an actor because it can lead to non-redundant ties to other organisations (Henriksen and Seabrooke 2016).

Epistemic Arbitrage

Burt's concept about structural holes is closely related to Seabrooke's (2013) conceptualization of epistemic arbitrage - a way to thinking about how actors mobilize and mediate between knowledge pools from different professional ecologies in the pursue of issue control. Concerning our study, access to different types of knowledge gives central actors within the network a strategic advantage in governing SF's meaning construction. Seabrook defines an epistemic arbitrageur as either an individual or a group of professionals, who move between different knowledge pools to position herself/themselves in gaining issue control. When successful, the actor has the power to decide how to address the problems of a policy issue and who can address them. Epistemic arbitrage is driven by the "market of knowledge, where arbitrageurs buy cheap and sell dear" (Seabrooke 2013: 51) while creating barriers for other actors to access their position. Their key recourse is knowledge and can be exchanged and transferred across and within the network. From this perspective, "knowledge is not a stock of information, knowing or not knowing, but a relationship among professionals" (Seabrooke 2013: 52). Whereas Burt focuses on actors who take advantage of structural holes by controlling the information flow between two ties, Seabrooke (2013) pays attention to how particular forms of knowledge are being exploited by the actor to push forward a particular way of understanding a topic, an issue, a problem or a subject that favours the actor. Further, '*knowing well*' from epistemic arbitrage is more important than having a good idea. Ideas only become powerful when those who foster them are well-positioned possessing particular forms of knowledge. Professionals engage in epistemic arbitrage in the peruse of prestige, peer recognition, validation, improving their resources, and esteem.

Now that we have addressed the role of knowledge, we will change the focus towards the importance of arbitrage, which is about "identifying the difference between the value of assets in different markets, and then exploiting this difference for profit." In finance, hedge funds are common to identify potential profits that can be made by exploiting the price differences of assets in identified markets. When it comes to epistemic arbitrage, it is about the actor's ability to exploit knowledge pools in generating institutional and social change by changing the knowledge base. Therefore, the concept of epistemic arbitrage is crucial for how SF is treated because it explains why some

knowledge is recognized as more valuable than other types of knowledge. Central actors of the network take advantage of structural holes by creating 'black boxes' that "reinforce what knowledge is most appropriate and should not be questioned" (Seabrooke 2013: 61). The actors are identified as the 'knowing well'.

To take advantage of different pools of knowledge is relatable to Abbott's (2005) work on linked ecologies that emphasises the competition between professionals, especially in the period when the jurisdictions of an issue are about to be settled where professionals compete over who gets the authority to do what tasks based on the specific skillset and knowledge. Organisations, formal institutions, and co-workers are actively coordinating and organising themselves beyond their formal professional associations in the pursuit of claiming how an issue should be treated. The interconnection between smaller groups in which ideas evolve and transform can be understood through Abbott's (2005) concept about *'linked ecologies*.' Abbott's (2005) work explores how issues are tread with what tasks and by whom. Abbott (2005) used to have a static way of understanding ecologies, where actors interact in specific locations. The social network would be divided into non-overlapping social groups. Later on, he developed a more relaxed approach where actors are seen as neither independent nor constrained, but something in the middle where they interact in and between institutional systems using a set of strategies to make jurisdictional claims over how an issue should be treated. Epistemic arbitrage happens within a linked ecology framework by occupying a structural hole where the actor transmit knowledge back and forth to their professional ecology's ties. The actor's position implies that the organisation or the professional can access certain types of knowledge that others do not. The actor keeps its position within and across professional ecologies by using expertise to open new areas to present new rules and construct and support new status hierarchies" (Seabrooke 2013).

The concept of epistemic arbitrage adds to the work on epistemic communities by introducing a structural and competitive component to the actors that problematize and solve transnational issues. Haas (1992) describes an epistemic community as a network of professionals who share knowledge about a highly technical issue. Knowledge can be understood as the educational background, professional experience, and technical training that allows the professional to execute specific tasks (Stone 2013). It is the notion of science that gives the epistemic community credibility to shape state agenda and interests. Although research cooperation among actors is regular, their ability to move across and between different subgroups within the network gives them opportunities to mobilize and

duplicate new markets rather than passive playing along in an already existing market. Through their capacity to integrate into peer networks and engage in epistemic arbitrage, they create new services and tasks for emerging issues and change what knowledge is appropriate for the established issue (Seabrooke 2013).

Philosophical Considerations

Throughout our study, we have carefully constructed our understanding of the SF issue through engagement with our gathered data. We have intentionally analysed through logic, reasoning, discussing, and a little bit of creativity to seek out meanings that we find crucial for our study. Our objective of the study is ideas where we explore how they relate to social networks, power, discourses, and institutions that we regard as essential mechanisms of ideas. We regard ideas as interpretive filters used by the actors to make sense of the world and themselves. Due to the constructed nature of ideas, in which their elements of meanings are in a constant change based on how they are exchanged and within what institutional context, we align ourselves with the social constructivist tradition. Its ontological position asserts that social phenomenon and their meanings are an effect of the ongoing structure of social relations and how actors use language to construct their reality. Knowledge is expressed through speech, artifacts, and symbols and is exchanged through communicative interactions among actors (Detel 2001).

Because we care about how ideas and knowledge about the SF issue are constructed and used among actors within specific meaning contexts, we employ methodologies that capture this construction through topic modelling and social network analysis. The topic modelling allows us to observe the elements of meanings that are being communicated and that we argue produce the SF discourse. The social network analysis allows us to trace who is communicating and exchanging the elements of meanings. The social network analysis is based on the underlying assumption that actors who are well-connected hold power in the given field. For our study, that would mean that the network's central actor holds power to influence what ideas, based on what knowledge, should be applied in the construction of the SF discourse.

Methodology

Research Design

This study is a mixed-method case study of an emerging institution of sustainable finance, with documents between 2015 and June 2020. The EU and three Scandinavian countries, namely Denmark, Norway, and Sweden, were chosen for the analysis of the SF discourse. The idea behind is to trace what ideas are circling at the EU level and how they transfuse in the national contexts. Even though Norway is not a member of the EU, they are a member of the EEA, and several of the EU regulations and legislations apply to the countries in the EEA (NetZero2050 2020). In addition, after doing a broad research about the issue and the countries, we noticed that Norway is still very dependent on the EU's policymaking in terms of trade and the single market. Furthermore, all three countries are social democratic welfare systems (Andersen 1990), and we want to see if there are differences in how the SF issue is adapted due to country-specific contexts, and which actors control the issue. Therefore, we decided to take the three neighbouring countries and the EU for our analysis.

The initial phase started with snowballing – identifying the documents, and through collaborators in those documents, we would identify more actors and more documents that could be involved in the SF issue. Further on, we employed quantitative means for the qualitative data and, through topic modelling algorithm, computed topics in the SF discourse. The topics were then analysed separately by qualitative means using words that define the topic and going back to the documents. After discovering the ideas in each block, we then performed a network analysis to determine which organisations are the issue controllers in EU, Denmark, Norway, and Sweden. Lastly, we analyse the entire network to determine the actors that are intermediaries not only within national, but also international space (Figure 2).

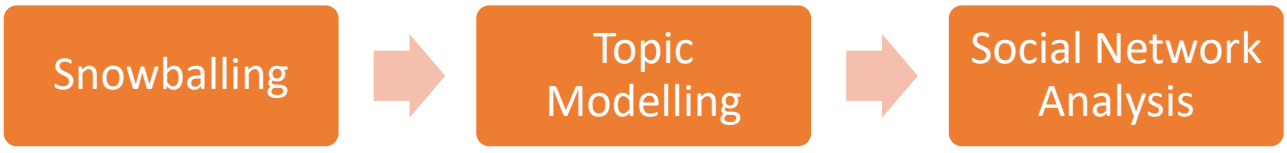

Figure 2. Research Design

Data Collection

Topic Modelling

The data collected for the topic model analysis are public documents published by state and non-state actors throughout 2015-2020. 2015 was the year that the Paris Agreement was ratified upon by 195 states, where Article 2.1.c addresses finance as a critical component to successfully combat climate change by aligning investments in a direction that leads to the temperature goals of well below two degrees (UNFCCC 2015). Since then, sustainable finance (SF) has transformed from being a niche phenomenon to becoming a mainstream investment approach that actors from both the private and the public sector are taking an interest in (UNEP 20).

We identified and selected documents for our topic modelling by following the 'snowballing' technique. Throughout the sampling period we actively developed and controlled the sampling process by adding documents that we think are the most relevant for how the issue is understood and talked about at the EU level and within Denmark, Norway and Sweden. At first, we did a literature review on the issue that led to the identification of recent international financial cooperation such as the G20 Green Finance Study Group, the UNDP Finance Sector Hub, the Central Banks and Supervisors Network for Greening the Financial System (NGFS), the Financial Stability Board's Task Force on Climate-Related Financial Disclosures (FSB TCFD) and the European Commission's establishment of a high-Level expert group on sustainable finance (HLEG). What is common for many of the initiatives is the collaboration between private-led financial institutions, financial ministries, and central banks. Due to this observation, we searched for documents that were written both by state and non-state actors. We started with a 'top-down' approach by first finding the documents written by the EU institutions. As the process unfolded, we would move between the EU level and the national level in tracing documents. What kickstarted the snowball sampling was the European Commission's Action Plan on Financing Sustainable Growth (2018). The document outlines the EU's ambition to become a leader in coordinating international efforts towards a financial system that supports global sustainable growth. Part of the work is to mobilize and steer private capital flows towards low-carbon projects related to energy and infrastructure. A central topic is the climate-related financial risk that entails the idea that climate change contains risks for the stability of the financial system. The focus on the financial risk made us look into whether or not the issue was relevant among EU institutions that safeguard the financial stability across Europe. We searched for published documents by the European Central Bank (ECB), the European Securities and Markets

Authority (ESMA), the European Insurance and Occupational Pensions Authority (EIOPA). We looked through their web page for reports and articles based on the searching words: climate change, climate finance, climate risk, climate-related financial risks. Furthermore, we examined the work done by the High-Level Expert Group on sustainable finance (HLEG), who advised the European Commission in the making of the action plan on SF. We identified three documents – their final report on taxonomy, a document about green bonds, and a document about climate benchmark and disclosure.

One way to collect documents was first to identify the contributors to the first source document and, secondly, identify other related documents written by the same contributors. By contributor, we mean actors who either wrote, financed or provided knowledge to the document. This approach helped us to discover other documents and actors.

When searching for documents published by Danish, Norwegian, and Swedish actors, we started out identifying documents written by the central banks, pension funds, insurance companies, banks, and climate research centres. In Norway and Sweden, we often found research collaboration between climate research centres, private-led financial institutions, energy companies, and the governments. Some of the documents represent research collaboration across borders, such as the Centre for International Climate and Environmental Research (CICERO) located in Oslo and the Stockholm Environmental Institute (SEI).

In all three countries, pension funds shared documents about their 'green' investment into national and global low-carbon emission projects, whereas insurance companies shared documents addressing country-specific climate-related financial risks. Looking into some of the pension funds' investment activities, they are often channelled to renewable energy projects run by the energy companies Equinor and Vattenfall. These findings made us realize the importance of including documents from the energy sector in understanding SF. The collection of documents related to investments and green energy became the final step for the document selection process. Our data resulted in 69 documents in total, respectively 10 for EU, 16 for Denmark, 19 for Norway, and 26 for Sweden.

Social Network Analysis

For the network analysis, we used the documents used in the topic modelling to determine which actors wrote and contributed to the creation of the document. The organisations that funded, wrote, and contributed to the document were included in the actor’s list. The network represents 223 unique

organisations with 5681 ties (connections) between them. In the dataset, we distinguish two types of ties – co-authorship and funding. We decided to make this distinction because some organisations only provide the funds for the research, and do not actively participate in creating the document and the ideas within it. We constructed two datasets to create a directed network: one for the nodes and one for the edges. The node list contains 223 actors and indicates what type of organisation they are. The edge list contains connections indicating the tie going from one actor to another and what kind of connection it is: co-authorship or funding.

The actors were categorised into seven distinct types of organisation: *Government, Association, NGO, Corporation Industry, Corporation Finance, Research, and IO*. *Government* represents all public organisations that are responsible for the oversight and administration of specific tasks in the state or the European Union. Government includes, inter alia, ministries, agencies, and other governmental bodies. *Association* portrays organisations that seek to advocate for the interests of those engaged in the association (e.g. trade associations). *NGO* are marked those who are a non-profit organisation that operates independently of any government. The purpose of these organisations usually is to address a social or political issue. *Corporation Industry* contains companies linked to the real economy, inter alia, energy companies, and car manufacturers. *Corporation Finance* represents financial companies that, among others, include pension funds, asset management companies, banks. Research includes entities with a primary goal of conducting fundamental and/or applied research (e.g. universities, research centres). Lastly, *IO*'s are international (intergovernmental) organisations established by a treaty or other instrument governed by international law and who possess its own international legal personality (e.g. UN). In its entirety, the network represents 35 Government, 22 Association, 10 NGO, 39 Corporation Industry, 69 Corporation Finance, 16 Research, and 4 IO categories.

Methods

Topic Modelling

Introducing quantitative approaches as topic modelling in the political sciences is quite prominent in academia (Jelodar 2019). Topic modelling LDA method allows us to understand the hidden structures expressed by words in the corpora. The study by Fang et al. (2012) created a new unsupervised topic model based on LDA for contrastive opinion modelling which purpose was to find the opinions from

multiple views, according to a given topic and their difference on the topic using the statement records of US senators. This is seen as to allow for contrasting the topics and themes that occurred. Madan et al. (2011) used an LDA topic model to discover patterns and analysis of people's behaviour who changed their political opinions based on using mobile phone sensors. They used a mobile sensing platform to capture social interactions during the 2008 Presidential campaigns of John McCain and President Barack Obama to gather their data. They report statistically significant differences in individuals' daily activities that change political opinions versus those that do not by modelling and discovering dominant activities using topic models (ibid). Topic modelling technique allowed the researchers to uncover the latent structures that had an influence for one's political opinions. It is argued to be a valuable method for identifying such structures and categorizing them by quantitative means that will also allow us to identify and analyse the opinions and spread of ideas in the discourse of sustainable finance.

Chen et al. (2010) suggested a generative model using LDA to auto discover of the latent associations between opinion words and topics that can be useful for extracting political standpoints. The quantitative LDA model is ought to clarify the different opinions and is useful when considering the extensive corpus of data that they used (15512 statements from 88 senators). They find similarities and dissimilarities between Republican and Democratic senators with respect to various topics and conclude that these can effectively express opinionists' standpoints (ibid). This research allows them to identify the concrete views that respectable parties have and hence allows the comparison of and enhancement of the latent structures behind the large corpora of text.

The research following the actual "*best number*" of topics and the "*best size*" of the corpus is somewhat limited. It is argued that LDA is mostly used when the corpus is extensive, and it would be physically impossible to read everything through if one would to complete the research manually in the particular chosen period of time (Graber et al. 2017). Topic modelling in the large corpora allows to identify the hidden structures without actually reading through all the documents (Jelodar et al. 2019). However, LDA requires a prior selection of how many topics one should choose, which is proven to be a limitation (Sbalchiero 2020). Working with a lower number of documents and having read them through allows us to critically assess if the number of topics chosen represents our corpus. It was chosen to include an algorithm-based model to avoid personal bias and include the words with the highest value for the topics. Since we follow the development of ideas, it is valuable for us to see the combination and expression of words and how they vary between the chosen countries'

institutional settings. The qualitative analysis of the texts and our prior knowledge allowed us to enter the field of sustainable finance and identify differences between ideas and the portrayal of those in the academic texts and policy literature.

The qualitative analysis is descriptive in nature, whereas quantitative analysis of textual data provides effective tools for representing models and visualization of contents. The advantages of these approaches together allow the opportunity to reduce our as researchers' biases and go beyond main limitations to qualitative analysis e.g. "(a) quickly and cheaply investigate amounts of data in a systematic way; (b) explore latent patterns; and (c) improve the robustness of results" (Sbalchiero & Tuzzi 2015: 1346). Quantitative methods are not meant to replace traditional qualitative approaches, but in our study, it provided tools for verifying intuitions and expanding on specific ideas identified by qualitative analysis (ibid). Introducing the topic modelling quantitative approach and following the theory of discursive institutionalism allowed us to identify the content of ideas conveyed and exchanged by actors through the sustainable finance discourse. Ideas are dynamic and transformative, underpinning the actor's ability to make sense of the world and shape their interests in a given context. Sustainable Finance's (SF) diffuse nature creates space for manipulation, letting actors translate the issue in a manner so it fits country-specific political, cultural, and economic institutions (Schmidt 2002). Therefore, we assume the meanings of SF will differ at an EU level and across the Scandinavian countries. The meaning construction of SF is sensitive towards its institutional context and the actors within the social network. Actors who have the authority claim for how SF should be treated will influence the understanding of the SF issue (Ban 2016). Topic modelling allows us to capture these meaning differences.

Throughout the years, knowledge was gathered in the form of newspapers, books, images etc, and with the digital age, all of this knowledge and information continues to be digitized and stored, creating a very complex and challenging to organise and navigate platform. However, technological advancements facilitated the upcoming for the methods for automating the processes of the data encoding and analysis. Text analysis as such is not a recent invention (Berelson 1952; Krippendroff 1980), but the second half of the century gave it a boost with automated processes, electronic format, and software development for such analysis (Sbalchiero 2018). Large datasets of digitized content offer significant opportunities for the researchers to understand the underlying structures that hinder behind large quantities of text.

Topic modelling as a form for text analysis are algorithms that allow the researchers to discover and annotate extensive archives of documents with thematic information (Blei 2012). In this thesis, Latent Dirichlet Allocation (LDA) model will be used, which is the most prominent and simplest topic model. LDA is a statistical model of language that assumes multiple topics within a collection of documents, where a topic is formally defined as a distribution over a vocabulary (DiMaggio et al. 2013). It is best described as an imaginary random process by which the model assumes that the documents arose: the documents are represented as random mixtures over latent (hidden) topics, where each topic is characterized by a distribution over words (Blei et al. 2003). Terms that are prominent within a topic will be those that will tend to appear in documents together more frequently than would be expected by chance (DiMaggio et al. 2013). The explanation of the entire algorithm behind LDA is out of the scope of this thesis (see Blei et al. 2003; Blei & Lafferty 2009; Blei 2012; DiMaggio et al. 2013), but generally speaking, "it analyses the collection to estimate simultaneously the topics and how the documents exhibit them" (DiMaggio et al. 2013: 578). It encodes the topics and the per-document topic proportions as hidden random variables in a hierarchical probabilistic model and then approximates the conditional distribution of those variables given an observed collection of documents (ibid). This thesis will analyse the algorithm's output: the hidden thematic structure in the archives of text, that is, the words derived and then used for interpretation about the prominence of different/similar topics in the chosen countries.

Sampling-based LDA algorithm "*Gibbs sampling*" is used, which attempts to collect samples from the posterior to approximate it with an empirical distribution (Blei 2012). We use *RStudio* software and the *topicmodels* package for topic creation (Grün & Hornik 2020). The data is pre-processed, and several parameters are considered before running the algorithm. Gibbs sampling performs a random walk (a path that consists of a succession of random steps on some mathematical space) that reflects the characteristics of a desired distribution. Since the starting point of "*the walk*" is random, it is necessary to discard the first steps of the walk as these do not correctly reflect the distribution's properties. In the parameters required to run the algorithm, this means to set the "*burnin*" parameter. Another important parameter that needs to be set prior is k – the number of topics that the algorithm should identify when classifying the documents. Package "*ldatuning*" was introduced to determine the optimal number of topics, though after inspection, it was decided to evaluate every topic individually and decide on the number based on the researchers' rationale and interpretation possibility. There is no absolute empirical rule for establishing the parameters that enable the number of topics, but researchers can decide whether or not de/increase the number of topics depending on

the research capacity, dimensions of the corpus and the feasibility of interpreting the results (Sbalchiero 2018; Blei & Lafferty 2009).

After experimenting with 10, 7, 6, and 5 topics, we concluded that the best number of *k* is 5 for the countries and 6 for the EU since it allows the clearest interpretation of the results. 10 topics were too hard to interpret or were repetitive, and 7 topics provided a better overview, but still lacked concreteness. Each topic then consists of 20 key words that were used to interpret the "*Topic name*" (Danish example Figure 3; Other examples in Appendix1). In addition, the key words will be used as an indicator when analysing the documents to find the most relevant information about the topic.

DENMARK					
	Topic 1	**Topic 2**	**Topic 3**	**Topic 4**	**Topic 5**
1	climat	insur	invest	energi	financ
2	danish	risk	energi	denmark	sustain
3	denmark	damag	danish	electr	esg
4	develop	climat	wind	heat	invest
5	tax	water	fund	danish	sector
6	emiss	flood	project	project	compani
7	target	compani	pension	gas	bank
8	cent	chang	billion	renew	key
9	chang	municip	develop	sector	transit
10	council	denmark	eur	includ	busi
11	new	institut	green	agreement	forum
12	transit	level	million	market	recommend
13	green	countri	dkk	increas	activ
14	reduct	nordic	power	measur	includ
15	need	cover	privat	polici	denmark
16	requir	system	provid	support	risk
17	public	green	farm	plan	product
18	industri	condit	partner	nation	custom
19	greenhous	home	sustain	new	ratio
20	gas	adapt	solar	emiss	danish
Topic name	**Public Strategy For Emission Target**	**Climate Change and Insurance**	**Pension Funds Investing in Green Projects**	**Danish Energy**	**Financial Sector and Sustainable Transition**

Figure 3. Danish Topic Modelling Example

Furthermore, the documents that best fit or describe the topic are identified through the topic probability score from 0 to 1. The closer to 1 the stronger the document portrays or talks about the topic (Denmark example in Figure 4 below). These will then be addressed in terms of the Topic Name and the key words to perform analysis on the discourse

Doc Nr	Topic 1	Topic 2	Topic 3
1	0.113764	0.073034	**0.610955**
2	0.177063	**0.541269**	0.042768
3	0.341121	0.098131	0.088785
4	0.076506	**0.842699**	0.030467
5	0.118756	0.022353	0.006326
6	**0.518699**	0.04878	0.076423

Doc Nr	Document Nan	Topic
1	2018Vestas-pa	3
2	ANALYSIS_No 2	2
3	climate-act_fa	4
4	Denmark-Nordi	2
5	Denmarks-Inte	4
6	dis-160-propos	1

Figure 4. Danish Topic Probabilities and Documents to Topics Examples

It can be argued that topical decomposition found with LDA and other topic modelling techniques are not completely "definitive" as it depends on the interpretation and the parameters chosen (Blei & Lafferty 2009: 17). However, topic modelling is used as an explanatory tool to identify the computed summary of the hidden thematic within the corpus of our data and allows us to find the similarities and differences between the literature talking about the issue in different countries.

Social Network Analysis

Social network analysis (SNA) is both a theory and a quantitative method used to explain social structures through networks – how actors relate to each other and how these linked relations determine and organise social action. The relations of the social network provide channels in which ideas and power can flow through. The use of SNA to understand social structures evolved in the 1930s, where the focus was on group dynamics and group structures and how information and ideas moved between groups and have since been widely used among anthropologists, sociologists, psychologists, and economists to map and measure social structures and positions. Cross et al. informs how IBM has used SNA to understand the connections at the workplace and to use it to improve knowledge creation and sharing (Cross et al. 2014). Through the analysis, they understood that the actual hierarchical structure is not what the actual network looks in practice and that some people have a very central position in the network, even though they are not seen central or important 'on the paper'. They emphasise, that "who you know has a significant impact on what you come to know" (ibid: 2).

Theoretically, the social ties between the various actors reflect how the actors behave and what available resources they can attain and utilise. Social networks can be regarded as a pattern of behaviour that provides *opportunities* or *constraints* depending on the actor's *centrality* in the network. Methodologically, SNA provides tools and measurement methods that offer a better understanding of the relational ties between a group of actors and actors' centrality. The relations of the social network provide channels in which ideas and power can flow through (Borgatti et al. 2009; Scott 2013).

SNA encompasses its own terminology that we will address in the following section by concentrating on various terms and concepts. SNA draws on the methodologies of sociometry and mathematical graph theory in forming a structural pattern in which actors are represented as nodes and where the edges represent social relations. Nodes could be organisations, individuals, or groups. A two-mode network would embody two types of actors, such as professionals and organisations, whereas a one-mode network would focus just on one of the mentioned. In our study, the nodes represent organisations shaping the one-mode network within the sustainable finance space. It is not uncommon in academia to represent the actors as organisations without focusing on the individual actors within them (Holzscheiter 2005; Taylor & Burt 2005; Kivimaa 2014). We chose to portray just the organisations, as we believe that the SF discourse is somewhat organisational interest-driven. Meaning, that the papers chosen for the analysis represent the views, interests, and seeks of the organisation as a whole, not those of a specific person. In addition, several of the documents do not address authors of the document as an individual, but rather mentions the organisations that are the contributors.

The network can be undirected or directed. An undirected network would represent a network where the relation of actor A to actor B is the same as actor B to actor A (Scott 2013). This relationship between the two actors would be considered independent of any question, whether it is a relation of power, influence, or the spread of ideas (ibid). On the contrary, a directed network will involve a "*from*" and "*to*" aspect to specify the tie's direction and, hence, show the flow of information, power, or influence. However, a directed network can always be simplified and made into an undirected network if the researchers decide that the importance is merely to show the presence or absence of a relation, rather than its direction. Our study will employ a directed network since some of our actors have connections merely through funding, and this could be argued as they initiate the creation of

ideas but are not actively "moulding" the discourse itself. Therefore, the ties that represent the funding will have a one-way arrow indicating who provides the funding to whom.

Centrality Metrics

Centrality describes a "family of node-level properties relating to the structural importance or prominence of a node in the network" (Borgatti et al. 2009: 894). Centrality can be measured by degree, closeness, eigenvector, or betweenness centrality.

The degree centrality portrays the number of direct ties an actor has in the network, which tells us something about the actor's connectivity to others. The measurement adds all the edges that an actor has, and a higher degree represents a more 'well-connected' actor (Scott 2005). In our case, the measurement might not reveal the true importance of the connectedness as some of the documents involve many actors, which would automatically imply that those actors are very well connected. The eigenvector centrality is a measure of a node's influence in a network that assumes that a node is more central when it is connected to other central nodes (Hellsten et al. 2020). It could be argued that it is mainly a semi-local relative measure of popularity. The closeness centrality is a measure of "global centrality" and informs about the distances among various points in the entire network (ibid). It is used as a measure of access efficiency or independence from potential control by the intermediaries (Brandes et al. 2016).

For the purpose of our study, as we are interested in the intermediaries, we will use the betweenness centrality (BWC) measure. BWC measures the extent to which a particular node lies *'between'* the various other nodes in the graph (Scott 2013). It is seen as an indicator of an actor's "ability to block or facilitate flow processes in the overall network" (Henriksen and Seabrooke 2016: 728). A point that has a relatively low degree centrality might play an important 'intermediary' role and be a central node in the network (ibid). If one node locates in the only way which other nodes have to go through, such as communication, connection, or transaction, then this node should be important and likely have a high BWC. This implies that BWC measures the extent to which a node acts as a "broker" or "gate keeper" with potential control over others and the spread of information (ibid). In the example network below, Actor B can be interpreted as an intermediary between the set of agents centred around actors A, C, and H (Figure 5, Plot 1). BWC is a function of how a particular node falls in the shortest geodesic distance between two other nodes. BWC of a node is the sum of the fraction of shortest paths going through the node between any two nodes, considered over all pairs of the nodes

(Meghanathan 2016). In other words, on the shortest paths of all connections in a network, the higher the betweenness centrality, the more frequent node B falls between any pairs of other nodes. This implies that many actors in the network need actor B to reach other nodes via efficient paths. Such nodes are argued to have considerable influence within a network by virtue of their control over information passing between others (Scott 2013). They are also the ones whose removal from the network will most disrupt communications between other nodes because they lie on the largest number of paths taken by messages. We will use this measurement to draw inferences about organisation's ability to bridge the gaps between different ecologies, or act as brokers both nationally and internationally. It will also be used as a visualisation tool, as the size of the nodes will represent the betweenness score just as in the example network below (Figure 5, Plot2). If one uses the degree centrality measurement here, the nodes A, B, C, and H would all have the same score and size of the node, since all of these actors have three edges (connections). We are not merely interested in how many connections an actor has and therefore choose BWC as a centrality metric in our study instead. This allows us to determine which actors are intermediaries in the creation and formulation of ideas in the issue of sustainable finance.

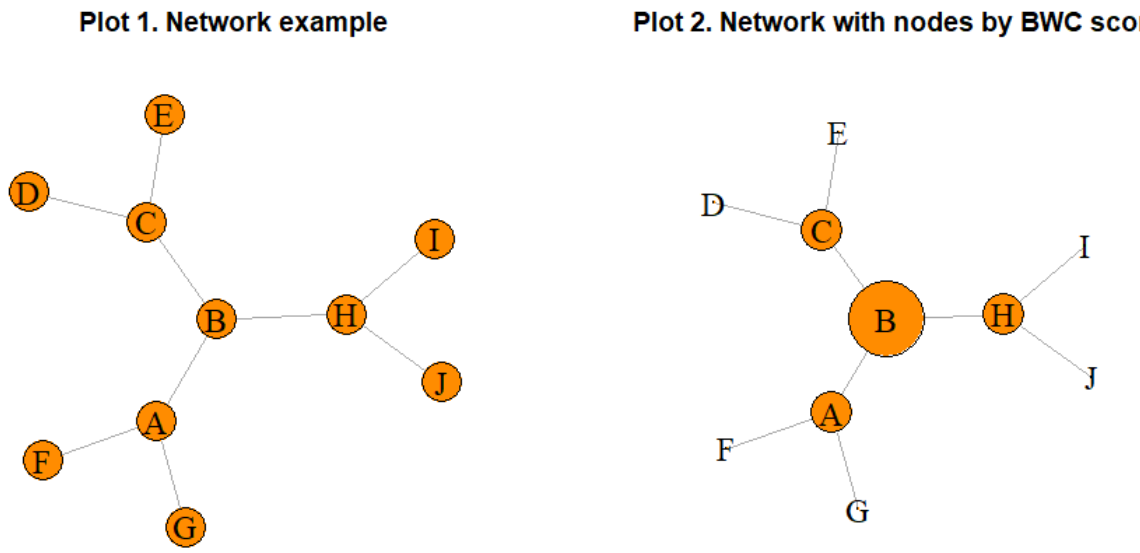

Figure 5. Plot 1 - Simple Network Example. Plot 2 - The same network with nodes according to BWC score

Visualisation and Tools

We use *RStudio* program and the *igraph* package to create and visualise the networks and calculate the BWC score. Visualisations of the created networks will be primarily used throughout our analysis as the spatial orientation of nodes provides a qualitative understanding of the network that would be rather hard to obtain in a quantitative manner (Borgatti et al. 2013). Several parameters were introduced into an initial code to make the network clearer and more informative. We will use complete networks for a quick overview; however, they are very dense due to a large number of actors. We also see some documents involving more than 20 actors, and if they are mentioned only once, this creates "stars" in the network. Reduced networks will involve only the actors who are in at least two documents, allowing for better visualisation. Also, the node sizes will be set by the betweenness score, so visually, it will be easy to determine who the intermediary actors are. Lastly, the co-authorship ties will be shown as an edge without any arrows since all the co-authorship communications go both ways, while the funding tie will have a one-way arrow and a distinct colour.

Analysis

According to the theory, when global ideas are integrated into local contexts, actors tend to frame and translate the ideas in a manner, so it fits the specific political and economic context. If the ideas are defusing, they create space for manipulation that allows the actors to induce their interests and value system. To identify the ideas that are currently framing the emerging institution of SF and the discursive interaction for how agents generate and communicate these ideas, we will in the following sections address the EU, Danish, Norwegian, and the Swedish discourse followed by the actors framing it. The analysis of the EU and the Scandinavian countries is divided into three main parts. First, we will address the political and economic context in which the SF issue is embedded, because discursive institutionalism theory informs, that ideas might be context dependent. Secondly, we analyse the SF discourse observed through our topic modelling in depth, to unravel the ideas. Thirdly, we look at the social network and analyse the centrality of specific actors and how they use their knowledge and central position to promote specific ideas, rather than others, of the SF issue in relation to their interests. The last part of the analysis will present the overall network as to portray the actors that form the SF discourse in our documents, followed by the summary of the analysis.

EU

The Institutional Context

The European Union (EU) was founded on the belief in economic and political stability to ensure long-term peace in Europe. As of 1950, the European Coal and Steel Community started the European integration process in uniting European countries to create peace and collaboration between countries through free trade, the flow of capital, and labour migration in a single market of 500 million people. The EU was established in 1993 through the Maastricht Treaty, which improved the powers of the European Parliament, familiarized the concept of European citizenship, and created an Economic and Monetary Union: a shared monetary authority and a single monetary policy across the eurozone. Today, the EU consist of 27 member states (ECB 2020, EU 2020).

The EU and Economic Growth

The EU experienced its glory days in the millennium when the Single Market was initiated and put into action, the common currency was introduced, and six new member states joined the EU. At the time, the EU had a steady and impressive economic growth cherishing optimism about the future. However, this drastically changed when the cheap, credit-fuelled bubble burst in Europe due to the collapse of the American mortgage bank, Lehman Brothers, in 2008. The major banks of Spain, Greece, and Ireland went bankrupt, creating the most significant economic downturn Europe has faced since the Second World War. The financial crisis left countries in colossal debt and damaged the real economy with declining GDP. The social cost of the crisis was massive, where social benefits were cut, the unemployment rate increased, and wages declined (Berend 2019). The need for economic growth to service the debt while fostering jobs, investments, and innovation became the foremost priority for the member states. This fostered economic policies to avoid macroeconomic imbalances and support of structural reforms that lead to economic growth (Behrens and Rizos 2017). While facing the crisis, the European labour market is challenged by low production and labour costs in Asia, and high prices on material imports that businesses depend on for their production. This eventually adds more pressure on the European economy. The common perception for creating economic growth is to invest in long-term economic projects, such as infrastructure projects. Such projects' long-term nature stands as a contrast to the short-term profit attitude found in the financial sector. Therefore, the EU and other OECD countries started paying attention to institutional investors, such as pension funds and insurance companies. They were less affected by the crisis, which mean

they have capital to invest, and due to their long-term horizon perspective for their investments, they match the EU's solution for creating economic growth (OECD 2013, OECD 2018, Ougaard 2017).

Alongside the European hardships, leading to the desire for economic growth, the climate change debate has increased in popularity among the European citizens and policymakers. This leads us to the next section concerning the EU climate policy.

The EU and Climate Policy

During the 90s, climate change got increased recognition and was put on the international and European policy agenda, much based on the research done by the United Nations Framework Convention on Climate Change (UNFCC) and its 2007 Kyoto Protocol that commits state parties to reduce GHG emissions. In 1990, the European Commission (EC) put climate change on the agenda for the first time, addressing targets and strategies for lowering GHG emissions. Since then, the EU has been at the forefront of the development and implementation of concrete climate policy, both externally and internally, giving them a competitive advantage regarding economic and technological opportunities of low-carbon development.

According to Oberthur et al. (2010), three crucial factors can explain the EU's motivation for continuing international leadership on climate change. First, climate policy is thought to be an essential driver for the European integration process. Since the failure of establishing a joined constitution for Europe in 2005 and the 2008 financial crisis, European citizens started to distrust the EU institutions. Therefore, the EU looks for opportunities to strengthen its legitimacy and revive the integration process. Public opinion polls show that climate change is a significant concern among European citizens, where the citizens find it appropriate for the EU to tackle the issue. Therefore, climate change can be used to increase the legitimacy among the public towards the EU institutions. They have done so by developing and improving both internal and external EU climate policy. Secondly, the EU needs to find sustainable solutions for securing future energy supplies to Europe, which has encouraged a stricter climate policy construction. During the 2000s, oil prices were generally high, making people realize how dependent the EU is on energy imports and will continue to be so, unless they try to develop and secure their own energy supply. Furthermore, the EU's energy supply stability may be threatened if the union relies on only a few external partners. Today, the major countries that the EU import brown energy are from Russia, the Middle East, and Norway. Therefore, robust renewable energy policies have been implemented to increase the share of renewable energy,

diversifying the European energy supply, and driving renewable energy technology with a clear economic and employment benefit (ibid). Today, seven out of the top ten companies in renewable energy technology are located in the EU (Bonnet et al. 2019). Renewable energy policy has played an essential role in linking energy security to climate policy. Thirdly, at the international level EU holds a strong position in supporting multilateralism and international law as the backbone for global governance. Climate change fits well into these beliefs through its characterization as a global problem that needs global solutions to be solved. Further, EU's eagerness for international leadership enables them to use the climate object to highlight their international profile (ibid).

The challenges in creating economic growth to maintain a competitive Europe, and to consolidate their international leadership on climate change, has led to a new growth strategy aiming to transform the EU into a just and thriving society, with a resource-efficient and competitive economy where economic growth is decoupled from resource use (EC 2019). To accomplish this transition, a large amount of capital is needed. This has fostered the idea that the financial system is the solution due to its investment capabilities. In 2016 the EC appointed a High-Level Expert Group (HLEG) on sustainable finance that were tasked to provide a recommendation on how make a sustainable finance strategy for the EU. Their final report became the foundation for the EC's Action Plan on Sustainable finance that was published in 2018. The same year the EC established a Technical-Expert Group (TEG) on sustainable finance to give advice for how to implement the Action Plan. Their advice is revealed in various reporting standards on the SF issue. This leads us to the next section of the EU analysis, where we will address the identified ideas through topic modelling that constitutes the SF discourse**.**

Topic Modelling

Ten documents were used for the topic modelling for the EU, and through several iteration processes, we came to the result that six topics best describe the ideas that are presented within the corpus. We have identified these topics as: *Climate Finance for Development, Long Term Investments, Disclosure Guidelines, Classification of Sustainable Activities, Green Bonds,* and *Change of the Global Energy System*. These topics will be analysed in accordance to the twenty keywords that best describe the topic. The table below provides an overview of the ideas at the philosophical, programmatic and policy levels of generality, as well as some actors that create the discourse (Figure 6).

The EU Discourse

EU						
Topic / Level of generality	**Climate Finance for Development**	**Long-term investments**	**Disclosure Guidelines**	**Change of the European Energy System**	**Green Bonds**	**Classification of Sustainable Activities**
1.Philosophical (Underlying Assumptions)	• The need for economic growth • Climate change and extreme weather events continue to increase climate-related risks • Transition to low-carbon economy is needed to combat global warming and reduce GHG emissions					
2.Programmatic ideas (Problems)	•Strengthening EU economy while combating climate change • The need for finance	•Strengthening economic growth • unclear investor duties • attract capital	•Inconsistent disclosure • Not considering sustainability factors	• Change in the energy system • Climate-related risks	• Lack of green projects • Unclear green definitions	• Incoherent classification
3.Policy ideas (Solutions)	• Private investment funds •Infrastructure Projects •Incorporating ESG factors in EU frameworks	• Mobilising capital for infrastructure • Incorporating ESG factors in investments and decision making	• EU CTB Climate Transition Benchmark • EU PAB Paris-aligned Benchmark	• Scenarios for transition •Frameworks for reporting on the climate-related risks	• EU GBS Green Bond Standard	• EU Taxonomy • ESMA framework
Actors Involved in Creating the Discourse	• EC • ESMA • HLEG	• EC • ESMA • HLEG	•TEG	• EC • EIOPA	•TEG	•TEG

Figure 6. Overview of the EU ideas

In general, all of the topics identified are based on the underlying assumption that there is no obstacle between economic growth and combating climate change. Economic growth is unquestioned by problematizing how to create economic growth while reducing resources and GHG emissions. The idea has a normative dimension by referring to the European industry's aspiration for economic growth and citizens' fear of climate change. Climate change is based on a cognitive understanding where the climate is treated as a global system of circulating molecules in which climate change is the effect of rising temperatures due to the increased levels of GHG emissions released into the atmosphere (B. Allan 2017). The impacts of climate change will cause significant economic,

environmental, and social damage if nothing is done to reduce the global GHG emissions (HLEG 2018). In that perspective, the EU has an ambition-target to reach net-zero GHG emission by 2050 (EC 2019).

The topics *"Long-term Investments"* and "*Climate Finance for Development*" were identified through the same papers written by the European Commission (EC), the HLEG on SF, and the European Securities and Markets Authority (ESMA). Looking at the meaning construction found in the two topics, they defer by addressing a different problem with a different solution. Still, they share the assumption that the financial sector plays a crucial role in the transition to the low-carbon economy. The topic of *"Long-term Investments"* addresses the problem of the European funding gap. Nearly EUR 180 billion is needed to reach its climate and energy targets of 40 percent CO2 reduction by 2030 (EC 2018). Public funds alone will not suffice to finance the green transition. Therefore, action from the financial sector is needed to speed up the transition. What hampers the financial sector's capital distribution is short-term thinking among investors, which contrasts the long-term investment needed to finance the transition. By redefining the investor's responsibility by clarifying their investors' duties to embrace long-term horizon and sustainability preference, the financial sector can help cover the funding gap. It would mean incorporation ESG factors into investment decision-making (EC 2018, HELG 2018, ESMA 2020). The topic "*Climate Finance for Development*" emphasizes how the transition should take place. Long-term investments should be channelled to sustainable development projects with the main task of creating renewable energy solutions and a circular economy. Also, the projects should create new jobs and benefit related communities. Adding the concept of sustainable development to the idea about long-termism morally justifies investors' need to think long-term, rather than short-term when they make their investment decisions (EC 2018, EC 2019, HELG 2018, ESMA 2020).

The topic "*Change of the European Energy System*" contains the assumption that for the EU to reach the climate objects in 2030 and 2050, they will have to decarbonize the energy system. To do so, the EC argues that the energy infrastructure needs to be centralized and upgraded to ensure renewable energy to all member states. The EC justify centralization by playing on liberal values such as cross-border and regional corporations together with the cognitive notion of climate science. A part of the energy system's decarbonization depends on future developments of renewable energy technologies and infrastructure, such as smart grids, hydrogen networks, carbon capture storage (CCS), and energy storage is believed to play a critical role in the transition. Further, they think that offshore wind

production will be an essential renewable energy source. In one of the papers, EIPOA assumes that insurance companies can contribute to the decarbonisation of the energy system. As risk managers and investors, insurance companies can drive investments towards particular sectors and long-term projects that support the transition towards a low-carbon economy. Currently, insurers and pension funds are exposed to transition risks in their investment portfolios. Due to the lack of standardized reporting on climate-related risks, EIOPA welcomes the EC Action Plan on Sustainable finance while creating an insurance stress testing framework to incorporate climate-related risks.

In the topic "*Disclosure Guidelines*," the TEG addresses institutional investors and asset managers' main problem, which is the inability to consider sustainability factors and climate-related risk systematically in the investment processes. This will eventually lead to the end-investors not receiving the full information they need to "take into account sustainability-related issues in their investment decisions" (EC 2018: 8). This insufficient reporting and the lack of coherence are problems as the investors and stakeholders cannot assess companies' long-term value creation and sustainability risk exposure. Climate change poses many risks to the financial sector. Climate-related risks could be divided into two major risk categories: "(1) risks related to the transition to a lower-carbon economy and (2) risks related to the physical impacts of climate change" (TCFD 2017: 5). Transitioning to a lower-carbon economy may entail extensive policy, legal, technology, and market changes to address mitigation and adaptation requirements related to climate change. Depending on the nature, speed, and focus of these changes, transition risks may pose varying levels of financial and reputational risk to organisations (ibid). Physical risks would entail the increase in weather-related natural disasters, meaning that insurance companies need to prepare for higher costs due to increased pay-outs. The banks will also be exposed to greater losses due to companies' lower profitability when most exposed to climate change or highly dependent on dwindling natural resources (TEG 2019).

As part of the solution for how investors should address climate risks, the ESMA has an objective to develop a comprehensive analytical framework that will include tools and indicators at the EU level to analyse ESG factors and both financial and transition risks within their remit (ESMA 2020). The framework will cover areas as "green bonds, social bonds, emission allowances, ESG ratings of EU investment funds and climate-risk stress testing, and market efficiency in incentivising participants to support sustainable finance-related targets and goals" (ESMA 2020: 10). The cognitive framework later can be adapted, where feasible, at the national level. In the Action Plan on Sustainable Finance,

the EC states that it is necessary to include and integrate climate and environmental risks into the EU's prudential framework and assess the suitability of the existing capital requirements for green assets (EC 2018). The EU initiatives will work towards "incorporating climate risks into institutions' risk management policies and on the potential calibration of banks' capital requirements in the Capital Requirement Regulation and Directive, hence to take into account climate change-related risks while safeguarding financial stability and ensuring coherence with the EU taxonomy" (EC 2018: 16). As described by the topic *"Classification of Sustainable Activities"*, the cognitive frameworks and the taxonomy will guide and enable the financial sector to choose more wisely where to allocate the money and mitigate the climate-related risks as part of their investment process. The EU taxonomy is a tool to evaluate if an economic activity contributes to the EU's environmental objectives (TEG 2020). For the institutional investors, TEG suggests an EU Climate Transition Benchmark (EU CTB) and an EU Paris-aligned Benchmark (EU PAB) that will work as monitoring, disclosure, and incentive tools providing transparency and comparability for the investment portfolios (TEG 2019).

The topic of *"Green Bonds,"* addressed in documents written by the TEG, emphasise investors' limited ability to invest in sustainable development with the cognitive notion that there is a lack of green projects and concerns with reputational risks by unclear green definitions (TEG 2019). Issuers face reputational risks caused by choices related to green projects' definitions and the incoherent reporting in the issuance process. This current lack of standards creates a problem and high uncertainty for the investors. As a solution, TEG recommends implementing the voluntary EU Green Bond Standard (EU-GBS). This standard will help expand green projects, will give precise definitions, and reduce complexity and cost. If combined with tax incentives granted at the issuer or investor level, green bonds can also help promote market growth (TEG 2019).

All in all, through the topics identified, we find that the SF discourse entails the EU’s interest in creating economic growth and the assumption that climate change will cause significant economic, environmental, and social damage if nothing is done to reduce the global GHG emissions. To find a joined solution for the two concerns, the discourse promotes the idea of steering investments towards renewable energy solutions and circular economy projects to connect finance with the real economy. This economic development would need a large amount of capital over a more extended period, which is why the idea of long-term investments is addressed. Investors are encouraged to think long-term rather than short-term for their investment practices to channel their investment into sustainable development projects. To motivate such investment, the discourse entails the idea of climate-related

risks and how they should be disclosed through the reporting standards, the Taxonomy, the Green Bond Standards, and Climate Transition Benchmark.

Network Analysis

The topic modelling allowed us to identify elements of meanings that constitute the leading ideas of the SF discourse. In the coming section, SNA will measure and visualize which actors are involved in crafting the ideas according to the theory. The betweenness centrality measures how significantly an actor is as a connecter or as a broker. The network below visualizes the EU network in its fullness representing 61 organisations - a mixture of the EU institutions, industry associations, financial institutions, institutional investors, research centres, universities, NGOs, industry corporations, and IOs (Figure 7). Around half of the actors represented are actors from the private sector.

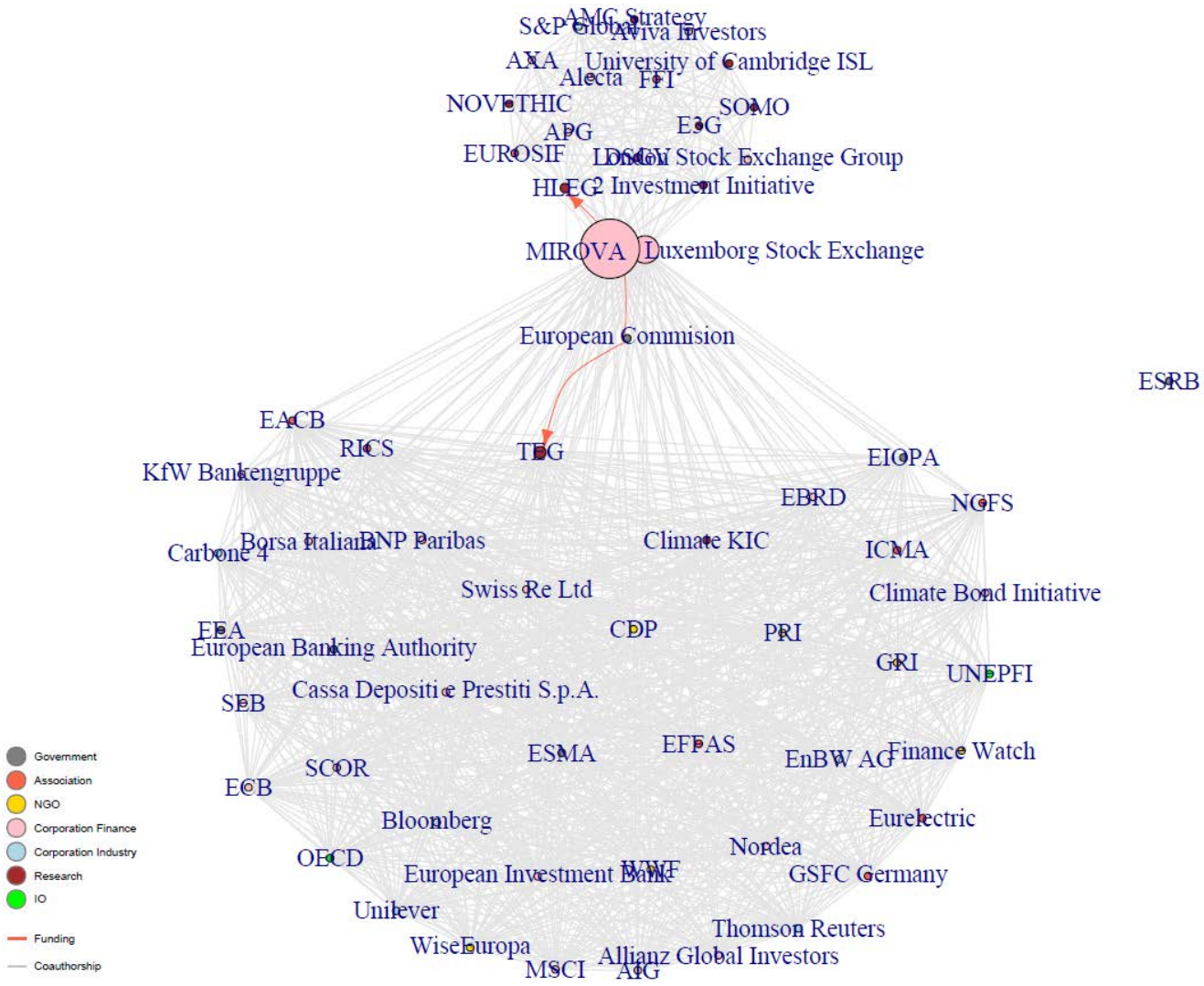

Figure 7. Overall EU Network

Central Actors

The entire network is very dense, and hence we will reduce it, to better portray the main actors. In the following section, we will present the five most central actors in the network and address how they manage to gain issue control and influence the ideas constraining the SF discourse. The reduced EU network visualizes that Mirova, Luxembourg Stock Exchange, the European Commission, the TEG, and the HLEG play a central role (Figure 8).

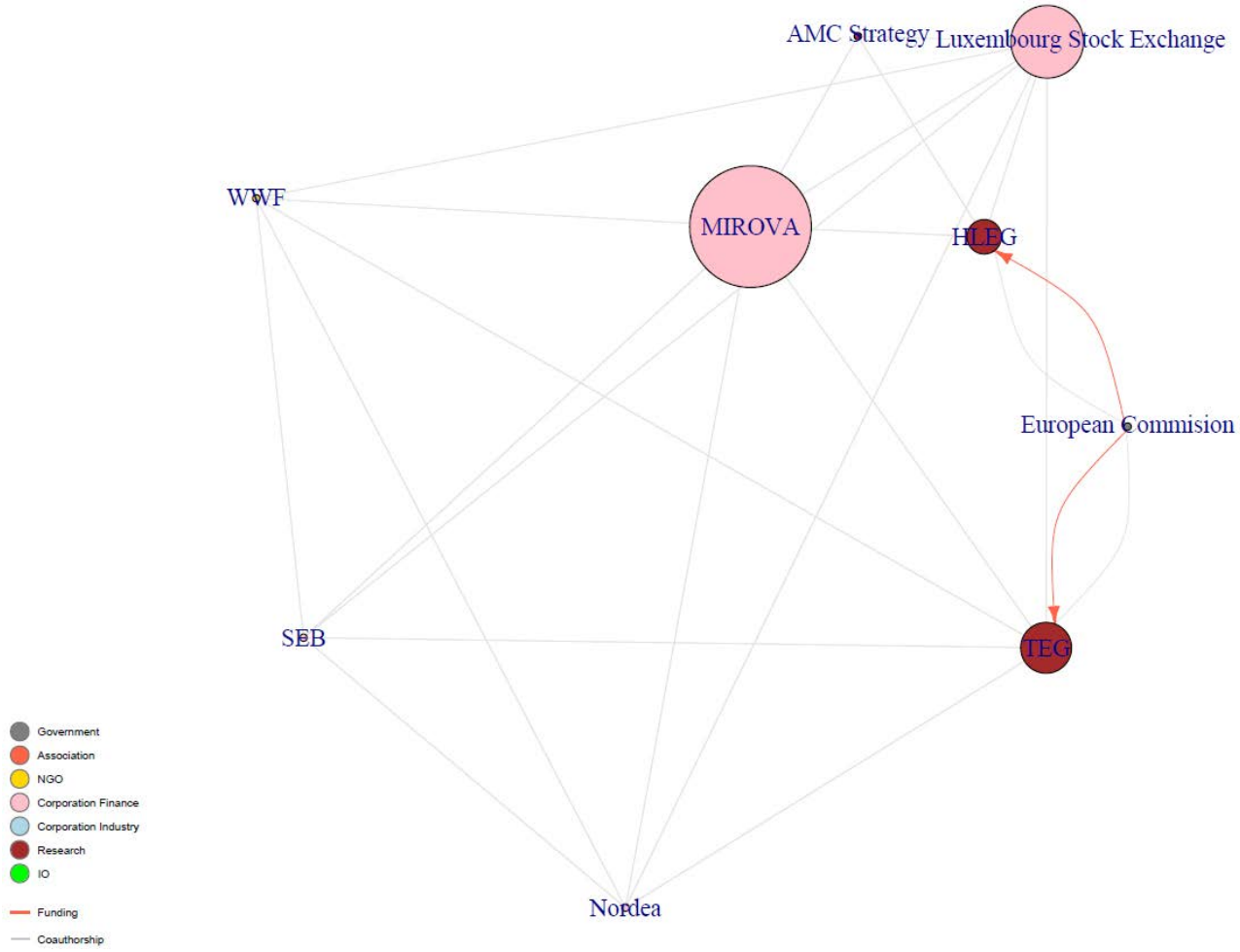

Figure 8. Reduced EU Network

Mirova is an asset management firm with over 20 years of experience providing its clients with solutions that reunite financial performance with positive environmental and social impact. Their offices are located in Boston, London, Paris, and Luxembourg, where they have more than 12 billion Euros in assets under management. Mirova is the most central actor in the EU network, and as service

provides, they act as a broker due to their desire to influence the policy-making process so it can favour their asset management model. To be the actor who has first-hand knowledge of SF reporting standards, they can carry out a market for their services. As an asset manager, they want policies to be framed according to the investors' needs. Being a TEG member, they have the power through ideas by directly influencing the drafting process of the green bond standards, the benchmarks disclosure, and the taxonomy. The 'know-how' used to influence the standards is gained through years of experience and research on integrating ESG ratings into investment processes, and knowledge about carbon benchmarking. Their 'know-how' and their assumed connection to institutional and individual investors make them a valuable resource for the EC, which may explain why they were appointed to be a TEG member. Mirova's broker status lies in their ability to transfer knowledge and information between the private and public sectors. They exploit the knowledge gained from the investor community to influence the policy-making process within the EC, and by participating in the TEG they gain access to policy information, which is crucial for their service portfolio offered to their investors. The reporting standards contain a broad scope of technicalities and complexities, which invite consultancy demand (Mirova 2020).

Luxembourg Stock Exchange was established in 1928 and is today the leading listing venue for international securities. Their specialty is the listing of international bonds. In 2007 they became the world's first exchange to list a green bond, and in 2016 they launched the Luxembourg Green Exchange - a platform to meet the growing demand for sustainable finance, providing green, social, and sustainable securities (LGX 2020). To enter the platform, issuer and asset managers need to provide full disclosure to maximize transparency. Today, the Luxembourg Stock Exchange lists 50% of the world's green bonds. The platform was launched the same year the EC appointed Luxembourg Stock Exchange to be a member of the High-level Expert Group on Sustainable Finance (HLEG). According to the betweenness score, Luxembourg Stock Exchange is the second most central actor in the network and is connecting to the private as well as the public sectors. Being a member of both the HLEG and the TEG, gave them access to the meaning construction of the SF discourse entailing the standards concerning green bonds, benchmarks, and taxonomy, which would subsequently govern their listing operations. They have impact on what ideas to include and what ideas to exclude, to influence the understanding of bonds classification and how to disclose information.

The exchange's main motive is to make a profit, which can be gained from increased cash flows due to the fees that the exchange gain from each trade. Therefore, market participants that can provide

liquidity are vital because they attract other market participants, forcing the exchange to have various services and financial products (Mattli 2019). The SF discourses able them to expand their services and products range, which give them a competitive advantage in attracting investors for the green bond market. Their knowledge and information about the market and how to list securities, especially green bonds, entitle them a broker status in which they occupy the space between the EU institutions and the market, allowing the exchange to open or block the flow of information dependent on their interests.

The *European Commission* (EC), *HLEG*, and *TEG* are the third, fourth, and fifth most central actors of the network according to the betweenness score. In the coming section, we will analyse them together due to the EC's overall command and funding for both of the HLEG and TEG.

The EC's work is about shaping the EU's overall strategy by designing and implementing EU policies. The commission is governed by a group of 27 Commissioners who set the political and strategic direction. A new Commissioner is appointed every five years. In 2016 the EC established a High-Level Expert Group on sustainable finance (HLEG) that comprised 20 senior experts. They were mandated to provide advice to the commission on how to steer the flow of capital towards sustainable investments, how to protect financial institutions from climate-related risks, and how to implement issue related policies. Their recommendation given in their final report published in 2018 became the backbone for how the EU will build its sustainable finance strategy, manifested in the EU's Action plan on Financing Sustainable Growth (March 2018).

Furthermore, the action plan encourages to create a classification system for sustainable activities – the EU Taxonomy. For the taxonomy development, another expert group of 35 members was created - the Technical Expert Group (TEG) - to give their recommendations on the taxonomy's overarching design. Those include guidelines for how to develop climate-related disclosures together with green bond standards and guidelines on climate change-related investment benchmarks. The group's final report, published in 2019, set the groundwork for a future EU taxonomy in legislation.

The two expert groups representing the financial sector, academia, business, and civil society have an enormous power to construct the elements of meanings that, in its totality, shape the overall discourse of the SF at the EU level. Their knowledge production about the SF issue is constituted through their reports, which we argue is powering through ideas. The groups have gotten policy space to induce *new* meanings through knowledge production following their interests and value systems.

The high representation of experts from the financial sectors may explain why the understanding of the SF is in line with private sector preferences, which will be discussed later in this paper. However, the EC controls the knowledge production through its requirements and funding. The requirements reflect the EU's interest in incentivizing investors to invest in long-term sustainable projects. This is believed to solve the EU's main problems addressed in our context section of the paper; how to create economic growth, secure the EU's energy supply, and reach the EU's climate targets by 2030 and 2050. The EC acts epistemic arbitrage by occupying a structural hole in the network connecting the financial sector and other environmental NGOs with the EU situations. They exploit the two knowledge pools of climate and energy policy and finance in constructing knowledge on the SF.

To sum up, the EU network informs a close collaboration between the public and the private sector, where central actors from the financial sector play a crucial role in framing the various reporting standards on the SF issue. Both Mirova and the Luxembourg Stock Exchange act as brokers between the financial sector and the EC, where they influence, through TEG and HLEG, the drafting process of the reporting standards with their know-how. By occupying structural holes, they control the flow of knowledge and information, enabling them issue control. Further, we argue that the EC is an epistemic arbitrageur that exploits different knowledge pools to create new knowledge used to frame the overall SF discourse. Due to their connections to financial organisations and NGOs through the HLEG and the TEG and the EU institutions, they gain a central position within the network.

Denmark

The Danish Institutional Context

Denmark is a Nordic country with a population of just under 6 million inhabitants. In 1972, they joined the European Economic Community (EEC) - the leading economic partnership in Europe – later to become the European Union. Denmark was also one of the founding members of the United Nations (UN) and continues to be a very active member, especially in the negotiations of the goals in The Paris Agreement (Denmark 2020). The renewable energy development in Denmark began with the 1970s oil crisis, where prices quadrupled in a few days, and the they realised that they needed to turn around their energy supply. The first oil crisis happened in 1973 when oil prices spiked dramatically and where 90% of the Danes' energy supply was imported (Lilleholt 2016). In response to the crisis, Denmark's policymakers turned to bid on the North Sea's rich energy reserves for energy independence throughout the 1980s. The climate science was still not fully understood by that time.

However, a diversification process has started, and in the first phase of change, oil was gradually being replaced with coal and natural gas (ibid). In the second phase, bioenergy and wind were added, and district heating systems based on combined heat and power production were expanded into homes and businesses (ibid). Eventually, the Mideast resumed the oil flows, and Denmark also had some stability from the reserves in the North Sea. However, Denmark never forgot the lessons of 1973 and continued driving for greater energy efficiency and a more diversified energy supply (Walsh 2009).

Wind energy

In 1979, the government began a determined program of subsidies and loan guarantees to build up its nascent wind industry (ibid). Copenhagen covered 30% of investment costs and guaranteed loans for large turbine exporters such as Vestas. It also mandated that utilities would purchase wind energy at a preferential price — thus guaranteeing investors a customer base. Energy taxes were also channelled into research centres, where engineers were able to craft designs that would eventually produce "cutting-edge giants like Vestas' 3-megawatt (MW) V90 turbine" (Welsh 2009). Early government decisions and political and public will could be argued to be the reasons for Denmark's dominance in sustainable initiatives and the wind energy market. The oil-crisis produced a robust social mandate for change and after four decades of progressive reforms—first aimed at securing supply and later at decarbonizing the economy—Denmark is said to have become an example of how to transition to a low-carbon economy by combining market-based and regulatory approaches with a long-term focus (Lilleholt 2016). In 1991 Denmark built the world's first offshore wind farm, and today, offshore wind energy become a thriving global industry that provides power cheaper than coal and nuclear plants (State of Green 2019a). Danes can now enjoy a strong, secure energy supply with more than 40% of the energy coming from wind, and economic growth increasingly decoupled from energy consumption (Denmark 2020).

"Wind has become a global competitive technology because of a long-term political vision and entrepreneurial ingenuity. It is proof that the green transition is possible. Now, it is time to use our experience from the wind industry to develop new sustainable solutions that can accelerate the world's green transition and combat climate change," - The Danish Minister for Climate Energy, and Utilities - Dan Jørgensen (State of Green 2019a).

Danish climate policy

In December 2019, 8 out of 10 parties in the Danish Parliament agreed on a legally binding national Climate Act (State of Green 2019a). The new Danish government has set a binding target and strengthened its 2030 goals to reduce the CO2 emissions by 70% compared with the 1990 level (ibid). Furthermore, the Climate Act commits current, and future climate ministers to reach net-zero emissions by 2050 at the latest and raises the Danish ambitions while encouraging other countries to follow suit (ibid). To decrease emissions, the government is also reshaping Denmark's political infrastructure. Firstly, it has established a Committee for the Green Transformation to ensure that climate considerations are taken into account of every significant political decision. Moreover, the government launched 13 climate partnerships with Denmark's leading private sector organisations intending to pave the way for the sustainable solutions of the future (ibid). The 13 partnerships represent all Danish business branches and portray that the business community has a central role in the green transition (State of Green 2019b).

The Danish Prime Minister and three of her ministers agree on the need for public-private partnerships in Denmark: "We are seeing that the Danish business community is deeply involved in the climate case. To be honest, many companies are a step ahead of us politicians. While we have been busy setting high climate targets for Denmark – a 70 percent reduction in emissions by 2030 – the green transition is already in full swing at the workplaces. <…> Danish companies and employees deserve a government that is as ambitious as they are themselves. We must invest in green technology and show that partnerships are the solution – also on the climate challenges and on the protection of the nature in which each generation only guests." (State of Green 2019b). The climate partnership with the Danish government and the Financial sector is through PensionDanmark – an association representing pension funds and insurance firms in Denmark. In addition, in September 2019, The Danish government and the Danish pension industry announced investments worth billions of EUR in the green transition (State of Green 2019c). In collaboration with the Danish government, the Danish pension industry announced plans for the industry to invest more than EUR 46 billion in green transition towards 2030 (ibid). The investments will be in energy infrastructure and other activities as green stocks, bonds, and energy-efficient constructions. The partnership with the pension funds will help the Danish government give Denmark a leading position globally in green investments. Besides, setting ambitious goals and collaborating across the public and private sectors shows that

Denmark can manoeuvre in green transition and, through many years of experience, lead on green transition globally.

Topic Modelling

Denmark was not only actively raising the issue of SF and securing an ambitious global climate agreement at the UN conference in Paris in December 2015. They also keep increasing their national ambitions for sustainable transition and carbon footprint reduction. It can be seen from the table below (Figure 9) that the most prominent SF ideas for Denmark are *Public Strategy for Emission Target*, *Danish Energy*, *Financial Sector and Sustainable Transition*, *Pension Funds Investing in Green Projects*, and *Climate Change and Insurance*. The table creates an overview of the three theoretical levels of generality and the main ideas that circulate in Denmark constituting the SF issue. Furthermore, it will also introduce several actors that are regarded as contributors to the discourse creation. Sixteen documents were used for the topic modelling for Denmark. Through several iteration processes, we concluded that five topics, described below, best describe the ideas presented within the corpus.

DANMARK					
Topic / **Level of generality**	**Public Strategy for Emission Target**	**Danish Energy**	**Financial Sector and Sustainable Transition**	**Pension Funds Investing in Green Projects**	**Climate Change and Insurance**
1.Philosophical (Underlying Assumptions)	• Climate change has strong impacts for the long-term strategy • Opportunities for the energy sector • Significant funds are needed for the green transition)				
2.Programmatic ideas (Problems)	•How to reduce Denmark's greenhouse gas (CO2) emissions (70 per cent target by 2030 by the Danish government	•How to reduce CO2 emission while staying competitive	•How to intergrade sustainability into investment decision making and business models	• Green transition • Need for significant funds	• Physical risks •Transition risks •Spillover effects due to risks

3.Policy ideas (Solutions)	•collaboration between public and private sector through "Klimapartners kab"	•policies that secure the Danish renewable energy and increase the export of energy to the European electricity market	• apply the EU's taxonomy • using ESG data when evaluating a company •the use of Danish mortgage finance	• Involving private sector •Partnerships &collaborations	•Incorporating, reporting and monitoring risks •Collaborations
Actors Involved in Creating the Discourse	• The Danish Government • DI •Klimaraadet	• Danish Ministry of Climate, Energy and Utilities, • The Danish Government	• Finance Denmark, • Finans Foreningen •PFA	• Vestas • The Danish Government • Insurance & Pension Denmark •PFA •PKA	•Danish Central Bank • Danish Insurance Association

Figure 9. Overview of the Danish ideas

The Danish Discourse

The underlying assumptions revealed by the topic modelling implies that climate change has not only strong impacts for the Denmark's long-term strategy, but that it also presents opportunities. Due to its geographical position, Denmark can be very exposed to physical risks caused by climate change if no action will be taken. Transition to a sustainable economy is needed, and this presents opportunities for the Danish energy sector. However, large investments will be needed to achieve these goals.

Both topics "*Public Strategy for Emission Target*" and "*Danish Energy*" address the newly implemented Climate Act (2019) that represents the government's high ambition to reduce greenhouse gasses by 70 percent by 2030 compared to the 1990 levels and towards a net-zero emission by 2050 at the latest. The climate act contains both a cognitive and normative notion in which the former uses the Paris Agreement of limiting the temperature rise well below two 2°C to justify the act, and where latter plays on Danish values and industrial traditions to legitimizing the Danish transition towards a climate-neutral society. The way to move forward appears differently in the two topics.

In the topic "*Public Strategy for Emission Targets*" the Confederation of Danish Industry (DI) and the Danish Government use national values of collaboration and collective movements to legitimize how the green transition should be done. Danish society must stand together to create a future for how to live, produce, and use transport that protects the environment while meeting the needs of

future generations. The transition is seen as a historical opportunity to strengthen the Danish economy, where Denmark now is able to show the world that it is possible to be green and competitive while being in solidarity. Based on existing green energy solutions, technologies, and infrastructure, Denmark has a unique chance to continue delivering green solutions that the global community demands (The Danish Government 2019; DI 2020).

The topic "*Danish Energy*" focuses on the Danish energy sector's potential to fulfil Denmark's emission targets. Denmark was early to establish a professional and efficient renewable energy sector, illustrated by long-term political vision and entrepreneurial ingenuity that accelerated the transition way before climate change was set on the international political agenda. In 2018, all parties in the Danish Parliament reached a political Energy Agreement to further build Denmark's international position by focusing on renewable energy efficiency improvements, research and development, and energy regulation. The measures and policies decided in the agreement are now being implemented to secure the Danish renewable energy and increase the export of energy to the European electricity market (Danish Ministry of Climate, Energy and Utilities 2019).

There is a general assumption represented in the topic "*Financial Sector and Sustainable Transition*" that the financial sector plays a key role by financing sustainable solutions within transport, energy, manufacturing, and buildings. According to Finance Denmark and Finans Foreningen, all financial sector actors must integrate sustainability into all dimensions of their business model e.g. integrating climate-related risks in their risk management and encouraging financial actors to advise on sustainability services to business and personal customers. Part of this work will be to apply the EU's taxonomy on sustainable activities to both investments and lending products, using ESG data when evaluating a company. It also means making sure transparency regarding sustainability and risks are following the EU legislation and international standards and including sustainable finance in research and teaching at universities. The state should encourage taxes, subsidies, and guarantee funds to promote sustainable production methods (Finance Denmark 2020). The Danish mortgage finance is believed to be an efficient financial system that indirectly promotes sustainable development investment. Energy performance (insulation, energy sources, etc) is positively included in the valuation of properties serving security behind mortgage covered bonds. Sustainability should thus not be restricted to including only green bonds but can also be promoted through mortgage bonds, which are already a common funding instrument in the EU (Finance Denmark 2019).

The topic "*Pension Funds Investing in Green Projects*" presents a cognitive assumption that the green transition requires significant funds and partnerships. This implies that a solution could be a partnership between the private and the public sectors. Danish pension industry has collaborated with the Danish Government and announced plans to invest more than €46 billion in the green transition towards 2030 (Insurance & Pension Denmark 2019). Such collaboration and investments will not only help the Danish Government to strike a leading position globally in terms of green investments, but also create a normative paradigm in the society of viewing the government and the pension funds as the transition leaders for the green and sustainable economy. Danish companies have been and still are particularly skilled in the fields of renewable energy, environment, water, and resource management - and partnerships, collaborations, and investments in green projects will keep strengthening the normative paradigm (State of Green 2016). Blended finance is key to achieve the climate goals, and a concrete example could be an offshore wind park in England; constructed and operated by DONG (Ørested), using Vestas wind turbines, and financed by the Danish pension fund, PKA, together with an investment from the LEGO group (ibid). Partnerships create opportunities and Vestas has recently entered a partnership with a Swedish utility, Vattenfall, and PKA, for a 353 MW wind energy project in Sweden. This is not only expected to give great returns as an investment, but will also help to come closer to being a fossil-free society, and ensure that the normative ideas in the society will view the companies and the funds as the leaders for change and sustainability (Vestas 2018). To conclude, collaborative partnerships between investors, policymakers, and companies are essential if investors are to maintain the current pace of investments in climate-related projects.

The topic "*Climate Change and Insurance*" cognitively presents climate change to have a spillover effect on financial stability. Both the Central Bank and Danish Insurance Association agree that physical risks are a big concern in Denmark. Rising sea-levels, flooding, and general weather-related damages have been the greatest threats in the recent years (Nordic Insurance Collaboration 2013). Transition risks will also arise from new regulations, technological advancements, and changes in consumer preferences. The Central Bank's and the insurance sector's concern is that these risks will have spillover effects both to the economy and to the financial system. The economy and corporate sector, agriculture, and households will see lower productivity, a fall in the asset prices, a significant decrease in property value, and ultimately the fall in earnings. This will create exposure to the financial system and result in higher insurance requirements (due to monetary damage) or uninsurance of some properties, loss on investments, loss on lending, and increasing risk weights (Denmarks Nationalbank 2019a; 2019b). As a solution, financial institutions and authorities

should incorporate these risks in their risk management, and financial regulation should reflect the actual risks (Denmarks Nationalbank 2019a). The Danish Central Bank became a member of the Network for Greening the Financial System (NGFS) and is strongly encouraging using NGFS's cognitive recommendations on monitoring and reporting on climate-related risks in terms of financial stability and data sharing (ibid). Insurance companies also ought to play a significant role in the climate change debate due to their ability to collect the claims data on the climate challenges e.g. downpour projects – a collaboration between universities, insurance companies and municipalities to create a risk flooding map for municipalities to address infrastructure decisions (Nordic Insurance Collaboration 2013). There should also be a collaboration between various insurance companies and the Danish Meteorological Institute (DMI) to create a weather service tracking extreme weather conditions. Collaboration between the policy makers, insurance companies, meteorologists, and municipalities can reduce climate-related risks and investments in coastal and climate protection (Denmarks Nationalbank 2019b).

To summarise, the Danish discourse is built on the general assumption that Denmark should be a leader in the green transition, and that climate change presents not only risks, but also opportunities. The discourse implies that physical and transition risks will have a spillover effect on the Danish economy. However, incorporating, monitoring, and reporting the risks could significantly reduce it. The transition will also require significant investments, and the financial sector plays a key role in financing sustainable solutions. We see strong partnerships that arise between the public and the private sectors to achieve the set emission reduction goals, inter alia, pension funds that commit to investing in green projects. The discourse also implies that Denmark still needs to stay competitive while reducing CO2 emissions. Climate change has strong impacts on the Danish long-term economic strategy and present opportunities for the energy sector. Denmark was early to establish the infrastructure for renewable energy (windmills), and recent policies are adapted to secure the Danish renewable energy and increase the export of energy to the European electricity market.

Network Analysis

Topic modelling provided the discourse that is prominent in Denmark. However, a closer look at the Danish network will inform which central actors are involved in creating the ideas according to the theory. The betweenness centrality measures how significant an actor is as a connector or a broker. In the network, 46 actors are involved in creating ideas on the SF issue. There are 6 actors from

government bodies, 10 associations, 3 NGO's, 16 financial institutions, 10 industry actors and 2 research centres. The network below shows the Danish network in its entirety (Figure 10).

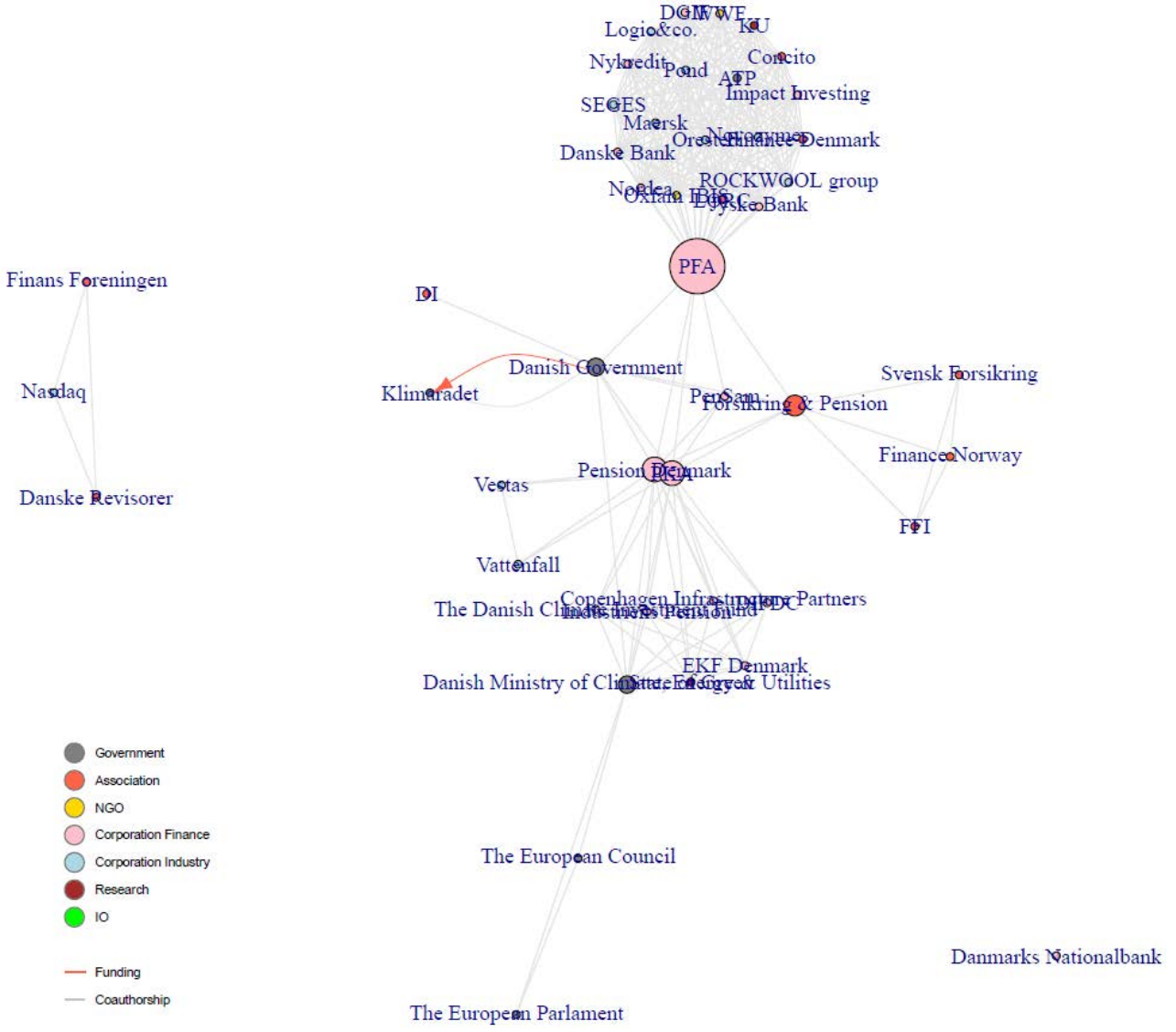

Figure 10. Overall Danish Network

The reduced Danish Network involves actors that have been in two documents or more, and presents that the Danish Government and the Ministry of Climate, Energy & Utilities, three Pension companies, and Insurance & Pension Denmark Association play a central role (Figure 11).

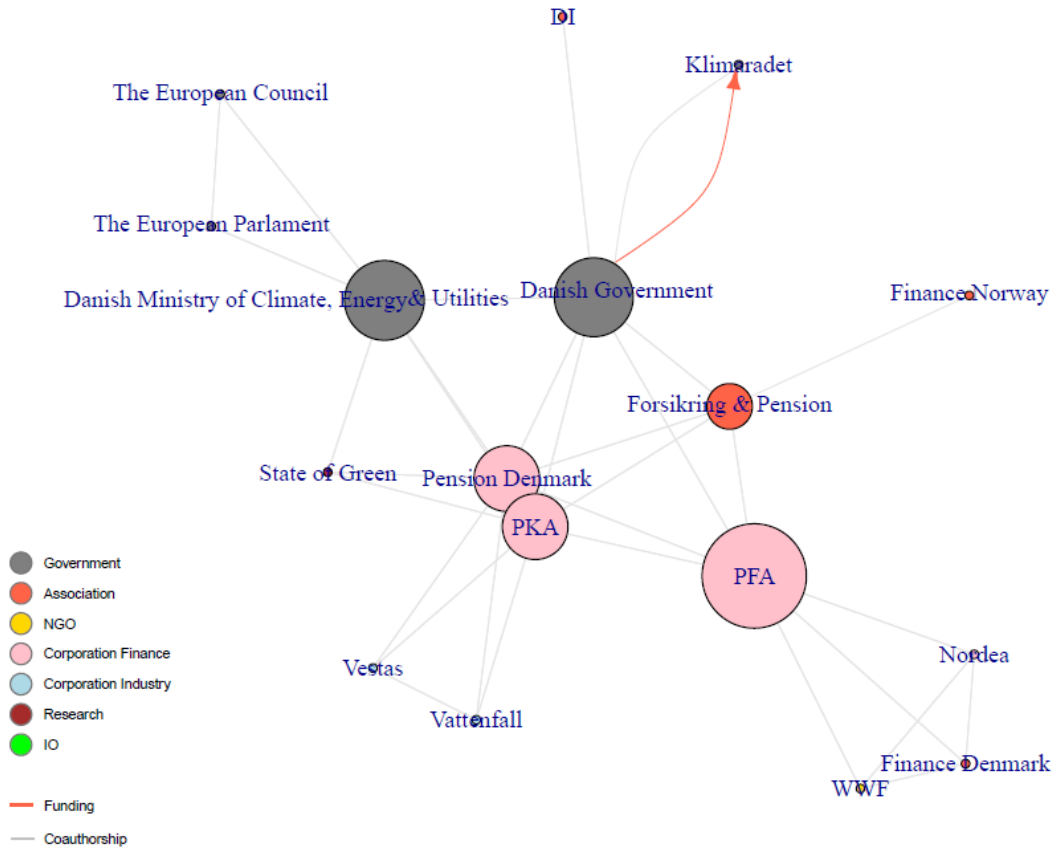

Figure 11. Reduced Danish Network

Central Actors

Based on the betweenness score, *The Danish Ministry of Climate, Energy and Utilities* and *the Danish Government* are the second and third most central actors in Denmark. The Danish Government consists of 179 members that are elected at least once per four years and is led by the Prime Minister (The Danish Parliament 2020). The Danish Ministry of Climate, Energy and Utilities was established on 28 June 2015, when the utilities area was added to the responsibilities of the Climate and Energy Ministry. The Ministry contributes to the Danish government's increased efforts to ensure safety and efficiency within the areas of energy and utilities and to promote a greener and more sustainable society (State of Green 2020b). These efforts include a governmental goal that Denmark will be independent of fossil fuels by 2050. As mentioned before, the Danish Government

wants to be a global leader in the green transition and has in 2019 announced a binding target to reduce the CO2 levels by 70%. The government's new climate law requires the government to set binding emission targets for each sector of the economy every five years, and this could potentially serve as a model pathway for other developed nations (ibid).

In June 2020, Denmark earned the top spot in global sustainability index (EPI) and made a leap from 3rd in the previous iteration (State of Green 2020a). Denmark is leading the world on climate change action and is an issue controller through power over ideas in their Public Strategy for Emission Target. Power over ideas represents how the Danish Government compasses how the SF ideas should be understood and managed, with its leading position in the issue. Their knowledge and experience with the government's will and ambition allowed them to reduce its CO2 emissions in 2019 by more than half since peaking in 1996 (ibid). In addition, Denmark's capital city of Copenhagen has slashed emissions through investments in wind energy and biomass and expansion of the infrastructure. An example is branching out bike lanes, resulting in more bicycles than cars in the streets. The Danish Government has a strong position in the SF issue. As can be seen in the network, the government funds "Klimarådet" – the Danish Council on Climate Change – which is an independent body of experts who are all appointed for a four-year term of office by the incumbent minister of climate and energy and who produces work within all aspects of the transition to a low-carbon society (Klimaraadet 2020). The government employed The Danish Council on Climate Change for advise on how to transition to a low-carbon society in a cost effective manner and how to ensure the future in Denmark with very low greenhouse gas emissions while maintaining welfare and development (Klimaraadet 2020). The latter implies that the government not only occupies the structural hole and works as an epistemic arbitrageur in the issue of SF and their public strategy, but also that they are eager to create more knowledge and have power over ideas to keep their leading position in the current discourse and mode of actions.

The Danish Government and the Ministry of Climate, Energy and Utilities are also the two most prominent epistemic arbitrageurs in the Danish Energy topic. Learning from the oil crisis, the government acknowledged the need for sustainable and renewable solutions, and it can be seen that they continued to do so. The 2019 Denmark's Integrated National Energy and Climate Plan, written by the Danish Ministry of Climate, Energy and Utilities and its Danish Energy Agency, stresses the Danish competences' importance in the wind energy sector (Danish Energy Agency 2019). Through the years, Denmark has developed an astonishing infrastructure for renewable energy and "is home

to some of the world's largest wind turbine manufacturers, including Vestas Wind Systems and Siemens Wind Power" (ibid: 128). The ministry and the government have extensive "know-how" in the energy sector gathered through years of policy changes, tax subsidies, and search for sustainable solutions for Denmark's energy supply. It can be argued that they have power over ideas through their extensive knowledge, and that they can control how these ideas should be understood since they were pioneers in the market. This enables them to control the knowledge they have and act as a broker between the EU institutions and the Danish financial actors. The network portrays what an important and central role they play in the SF's context due to their interests for the steady future supply of sustainable energy, and the general welfare for the Danish citizens. The network also reveals that the government and the ministry are closely linked with the pension companies and Insurance & Pension Association and portrays their interest in being a part of the orchestration of the direction of new investments.

The pension companies *PFA*, *PKA*, *Pension Denmark*, and I*nsurance and Pension Association (Forsikring & Pension)* are four actors that occupy strategic positions in the Danish network. Historically, occupational pension schemes were primarily reserved for the public sector employees and in total, only one-third of employees in the labour market were secured an income in their retirement in addition to the benefits paid under the public pension and ATP (the Labour Market Supplementary Pension) (Forsikring&Pension 2012). The key change to the modern Danish pension system was established in 1987, in the joint declaration reached between three parties: the government of the day, the workers unions and the employers' organisations (Ransby 2020). The most essential effect of the declaration was the establishment of pension schemes for a wide range of workers, and the pension scenario changed utterly.

From 1987 and onwards, pension schemes became widely available to workers in the private sector. In continuation of the Joint Declaration, in 1993, an agreement took effect that secured that occupational pension schemes will provide not only basic income support, but also provide financial security in the event of disability and death (Forsikring&Pension 2012). Since the early 1990s people slowly "increased their contributions to their pension schemes from 0.9 % to a minimum of 12 % of the salary" (Ransby 2020). It is also argued that while occupational pension schemes increased private savings, they also helped to turn the economy around in the 1990s, as the balance of payments has been in surplus ever since (Forsikring&Pension 2012). The Danish pension system also strengthens the economy by the fact that Danes are eligible for full tax relief on their pension contributions and

do not pay taxes until the time of retirement and taking of the pension income. Such deferred taxation helps to deal with the demographic time-bomb, as the country will be collecting tax revenues at the time when the elderly will put more pressure on public care and pensions (Jensen et al. 2019). However, some scholars argue that the universal all-encompassing pension system remains universal for those without any further means, but the real value of the pension has been slightly eroded (Kvist & Greve 2011). The increase of occupational pensions will reduce the pressure on the public purse caused by the demographic change. This will reduce how much retired people receive in the national old-age pension, although everyone will get the same basic amount (ibid). It is also argued that there will come some inequalities, as a shift towards a pension system with a more private pension that is based on labour market participation will favour those with the high and stable income over those with smaller and unstable incomes, and eventually imperil the Danish welfare model (ibid).

In third quarter 2019, the Danish Pension and Insurance industry has grown to nearly DKK 4.8 trillion, out of which the pension industry accounted for more than DKK 4.6 trillion (Danmarks Nationalbanken 2019). At the UN Climate Action Summit, the Danish pension industry also announced that they plan to invest DKK 350 billion by 2030 in an effect to support the green transition and were represented by PFA, PKA, PensionDenmark, PenSam, and Insurance & Pension Association (Danish Ministry of Climate, Energy & Utilities 2019; Forsikring&Pension 2019). As their interests are closely interlinked, some of these actors will be analysed and discussed together.

The most central actor in the network is PFA, followed by PKA and PensionDenmark, and finally Insurance & Pension Denmark. PFA pension was founded in 1917 by labour market players and is Denmark's largest customer-owned pension company providing pension and insurance plans. With 1.3 million clients and more than DKK 688 billion assets under management, PFA ranks among Europe's largest pension companies (PFA 2020). PKA is a Danish pension company established in 1954. Its total members of around 352 000 are predominately from the social and health sectors – the welfare society's backbone. The pension company has a fortune of DKK 330 billion. (PKA 2020). PensionDanmark is a non-profit pension company that was established by a group of labour unions and employer organisations to manage the pension agreements that have been part of the collective agreements since the beginning some 25 years ago, entitling all blue-collar workers (PensionDanmark 2020). It is owned by 11 trade unions and 29 employer organisations and has about 391 600 active members. The pension fund provides pension, insurance, and healthcare programme to its members and had EUR 36 billion (ca DKK 270) under management by the end of 2019. The

last actor is Insurance & Pension Denmark, a trade association that represents 92 pension funds and insurance companies operating in the Danish market. They are the voice of the insurance and pension industry, and their mission is to represent the industry's interests. They also want the industry to be perceived as a significant player that contributes constructively to creating security and resolving the challenges of the welfare society (Forsikring&Pension 2020).

From the network, we can see that PFA has a strategic position in the network that connects the other two pension funds, the Insurance & Pension Association, and the government bodies with the outside of Denmark actors WWF and Nordea. This is a unique position of this actor compared to the other pension companies and the association. This central position could allow PFA to access the international community and expand beyond the national ties. PFA is also present in the two topics, 'Financial Sector and Sustainable Transition' and 'Pension Funds Investing in Green Projects'. The organisation's main interests are to put its investments into assets that create a higher rate of returns and, at the same time, contribute to the green transition. The other three actors are also present in these topics. It could be argued that the main ideas that pension companies and associations promote, are how to achieve green transition while integrating sustainability into investment decisions alongside with the achievement of significant returns. There were discussed several collaborations between the Danish governmental bodies and the pension funds, signifying that pension companies and association are essential in the Danish context by providing financial knowledge and funding to make the green transition.

PensionDanmark and PKA together occupy a central position as they are considered to be the brokers between the governmental bodies and the real economy, namely energy companies Vattenfall and Vestas. While we know that renewable energy is a big part of the Danish context, we can see that the government does not create ideas with them as such. Through these pension companies, ideas are generated and developed, thus making them the broker between the political and real economy. These pension companies could be seen as having power through ideas with an ability to interlink financial knowledge with the energy values that are deeply rooted in Danish society.

To summarise, it is argued that the government's main interests are not only the green transition, but also the security of the pension companies, the source of post-retirement tax income for the government. The close collaboration with the pension companies and the pension & insurance association allows the government to partake in the financial knowledge, while the pension companies can learn from the past implementation of policy techniques to reach energy stability. The

most prominent ideas in the discourse are therefore seen as the government's agenda for the emission target, the pension companies' investment in the green projects, and Danish Energy. It is these topics that create the SF discourse between the central actors. Further, the Danish Ministry of Climate, Energy & Utilities connects the Danish Financial Sector with the EU bodies, while the PensionDenmark and PKA connect the governmental bodies with the real economy - the energy sector, and PFA acts as a broker with the international organisation WWF. The Danish network informs that there is a close collaboration between the public and the private sector in the Danish context, and that it is the pension companies and the government that are the main brokers of knowledge.

Norway

The Norwegian Institutional Context

Norway, with a population of 5.4 million, is a small and open economy with one of the highest GDP per capita in the world, and is dependent on its natural resources and energy sources (oil, gas, hydraulic energy, forests, and minerals) (Nordea 2020). Due to the international character of the Norwegian oil fund (Government Pension Fund Global) Norway is highly reliant on what happens at the global level. As a rich oil nation, Norway refused to join the EU following the referendums in 1972 and 1994 due to the fear of losing national sovereignty and control over natural resources (UiO 2020). However, Norway is a member of the European Economic Area (EEA) that was put into force in 1994 and enables Norway to fully participate in the European market while funding the EU budget. The agreement does not cover agriculture and fisheries. When nearly 60 per cent of Norwegian export goes to the EU, where 7.4 per cent of EU's import of oil and 18 per cent of the EU's import of natural gas comes from Norway, it is in the Norwegian interest to work closely with the EU and to contribute to the ongoing political process in Europe (EC 2020).

The Norwegian oil sector

At the end of the 1950s, few people understood how significant the petroleum industry would be for the Norwegian economy when the first production licenses for oil were awarded in the mid- 1960s. Today, the oil-industry is Norway's most important in financing the Norwegian welfare society and generating economic growth. Despite a declining oil production since 2000, Norway is the world's 15th largest oil producer and the 11th largest exporter. When it comes to natural gas, Norway ranks as number seven in production and is the 3rd largest in global export (SNL 2020).

The discovery of the Norwegian oil in the early 1970s was met with optimism and scepticism on how it would affect the Norwegian society. The consensus was to ensure national control by establishing the "Norwegian Model" where the operational responsibility for oil policy was divided between the institutional set-up of the Ministry for Petroleum and Energy, the Norwegian Petroleum Directorate, and the state-owned oil company Statoil (renamed Equinor in 2018). A license system was established that allowed the government to ensure Norwegian participation of at least 50% in all licenses, and in addition to the licensing system, a petroleum tax system was implemented to ensure the government to capture a large part of the profits in the sector while carrying a large share of the risks (SNL 2020, CICERO 2019).

In the 1970s, it was a general concern that too much oil production and export would overheat the economy and expand the industry too quickly. The production was capped, but as the industry expanded in the 1980s, new ideas evolved in which the goal of keeping stable production levels to secure the economy from overheating was replaced with the idea of having a stable investment fund that would protect the economy from ups and downs in oil revenue. The oil revenues were then separated from the government income by placing them in the oil fund established in 1990 and formally known as the 'Government Pension Fund – Global (GPFG). Today, the fund operates as a financial reserve, and as a long-term savings plan so future generations can benefit from the oil wealth. Following the fiscal rule, only 4 per cent of the fund's total size can be used through the national budget. Today the investment fund captures a large share of oil revenue from the Norwegian public whereas the oil production is idealized as the main contributor to the sustainment of the Norwegian welfare state. In that way, the petroleum industry plays a significant for national identity representing both national prosperity and social equality (NBIM 2019, SNL 2020).

National oil identity

Norway's economic dependency on oil has since the 1990s led the government to push for a climate policy agenda, both national and international, that allows Norway to grow its oil production and export while taking quantitative reduction commitments of CO2 domestically. Petroleum policies and climate policies were, for a long time, decoupled and reflected in the institutional division of tasks. Petroleum policy that regards exploration and production of oil is placed in the Ministry of Petroleum and Energy, the petroleum tax system is placed in the Ministry of Finance, and climate policy that regards national and international commitments is placed in the Ministry of Climate and Environment. The separation of tasks is linked to the international climate change discourse

manifested in the Kyoto protocol (1997) that focused on the demand-side measures, leaving out the supply-side measures. This enabled Norway to continue oil production growth. The Ministry of Petroleum and Energy, the energy sector, and research institutions pushed forward two normative ideas to legitimize he oil exploration and oil production. First, Norwegian oil was cleaner compared to the oil from other producers. Second, Norwegian gas is more environmentally friendly than coal, so that Norwegian gas should replace coal production in other European countries. (Andersen and Butenschøn 2001, CICERO 2019).

Over the last decade, the issue of climate change has been placed higher on the global political agenda, resulting in the Paris Agreement (2015) that aims to limit global warming to well below 2°C. The EU is following an ambitious climate target to become the world's first climate-neutral continent by 2050. From a Norwegian perspective, if the Paris Agreement and the EU climate target is preformed then it could have real implications for petroleum resource management due to the risk of stranded assets potentially affecting the Norwegian economy's future. To stay competitive, Norway implemented their own Climate Act in 2018 that sets the country's climate target as part of the transition to a low-carbon economy in 2050, which follows Norway's commitments under the Paris Agreement. Based on the recognised ideas through the topic modelling we observe that the SF discourse is currently reconnecting Norwegian climate policy and petroleum policy through the essential idea of climate risk. In the following section we will address the identified ideas through the topic modelling.

Topic Modelling

Nineteen documents were used for the topic modelling for Norway. Through several iteration processes, we concluded that five topics best describe the ideas presented within the corpus. We have identified these topics as *Climate Risk, Insurance and Climate change, Financial Sector and Government Strategy, Energy Solutions,* and *Sustainable Investments and Responsibility*. These topics will be analysed according to the twenty keywords that best describe the topic and the three theoretical levels of generality (Figure 12).

NORWAY					
Topic / **Level of generality**	**Climate Risk**	**Insurance & Climate Change**	**Financial Sector & Government's Strategy**	**Energy Solutions**	**Sustainable Investments & Responsibility**
1.Philosophical (Underlying Assumptions)	• The economic future is green. • Renewable energy solutions are the key to reach climate targets and stay competitive. • The financial sector has a responsibility and the power to speed up the transition towards a low-carbon economy				
2.Programmatic ideas (Problems)	• how to manage the transition risks - "stranded assets"	• Norway is vulnerable to flooding, landslides, and avalanches due to climate change	• Reaching climate targets • Green competitiveness • Green & profitable sector	• The oil industry & stranded assets • Climate change-imposed risks	• Reducing financial risks • Responsible investments
3.Policy ideas (Solutions)	•The use of scenario analysis to manage risks •Change from brown energy to green energy	•improve competence and management about climate risk	• Various government's policies • Carbon tax • R&D • Collaboration between public & private sectors	•Government support • Offshore Wind • Shades of Green methodology • CCS & CCUS	• Standards development • Integrating climate risks in business management • Reporting & disclosure
Actors Involved in Creating the Discourse	• The Norwegian Ministry of Finance • the Norwegian FSA • Cicero	• Finance Norway	• The Norwegian Government • The Norwegian Government's Expert Group • Finance Norway	•CICERO •EQUINOR •IEA •Ministry of Petroleum and Energy	•Norges Bank

Figure 12. Overview of the Norwegian ideas

The Norwegian Discourse

The underlying assumptions identified through the topic modelling emphasize that the economic future is green, leaving Norway with economic risks and opportunities. Further, the development of renewable energy solutions will help Norway stay competitive while keeping its climate targets. In this regard, the financial sector is responsible for speeding up the transition towards a low-carbon economy through its investment power.

The topic "*Climate Risk*" identifies economic risks that follows the transition of the economy towards a low-carbon economy. According to the actors - The Norwegian Ministry of Finance, the Norwegian FSA, and CICERO - inadequate pricing of climate-related risk can lead to imbalance and shocks in the economy. Some sectors will be harmed by physical risks, while transition risks will harm other sectors. For risk management of climate-related risks, all actors agree on using the TCFD framework (CICERO 2019, Finanstilsynet 2019, The Norwegian Ministry of Finance 2018).

The Norwegian economy is particularly susceptible to transition risk through its exposure to the oil and gas sector. Effective global climate policy is feared to reduce the value of Norway's remaining petroleum reserves. Over the last ten years, the political discourse has changed with the new narrative of economic risks that problematizes oil as a potential 'stranded assets' due to the fear of reduced oil prices and the decreased value of remaining petroleum reserves. Therefore, the problem boils down to what the Norwegian industry should look like in a future energy system that is in line with the Paris Agreement's objectives. The government is now forecasting the transition risks using scenario analysis for how various climate policies and technological changes will affect the Norwegian petroleum sector. It is believed that brown energy (coal, oil, and gas) will be replaced by green energy (renewable energy sources), but it is highly uncertain when this will happen (Cicero 2019, Ministry of Finance 2018).

Through the topic *"Insurance and Climate Damage,"* Finance Norway (2020) addresses the physical risk Norway is confronted with. In the last decade, insurance companies have recognised an increase in climate-related damages and insurance claims. Norway is specifically vulnerable to flooding, landslides, and avalanches due to heavy rain and changing water directions. Knowledge and improved competence about climate risks is needed, both in the public sector and in the private sector, for actors to improve their management of climate risks.

Norway has set a cognitive goal to achieve its climate targets while increasing green competitiveness and creating a green, profitable, and committed sector. The topic *"Financial Sector and Government's Strategy"* presents several plans and solutions to how Norway is planning to achieve this. The government's strategy is to create markets and infrastructure for green solutions, focus on the circular economy, strengthen the cooperation with the business sector, and to have an efficient climate policy (Norwegian Government 2018). It is argued that cooperation with the EU enables Norway to pursue a more systematic and predictable climate policy, and Norwegian policy in other areas also follows such strategy (ibid). To promote green competitiveness the government's policy include, inter alia,

the polluters paying as part of an integrated policy, and that the public sector as a customer must support the adoption and development of new environmentally friendly technologies, products and solutions. Necessary information must also be available to enable consumers, the business sector and investors to choose green solutions and products (ibid: 15). The government supports green investments and the development of new technology. Recently, Enova decided to grant Equinor NOK 2.3 billion in a funding commitment for what could turn out to be the world's largest floating offshore wind park (Ministry of Climate and Environment 2019). Since Norway is exposed to risks from diverging from fossil fuels, such projects can positively contribute to the normative societal perspective by creating more profitable jobs, new industries, and increase value creation across the country (ibid). The private sector should secure the value creation, and the state needs to channel the public funding towards green innovation and encourage more private long-term capital investments through e.g. tax incentives (The Norwegian Government's Expert Committee 2016).

In 2018, "42% of all energy-related CO2 emissions came from the power sector, causing it to remain the largest source of energy-related CO2 emissions" all the parties concerned in the topic agree that one of the cognitive renewable *"Energy Solutions"* could be offshore wind parks, especially since the North Seas are exceptional for offshore wind due to the shallow water and high wind quality (CICERO 2018: 7; EQUINOR 2020a; EQUINOR 2020b; IEA 2019). It could also be an investment in a multipurpose hydropower plant providing renewable energy and services to improve water management and flood protection (CICERO 2017). The topic also presents a cognitive notion that CCS & CCUS projects are identified as necessary in most scenarios in reaching the targets set in the Paris Agreement (Ministry of Petroleum and Energy 2019). CCS is also an enabler of hydrogen in a low-emission society and works well with intermittent renewables because of its energy storage ability. The more hydrogen available, the more renewable energy from wind and solar can be added to the grid (ibid). The Northern Lights project is a full-scale CCS project and is a result of The Norwegian government's ambition to develop a full-scale CCS value chain in Norway by 2024 (Norther Lights CCS 2020). There are currently two projects in the last planning phase - Norcem from cement production and Fortum Oslo Varme from their Waste to Energy facility (ibid). The projects are run by commercial companies (Shell, Total, Equinor, Norcem, Fortum) but are encouraged and immensely supported by the government. The state will sponsor 75 per cent of the well cost to explore a storage location in the North Sea (Ministry of Petroleum and Energy 2019).

However, investment uncertainties that arise due to climate change-imposed risks and current ESG risk ratings lack a climate science-based holistic approach for climate risk assessments (ibid). CICERO introduced a cognitive climate-science based rating methodology, "Shades of Green", that is used as a green bond framework assessment (2017; 2018). The cognitive methodology is used to 'share' the companies' current revenue-generating activities from a climate perspective and help companies adapt to a green economy (transition).

In the topic *"Sustainable Investments & Responsibility"*, the discourse is created by Norges Bank, managing the Norwegian Government Pension Fund assets, and they stress the need for the development of methodologies (Norges Bank 2018; 2019). They believe that the companies should follow international standards, do the reporting, and be transparent so the investors would see the big picture and without any hidden risks or costs (Norges Bank 2018). Their long-term investment horizon means that they are interested in sustainable development and are exposed to climate-related risks. Hence, they promote climate reporting on climate-related risks and GHG emissions and advise that companies should seek to align their disclosure with the emerging standards, like set by the TCFD, because this will help to better understand the financial system's exposure to climate-related risks (Norges Bank 2019).

Overall, The SF discourse contains both cognitive and normative ideas concerning the government's interest in securing the Norwegian economy while maintaining the national position as a climate leader. Norway's economic dependency on oil constrains how ideas of the SF discourse is understood. It is assumed that an effective global climate policy may affect the Norwegian economy negatively due to the potential cost of stranded assets within the oil sector. To avoid this from happening, the solution is to invest and develop technologies related to offshore wind energy, CCS, and hydrogen. The energy solutions are in line with the EU's priority areas for green technologies (EC 2019), which illustrates Norway's dependency on the EU to create economic growth. Further, it is believed that the private sector should secure its value creation, and the state should channel public funding towards green innovation to achieve competitiveness and implement tax incentives to attract private capital.

Network Analysis

Topic modelling postulated the discourse by specifying words that we used to identify elements of meanings that constitute the leading ideas in Norway. In the coming section our SNA will measure

and visualize which actors are involved in the creation of the ideas according to the theory. The betweenness centrality enable us to measure what we want to study – how significantly is an actor a connector or a broker. The network below visualizes the Norwegian network in its entirety representing 103 organisations - a mixture of ministries, industry associations, financial institutions, institutional investors, research centres, universities, NGOs, industry corporations, IOs, and government departments. Our analysis reveals that the majority of the organisations in the network represent the private sector (Figure 13).

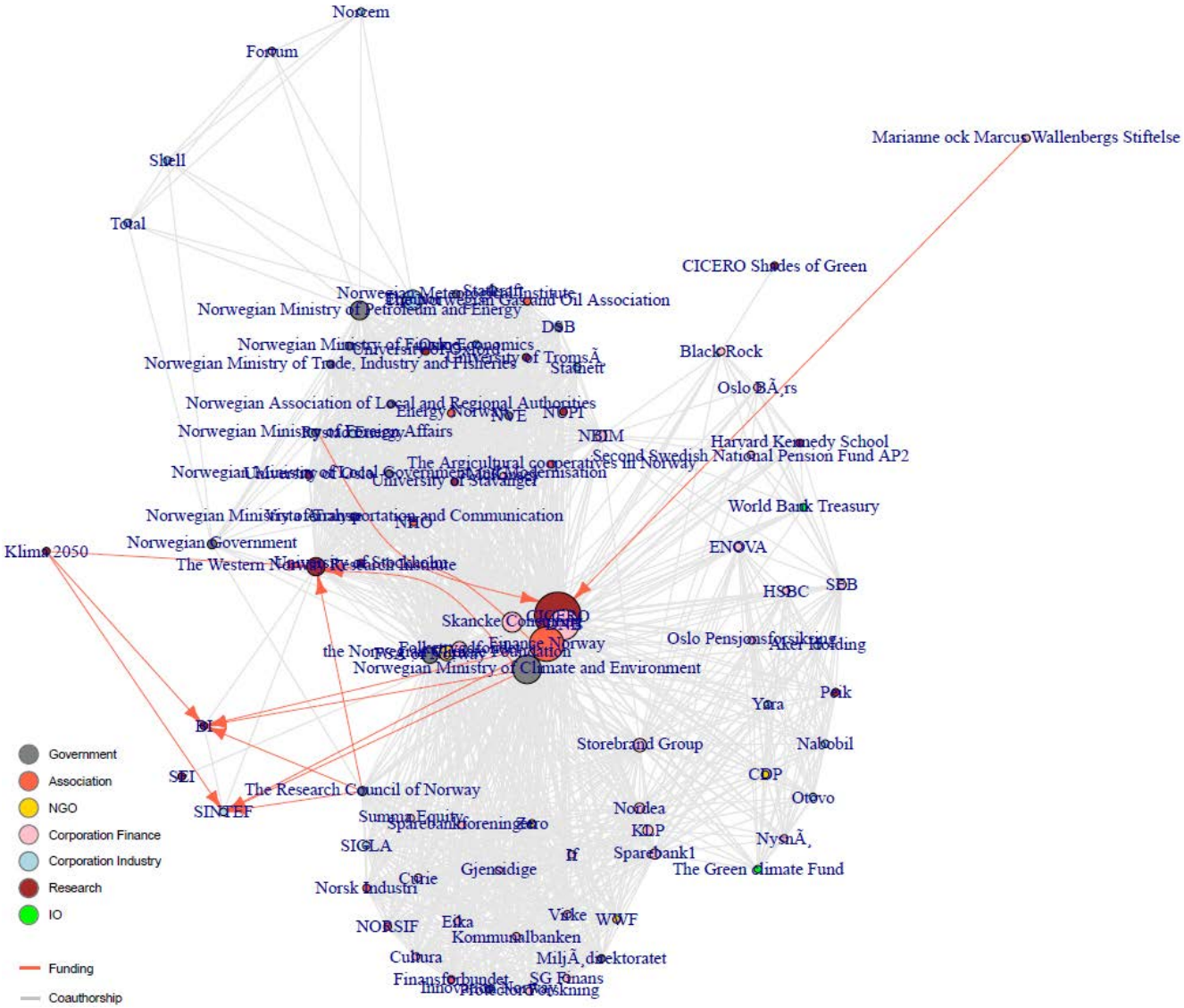

Figure 13. Overall Norwegian Network

Central Actors

In the following section, we will present the five most central actors in the network. The reduced Norwegian network presents that CICERO, Finance Norway, Equinor, the Ministry of Petroleum and Energy, and the Ministry of Climate and Environment play a central role.

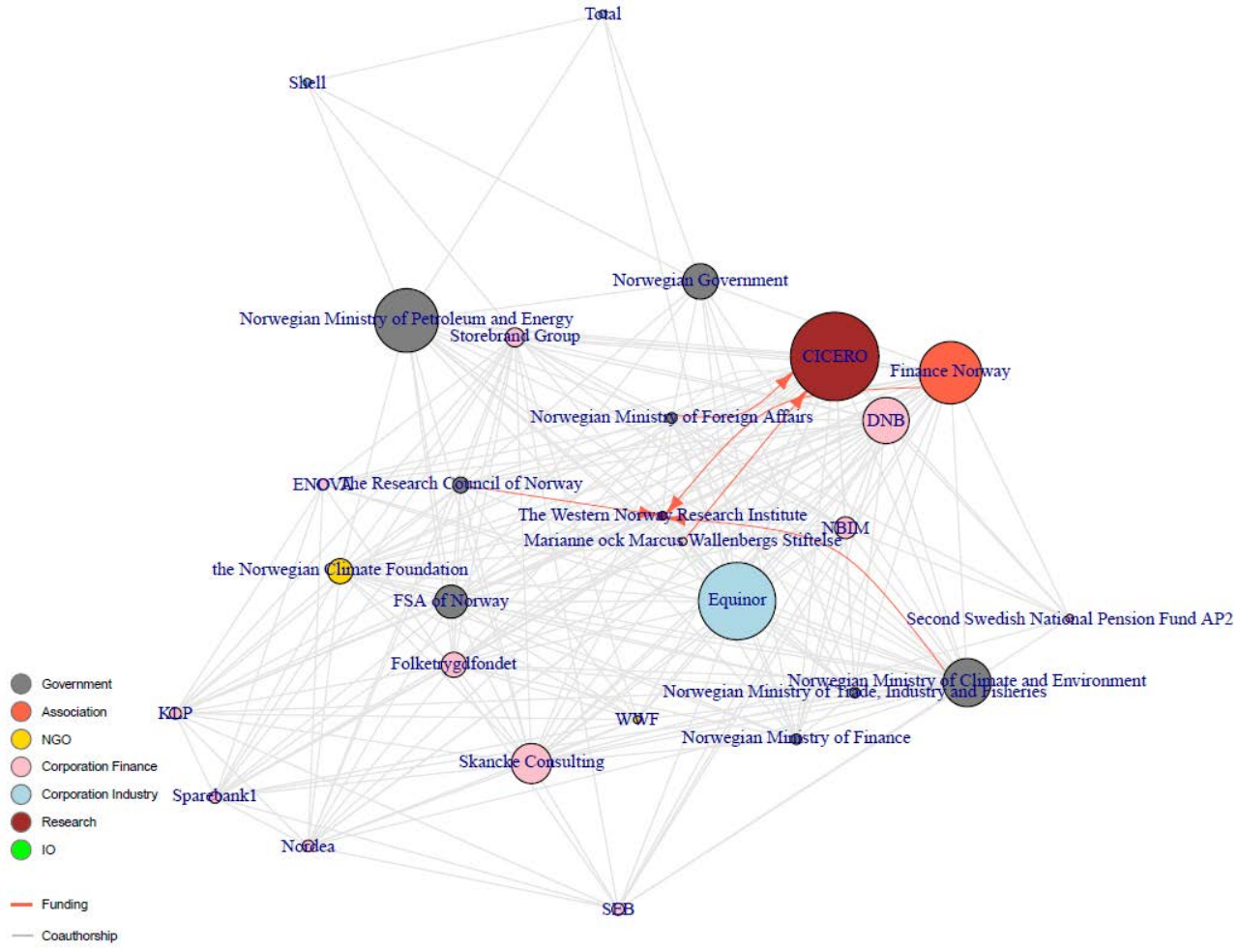

Figure 14. Reduced Norwegian Network

Centre for International Climate and Environment Research (CICERO) was established by the Norwegian government in 1990 and is Norway's leading research institute for interdisciplinary climate research. Associated with the University of Oslo, they play a national role in promoting

climate science in line with Norway's ambition to be an international climate leader. CICERO is one of the most authoritative actors on climate risk and is ranked as number one on the betweenness score among actors in the Norwegian network. CICERO is well connected across different sectors where their primary resource is knowledge about climate change. They demand epistemic arbitrage because they seek to find unique knowledge to gain a competitive advantage over other research institutions, which they manage to do by linking the two ecologies of climate science and finance. To lead the knowledge production on SF is in CICERO's interest because they gain credibility, which provides opportunities for future research collaborations, service provisions, and funding. CICERO's ability to merge climate science with financial methodology in framing the SF issue enables them access to the financial sector.

Further, in 2015 CICERO developed their own methodology they today use through their newly established company, CICERO Shades of Green, providing environmental valuations and green and sustainability bond framework services for firms (CICERO 2020, CICERO Shades of Green 2020). Due to their central position connecting the private sector with public sector and their 'know-how' they have the authority to claim how the SF issue should be treated. We argue they exercise power over ideas by having the freedom to induce the meanings they prefer.

Equinor is a 67% state-owned energy company presented in more than 30 countries worldwide. It was founded in 1972 under Den Norske Stats Oljeselskap AS - Statoil - and changed its name to Equinor in 2018, supporting the company's new strategy of broadening its energy solutions. The company's main activities are exploration, development, production, and oil and gas supply. However, they now try to build a material industrial position within the renewable energy sector (Equinor 2020). Equinor is the second most central actor in the network and is well connected to the Government, the Ministry of Petroleum and Energy, the Ministry of Climate and Environment, and companies of the energy sector. Because the Norwegian state is the major shareholder, their politics affect Equinor's operations. Together with their predicted decline in the value of fossil-based energy, the government's climate goals push Equinor to transform their brown energy into green energy.

On the other hand, the Norwegian economy's current dependency on petroleum revenue leaves Equinor in a powerful position to influence the vision for what will be the future energy solutions. As an offshore-oil expert, the company's inherent know-how gained from 40 years of experience in off-shore technologies and infrastructure is believed to be transferable to the renewable energy sector. Through the idea *Energy Solution*, Equinor sets the strategy for what will be Norway's future energy

adventure focusing on offshore wind, CCS, and hydrogen. These energy solutions determine the flow of future investments done by the shareholders. Equinor' 'knowing well' status is due to their ability to bridge between the energy sector, the public sector, and the financial sector controlling the knowledge flow from the energy sector. Their central position may explain why other renewable energy solutions, such as hydropower that accounts for more than 95% of total Norwegian power production (Hydropower 2017), is rarely mentioned in the SF discourse.

Finance Norway was established in 2010 and is today an association that represents about 240 financial companies with 50 000 employees. They advocate the financial industry's interests towards the Norwegian society (Finance Norway 2020). Finance Norway is a central actor in the network connected to both the private and the public sector and is ranked as no.3 on betweenness score. They have collaborated on several documents concerning the idea of *climate risk* published by the ministries and CICERO. Finance Norway acts of epistemic arbitrage are done by controlling the knowledge flow between the insurance sector and the public sector that is crucial for understanding climate risk. Their ability to bridge between the public and the private sector is due to their authority over data on climate-related damage provided by the insurance sector that both the government and the research organisations need to produce knowledge about climate risk. The empirical data is essential for carrying out research, which is crucial to justify why climate-related risks need to be addressed. Finance Norway's interest in accessing data from the insurance sector is also illustrated through their funding of the research that address the topic 'Insurance and Climate Damage' in the topic modelling. Further, Finance Norway possesses financial knowledge about risks and risk management, which offers technical depth to assessing and managing climate-related risks. Thus, we argue that Finance Norway exercises power through ideas by influencing the 'common' knowledge by positioning themselves as the actors who 'know-well' (Finance Norway 2020).

Ministry of Petroleum and Energy has the responsibility for coordinating and integrating energy policy with the primary goal to guarantee high-value creation of Norway's energy sources. Part of the work is to ensure good competitiveness, efficient use of resources and profitability in the energy sector to maintain the creation of jobs and revenues (Regjeringen 2013). The ministry's interests lie in keeping the Norwegian economy growing and ensuring a steady capital flow for the benefit of the welfare state. Petroleum activities have contributed significantly to Norway's economic growth and the Norwegian welfare state's financing. Therefore, the ministry supports the petroleum sector to expand its operations nationally and internationally. In the network, the ministry rank as number four

most central actor and is well connected to the energy sector and the other ministries. The ministry gains a central position due to its knowledge about energy policy related to exploration and production of oil and its connection to the oil sector.

Further, the knowledge they possess enables them to bridge the oil sector with the government, leaving the Ministry of Climate and Environment less central. We argue their centrality is influenced by how SF discourse frames the idea about climate risk – the problematization of oil as a potential 'stranded asset' due to the fear of reduced oil prices and the decreased value of remaining petroleum reserves. This understanding justifies the ministry's involvement in the SF discourse supporting the oil sector's (indirectly the government's) interests by advocating for CCS and hydrogen development in attracting national and international investors.

The Ministry of Climate and Environment is the fifth most central actor in Norway and was established in 1972. The ministry is responsible for carrying out the government's environmental policies, and acts as an advocator and planner to ensure that the authorities in the different sectors implement the government's environmental policies in their specific areas (Regjeringen 2014). Their knowledge of domestic emission reduction combined with their network related to climate policy puts them in a powerful position in determining the idea about green competitiveness, which connects them to the various ministries and Finance Norway, bridging the knowledge pools of climate and finance. Their control over the state-owned company Enova gives them the power to fund projects in line with their interests. The company was established with the mission of the restructuring of the Norwegian energy use and energy production. In 2016, the Parliament (Stortinget) decided that Enova should be a vital tool in developing the low–emission society and the future energy system. The same year, Enova entered an agreement with the Ministry of Petroleum and Energy, which entails a strong commitment to reduce greenhouse gas emissions and support technology development such as CCS (Enova 2020). The fund enables the Ministry of Climate to influence energy and oil policy areas by giving strict investment criteria (Enova 2020).

To sum up, the leading knowledge providers in the network are CICERO, followed by Finance Norway, where they both use their 'know-how' to shape and frame the ideas about climate-related risks and opportunities. Their epistemic arbitrageur status is gained through the ability to exploit the knowledge pools of climate science and finance to creating new knowledge on the SF issue. The knowledge is then mediated within their networks to gain issue control. Other observed epistemic arbitrageurs are the actors, Equinor, the Ministry of Petroleum and Energy, and the Ministry of

Climate and Environment. They show a capacity to combine knowledge from the brown energy sector and their long-time experience with climate and energy policies in constructing new knowledge on renewable energy solutions and technologies - ideas found in the SF discourse.

Sweden

The Swedish Institutional Context

Sweden is one of Europe's largest countries in terms of area, and its economy is growing steadily (Worldometers 2020; OECD 2019). In 2014 the Swedish government owned almost a quarter of the national wealth (Bruenig 2018). Strong public finances provide space for fiscal loosening in the case of a downturn, significantly as low interest rates reduce monetary policy margins. Beyond a strong economy, Sweden also enjoys high well-being, low inequality, and strong environmental performance (OECD 2019). Sweden has a robust, innovation-oriented economy and a well-developed welfare system (OECD 2014). It is also argued to be among the most innovative OECD countries when it comes to environment-related technology, and has pioneered several policy instruments, many based on the principle of putting a price on environmentally harmful activities. Progress in cutting greenhouse gas (GHG) emissions has been impressive, and Sweden has committed to ambitious climate goals (ibid). Sweden has followed the political line of armed neutrality since 1814 and achieved the longest peace period in its history and is still not a part of NATO (Ahlberg 2009). In turn, the EU membership was also not conceivable for a long time, but in 1991 Sweden applied for accession to the EU on account of the changed international situation, and in 1995 they became a member of the European Union (ibid).

The Swedish nuclear power

Sweden started its road towards sustainability at an early stage since the country has no fossil reserves and was importing increasing volumes of oil products in the years following World War II (Cruciani 2016). Sweden rapidly perceived the geopolitical risks generated by such oil dependency and developed its nuclear capacity, enabling it to reduce the role of oil in its economy, especially after the global oil shock in 1973 (ibid). By 1986, nuclear power became the first source of energy in Sweden's primary balance, and still today, nuclear power provides around 40% of its electricity (World Nuclear 2020). Sweden now has seven operable reactors and six that have been shut down (ibid). Sweden was one of the pioneers in nuclear energy use, but public scepticism emerged in 1979 following the accident at the Three Mile Island power plant in Harrisburg, Pennsylvania (Cruciani 2016). The

national referendum in 1980 emerged due to the publics' scepticism. However, it had no constitutional value at the time, but after the Chernobyl accident in 1991, the Swedish Parliament voted to set a deadline for the nuclear power plant fleet to stop operating in 2010 (ibid). However, in December 1995, a public commission on energy concluded that alternative supplies would not be sufficient at that date (ibid). Besides, an economic recession hit Sweden in 1992 and 1993 and revealed the importance of low-cost electricity for the industry, in which several branches are heavy electricity consumers (ibid). A new law was passed in 1997 that repealed all deadlines, but imposed the closure of the Barsebäck plant. The first unit of this facility ceased operating in 1999, and the second unit stopped in 2005. Sydkraft, the operator who had come under ownership of the German group E.ON, received an "indemnity of nearly EUR 600 million for the closure of each unit, and a handover of about 30% of the capital investment in the Ringhals nuclear power plant by its owner Vattenfall, to prevent the latter from holding a dominant position on the Swedish market" (ibid: 16). Furthermore, after the 1997 vote, Sweden's nuclear operators understood that it would be difficult to build new reactors, and they started to expand on the existing plants instead. In 2009 the text adopted by Parliament called for the ratification of the Paris Convention of 2004 raised the liability of operators to EUR 1.2 billion for accidents, but this resolution has not been implemented to date (ibid). However, a political changeover in 2014 brought to power an alliance between the Social Democratic Party and the Green Party, and the new government raised the levy on nuclear waste to EUR 4.30/MWh for the period 2015-2017, and increased the tax on thermal power nuclear reactors by 17%. With taxes as high as this and market prices, which are significantly depressed, renovating older reactors seemed no longer profitable. Such work does indeed look to be very costly given the new safety requirements presented by the SSM in October 2014, and mandatory as of 2020 (ibid). For its part, the Vattenfall Group has looked at the final shutdown of Units 1 and 2 at Ringhals in 2019 and 2020 (ibid). It was argued in 2016, that nearly 2,800 MW in capacity was deemed to be removed by 2020, and today it resulted in six power plants closed totalling at 3,173 MW removed (World Nuclear 2020).

The Swedish energy structure

Sweden also applied a tax on the consumption of oil products as of 1924 (Cruciani 2016). This tax was later elaborated on all other forms of energy and is to date increasing, however, some exemptions apply in the transport sector if the vehicles are powered by natural gas or 80% and up on biofuel (ibid). In 2003 Sweden also adopted an unusual instrument to promote renewable electricity – a system of green certificates (ibid). This system has spurred the development of the cheapest

renewable energy sources, two-thirds coming from onshore wind and one third from biomass. The cost of this support still remains remarkably moderate today (ibid). At the end of 2014, Sweden used fossil fuels to provide 30% of its primary energy supplies, while renewables accounted for 52% of final energy consumption, and today fossil fuels account only for 1.8 TWh, or 1 % of the consumption. It is argued that "Sweden's political leaders have chosen to keep its underlying foundations and carry out only moderate changes" (Cruciani 2016: 5). Thus, while stating their preference for renewable energy, the major political parties have found common ground to reduce tax pressures on nuclear power, since 2014. In June 2016, the Parliamentary majority and opposition parties signed an agreement to modernize Sweden's fleet of reactors, thus further demonstrating their sense of compromise. This solution is designed to limit the rise in electricity costs and to lengthen the period available for alternative energy sources to reach maturity (ibid). Moreover, the agreement extends the provisions promoting renewable power and emphasizes the importance of managing the demand for capacity and the efficient use of electricity, giving consumers of power an active role, be they industrial or domestic users.

To conclude, "Sweden seems to have taken measure of the difficulties faced by some European countries, which are already engaged in the energy transition and is trying to avoid them. Its political actors have been careful not to adopt excessively restrictive short-term goals and are content with general guidelines: they are betting on innovation to move forward" (Cruciani 2016: 5). It could be argued that Sweden has a significant advantage, alongside the efforts made for several years, favouring research and development in a very structured way.

Green Bonds

Sweden is a major player in the Green Bond market with the City of Gothenburg issuing the first city green bond in 2013 (Climate Bonds Initiative 2018). This was soon followed by other sectors, and in 2018 Sweden was ranking as number 6 in the global market and number 1 in the Nordics of green bond issuing (Climate Bonds Initiative 2018). Green bonds are issued to raise finance for climate change solutions. They can be issued by governments, banks, municipalities or corporations and the key is for the proceeds to be applied to "green" assets (ibid). In October 2019, Swedish National debt Office announced that Sweden will launch a green bond offering of around SEK 20 billion (USD 2.21bn/EUR 1.93bn) and that its proceeds will be allocated for expenditures supporting Sweden's environmental and climate goals (Riksgalden 2020; Renewables Now 2020). The Government decided on the framework for Sweden's sovereign green bond and as to which budget expenditures

the bond will be linked, including protection of valuable natural environments, climate investments and railway maintenance. The framework is rated "dark green" – the highest grade – by second-opinion provider Cicero (Riksgalden 2020). To conclude, it can be argued that Sweden is an early bird of sustainability thinking. The Government introduced the discourse on sustainable development in the early 1990s, and until that point of time, the focus was laid on the ecological dimension of sustainability (Ahlberg 2009). Sweden also showed ambitious energy solutions through time, and the will to explore and research for future sustainable solutions due to its limited fossil reserves.

Topic Modelling

For the discourse analysis, 26 documents were used, and through several iterations decided that 5 topics creates the best overview of the ideas that are prominent within the SF in Sweden. The table creates an overview of the three theoretical levels of generality and the main ideas that circulate in Sweden constituting the SF issue (Figure 15). Furthermore, it will also introduce several actors that are seen as contributors to the discourse creation. The five most prominent SF ideas for Sweden are *Climate Risk Policy*, *Stranded Assets*, *Long-term Investments*, *Green Bonds*, and *Swedish Industry Change*.

SWEDEN					
Topic / **Level of generality**	**Climate Risk Policy**	**Stranded Assets**	**Long-term Investments**	**Green Bonds**	**Swedish Industry Change**
1.Philosophical (Underlying Assumptions)	• Climate change imposes risks • Up-coming technologies will cause stranded assets • There is an increasing need for sustainable investments				
2.Programmatic ideas (Problems)	• climate change will affect the Swedish economy in terms of inflation, growth, and productivity	• €750 billion of assets in European are unprotected from the risk of becoming stranded	• too much focus on short term returns	• Need for sustainable investments • Climate finance gap	• How to become fossil-free while increasing competitiveness

3.Policy ideas (Solutions)	• risk assessment to reduce the consequences of climate change: monetary policy tools, internal carbon price, stress testing	• the use of new methodology to capture stranded asset risks	• shift focus to long term • Financial Sector Policy & ESG inclusion	• Green Bonds • Social Bonds • City Development	• development of: -electric vehicle charging infrastructure -batteries -hydrogen production -wind energy
Actors Involved in Creating the Discourse	•The Swedish Central Bank •The Swedish FSA •Misum	•SEB •SEI •Material Economics •Svenska Kyrkan •Ratos	•FSA of Sweden • SSFC (SEI, SSE) & Swesif •The Swedish Government •Misum	• Vattenfall • SKANSKA • SSFC • SEI • Ministry of Finance • National Debt Office •The Swedish Governemtn	•The Swedish Government •Vattenfall •SSAB •The Volvo Group

Figure 15. Overview of the Swedish Ideas

The Swedish Discourse

The underlying assumptions in the Swedish context present a notion that global warming comes with certain risks. These assumptions imply that rising temperatures and up-coming new technologies will cause stranded assets along many value chains and that the current short-termism is very unhealthy for financial stability. In addition, there is an increasing need for sustainable investments since the current pace of reduction of global greenhouse gas emissions is too slow to keep the temperature rising below 2°C.

The Topic "*Climate Risk Policy*" is addressed by the Swedish Central Bank and the Swedish FSA and is based on the cognitive notion that climate change will, in the long run, affect the Swedish economy in terms of inflation, growth, and productivity, based on the risks that follow global warming (Riksgalden 2020, SEI and Material Economics 2018, FSA 2016). The two actors seem to have similar views on what risks are most relevant to Sweden, but their solutions for how to respond to climate-related risks appear to be different due to role differences. Compared with other countries, Sweden is less exposed to natural disasters whereas capital investors and insurance companies do not have any comprehensive investments in assets with climate-related risks. However, as an open economy, Sweden is heavily dependent on Europe and the rest of the world.

Because climate change is assumed to impact financial stability and monetary policy, global warming is highly relevant to central banks. To tackle climate-related risks, the central bank suggests formulating climate policies similar to how insurance companies give higher weight to the worst outcome in the risk assessment. Transition risks may be reduced by an effective climate policy that contributes to more rapid technological development in green energy and sustainable infrastructure that would lead to economic growth, job creations, and higher living standards (FSA 2016). As a monetary policy-maker, the Swedish Central Bank considers four main monetary policy tools in the event of a sharp decline of the Swedish economy; (1) a lower policy rate, (2) green bond purchase (3) creating right loan conditions for low-carbon projects through banks, and (4) currency intervention (ibid).

The Swedish FSA's concern with the policy issue of climate-related risks results in their recommendation for more transparency and information about how the risks are considered and managed by firms. Carbon emissions are treated as a risk that firms need to assess, manage, and disclose. The price of carbon emissions is problematized as being too low where social and environmental costs greatly exceed the polluter's cost. To solve this problem, the FSA suggests firms to use an internal price on carbon (may differ from the market price) and disclose this price. Further, the cognitive notion of stress tests can be used to identify weak spots in the financial system at an early stage, such as stranded assets (FI 2016).

The topic "*Stranded Assets*" is framed by the actors SEI, Material Economics, SEB, Svenska Kyrkan, and Ratos and is based on the underlying assumption that the planet's rising temperature and up-coming technologies will cause stranded assets along many value chains. In the transition towards a low carbon economy, assets from the 'old' industry, such as nuclear power, oil, and coal, are at risk of losing value due to decreasing demand. The paper identifies €750 billion of assets in three European industries – automotive, apparel, and energy - that are unprotected from the risk of becoming stranded over the coming ten years. Therefore, stranded asset risks are highly relevant and should be addressed by investors and lenders. To do so, the actors have created a new methodology, using the cognitive notion of scenarios that move beyond current ESG approaches, to capture the stranded asset risks better (SEI 2018).

In the topic "*Long-term Investments,*" there is a general cognitive concern about short-termism being unhealthy for the financial sector and financial stability. Research suggests that only 12 percent of the mainstream financial analysts' time is spent researching companies' prospects beyond a 12-month

horizon – the demand for long-term analysis is decreasing, which is not good for the broader ambition of a global long-term sustainability agenda (SSFC et al. 2019). The paper by SSFC does not entail that all short-term investments are an issue, but rather sees it as an obstacle to companies embedding sustainability in their strategic planning and capital investment decisions (ibid). Most long-term perspectives contain one or more elements of ESG, which is the building blocks underpinning companies' long-term resilience. The other three papers describing the topic are all written by the Swedish FSA and entails that working for sustainable development and focusing on the long-term investment perspectives is a goal of the government. In 2015 the Swedish Parliament decided on a new goal for their financial sector policy: that the financial system must contribute to sustainable development. This means that financial market actors must take ESG issues into account when running their businesses (FI 2019). Transition to the sustainable economy needs significant investments, and according to FI, the transparency, reporting, and disclosure on ESG will help to identify the firms that work actively with sustainability and are taking the long-term approach (FI 2017; 2018; 2019). FI encourages using existing TCDFs frameworks for transparency and comparability and is working on integrating sustainability-related matters into ongoing supervision (FI 2018; 2019).

The Topic "*Green Bonds*" presents a general normative notion that Sweden needs to think sustainably if they want to contribute to achieve the goal of keeping the temperature rising below the 2°C-limit, and a cognitive solution that this could be done through sustainable financing, such as green bonds. The topic is a mixture of narratives from the government bodies, research centres (SEI, SSE), and companies (Vatenfall, Skanska). The government is focusing on promotion of green bonds and as a part of the government's action to achieve sustainable development, and the Swedish National Debt Office is issuing green bonds that will be used to fund budget expenditure on sustainable investments and projects (Ministry of Finance 2019). SEI and SSEs papers emphasise that Sweden – the leader in the green markets – is moving green bonds out of a niche asset class into the mainstream and since 2013, when City of Gothenburg launched the first-ever municipal bond in 2013, other municipalities have followed and have launched 40 green bonds worth US 4 billion (SSFC 2019). However, they note that investments should be not only green bonds, but also involve normative social aspects and sustainable and social bonds (bettering livelihood, education etc). The companies also see green bonds as part of the future that will allow them to use the proceeds to finance their green portfolio or as an external capital for their investments in sustainable activities (Vattenfall 2019; Skanska 2020).

Concerning the topic "*Swedish Industry*," the Swedish government asked the major Swedish industries to show how they will become fossil-free while strengthening their competitiveness to reach the governmental goal of becoming climate neutral by 2045. The paper "Roadmap for fossil-free competitiveness" gives the vision for how these industries (aviation, concrete, forest, mining and mineral, food retail, and construction) will create sustainable development. They describe in a normative way when and how they will be fossil-free, what technological solutions need to be developed, what investments are needed, and what obstacles need to be removed (The Swedish Government 2018).

Further, the papers concerning Vattenfall's effort to be fossil-free address their aim to become a leader in electric vehicle (EV) charging infrastructure operators in north-western Europe (Vattenfall 2020). Additional projects concern battery development, where they have partnered up with Volvo Group to make EV home-charging easier, and joined investment projects with other companies – Vestas, Danish pension fund, PKA - to develop wind energy projects in Sweden (Vattenfall 2020). Through the project "HYBRIT" Vattenfall also collaborates with SSAB where they have invested SEK 1.7 billion in hydrogen and gas development, intending to reduce Sweden's total CO2 emission by 10 percent. It is believed that hydrogen can play an important role in Sweden's future renewable energy system (Vattenfall 2020). One of the papers addresses The Volvo Group's partnership with Daimler Truck AG to develop large-scale hydrogen production as an alternative to battery electric vehicles and renewable fuels (Volvo 2020).

To summarise, the Swedish discourse informs that climate change comes with certain risks, and that new technological developments might cause stranded assets. The decreased demand for nuclear power, might be of the biggest concern for Sweden. An industry change is needed, including development of, inter alia, electric vehicle charging infrastructure, batteries, hydrogen production, and wind energy. However, to close the climate finance gap, a long-term focus and significant amount of sustainable investments are needed. To achieve this, Swedish discourse suggests sustainable finance through green bonds, and ESG inclusion in the company reporting and disclosure, as this would allow for transparency, implying a long-term approach. Sweden is considered a leader in the green bond market, and the discourse strongly suggests that it intends and strives to hold such position in the future.

Network Analysis

Topic modelling provided an overview of the ideas that circulate in Sweden within the SF issue. The further analysis of the actors who are involved in the creation of these ideas will inform which actors are the brokers of knowledge in Sweden (Figure 16).

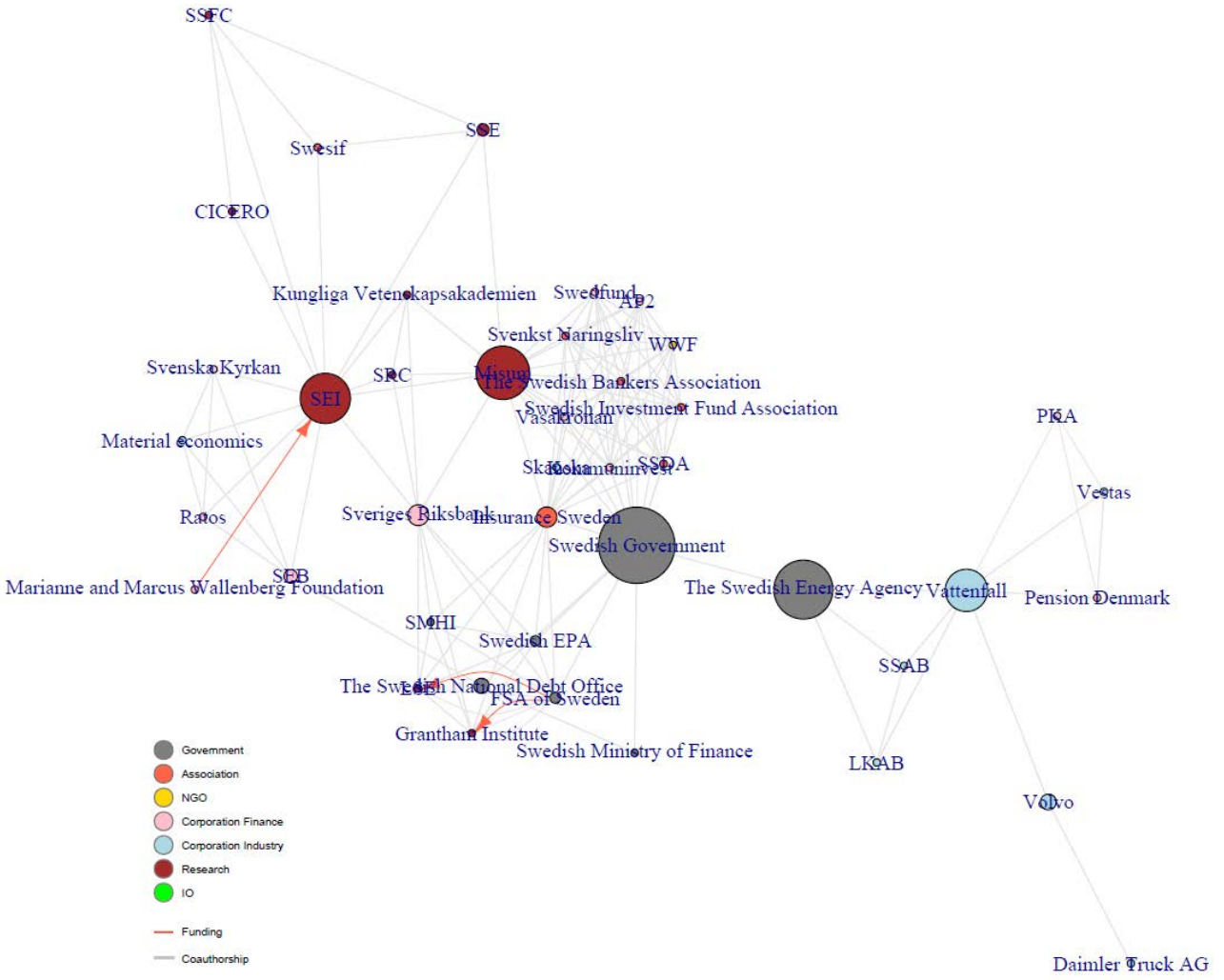

Figure 16. Overall Swedish Network

In the Swedish network, 42 actors are involved in creating ideas on the SF issue. There are 7 actors from government bodies, 6 associations, 1 NGO, 11 Financial Institutions, 8 industry actors and 9 research centres. However, the betweenness score's fifth most central actors are the Swedish

Government, Swedish Energy Agency, Misum, SEI, and Vattenfall. The network will be reduced to include just those actors that have been mentioned in two or more documents (Figure 17).

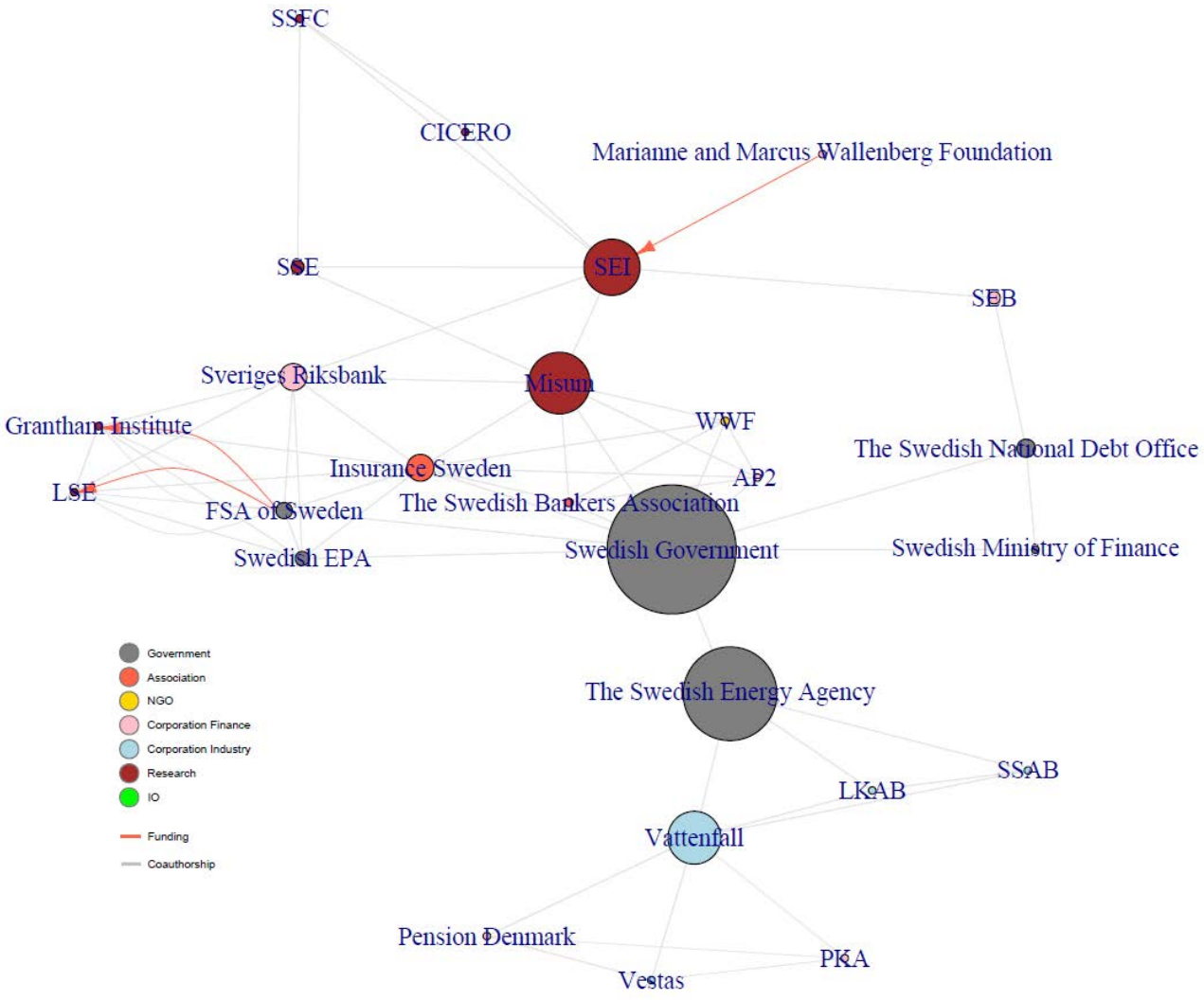

Figure 17. Reduced Swedish Network

Central Actors

Swedish Government is the most central actor by the betweenness score. Sweden is a parliamentary democracy and has a political structure similar as in the other Nordic countries. The parliament makes the decisions, and the government implements them. The government also submits proposals for new laws or law amendments to the parliament (Sweden 2020). The government is assisted in this task by

the Government Offices and the Swedish government agencies (345 in total, as of 2018) (ibid). The cabinet as a whole is responsible for all government decisions. Although many routine matters are in practice decided by individual ministers and only formally approved by the government, the principle of collective responsibility is reflected in all governmental work (ibid). The second most central actor by the betweenness score is the *Swedish Energy Agency*, leading the national transition to a sustainable energy system (Energimyndigheten 2020). The Swedish Energy Agency is subordinate to the Ministry of Infrastructure and regulated by the government through the instruction and annual appropriations directives. Parliament and the Government decide on the assignments and budget of the Agency. They contribute with knowledge, facts, and analysis of energy supply to secure the energy. They also fund the research on new and renewable energy technologies, smart grids, as well as vehicles and transport fuels (ibid).

The two actors are the most central in the Swedish case and they are prominent in the ideas of, 'Long-term Investments', 'Swedish Industry Change', and 'Green Bonds'. They act as brokers between the Corporation Industry sector and connect them with the rest of the Swedish network. Here they connect the ecology of climate science with the real economy ecology. The government and its agency are clearly the epistemic arbitrageurs performing power through ideas. Their extensive knowledge on the sustainability topic could be argued to allow them to focus on narratives that resonate with the public in legitimizing the new ideas to existing institutions. Sweden wants to be fossil-free by 2045 and occupies a strategic position between the real economy, the research centres, and the financial sector. This allows the government to control the ideas between the different actor types. Sweden is one of the leading countries in the green bond market, and this July, the Swedish National Debt Office announced a SEK 20 billion bond sale. This will support Sweden's environmental and climate goals (Renewables Now 2020). Through its agencies, the government participates in the creation of the ideas on the SF issue. Through the Financial Supervisory Authority (FSA), they fund LSE and its Grantham Research Institute on Climate Change and the Environment. The government ordered FSA to create ideas on climate risks and the policies that need to be implemented to ensure financial stability (Grantham 2016). The solutions suggested generally imply that the government should consider to have their supervised institutions carrying out stress tests and create disclosure standards that financial firms will have to follow (ibid). Due to the government's central position as an epistemic arbitrageur, they can express power over ideas by having the authority to promote specific ideas while excluding others.

The third most central actor is *Mistra Center for Sustainable Markets* (Misum). Misum is a cross-disciplinary and multi-stakeholder research centre at the Stockholm School of Economics (SSE). They collaborate with actors from the business sector, academia, and politics to create suitable business solutions for sustainable markets. They aim to become "a national center of excellence embedded in an international context" by running research projects nationally and internationally (SSE 2020). From the network, we can see that this actor is acting as a broker connecting the research community with the government bodies and through them with the real economy. They are mainly addressing the ideas of 'Climate Risk Policies' and 'Long-term Investments', where they collaborate directly with Sveriges Riksbank (Central Bank) and the Swedish Government, respectively. They are also developing the idea of ‘Green Bonds’, which is one of the SF issues where Sweden is showing the lead. Through its central position in the network, Misum acts as an epistemic arbitrageur and holds power through ideas due to its extensive knowledge in the SF issue and its ability to occupy the structural hole between SSE, SSFC, and SEI and CICERO with the rest of the network.

The fourth actor by the betweenness score is *Stockholm Environment Institute* (SEI). SEI is named after the Stockholm Declaration on the Human Environment, adopted at the UN Conference on the Human Environment in 1972. Their mandate, vision, approach, and values are derived from the principles outlined in this declaration. They are a non-profit organisation that strives to be the issue controller. To promote debate and share knowledge, they convene decision-makers, academics, and practitioners and engage with policy processes, development action, and business practice worldwide. Their long existence commands respect, trust, and credibility for the institution. They are international, trusted, credible, and relevant (SEI 2020). In 2019 SEI celebrated its thirtieth year of bridging science and policy on environment and development (SEI 2020). SEI is most prominent in the topics of ‘Green Bonds’ and ‘Stranded Assets’. As aforementioned, the Green Bond topic is very prevalent in Sweden, in addition, SEI collaborates with the SEB on this issue and they are also funded by Marianne and Marcus Wallenberg Foundation, who are also the controllers and founders of the SEB group. It can be argued that SEI is bridging the research community with the Swedish Central Bank and SEB and its acts of epistemic arbitrage come from more than 30 years of knowledge in the field of sustainability.

Vattenfall is the 5th central actor by the betweenness score. The Vattenfall Group is one of Europe's largest producers and retailers of electricity and heat, with a history going back over 100 years

(Vattenfall 2020). Their parent company, Vattenfall AB, is 100% owned by the Swedish state, and its headquarters are in Solna, Sweden (ibid). Vattenfall has developed a strategy for how to enable fossil free living within one generation. This commitment to their customers, stakeholders, and employees provides clear direction, engagement and focus, and significant business opportunities. There are three financial targets for the Vattenfall Group, set by the owner, the Swedish state (ibid). The financial targets are related to profitability, capital structure, and dividend policy. They are intended to ensure that Vattenfall creates value and generates a market rate of return, that the capital structure is efficient, and that financial risk is kept at a reasonable level (ibid). Vattenfall acts as a broker for the Swedish Government as it connects them to the Danish pension companies and Vestas. The state can practice power through ideas using Vattenfall as the mediator. Vattenfall has extensive knowledge in the energy sector, and they can focus on the weaknesses of their existing institutions and allow new ideas to be mixed with the existing institutional setup. While Sweden has a good infrastructure for nuclear and hydropower, recent collaborations with Vestas and the Danish pension funds have created ideas for developing offshore and onshore wind parks in order to phase out nuclear power. In this case, epistemic arbitrage is driven by its primary resource - knowledge, where it is exchanged and transferred within the network.

The Swedish network portrays that the Swedish government and its agencies are the most central actors in the idea formation and brokerage. The involvement of the state and the state-owned company Vattenfall shows that it is crucial for Sweden to be the frontrunner on the issue of SF and to ensure that the country is not left behind and ready for green transition. We identify the most prominent topics for these actors as Green Bonds, Long-term Investments and Swedish Industry Change. The decreased demand and quite negative normative notion about the nuclear power suggests that transformation of the energy sector is needed, and the green bonds could be a financing solution. The other two most prominent actors are research centres, Misum and SEI. They play a vital role in connecting the research community with the state, the financial sector, and the real economy. Once again, we identify the dominance of the long-term thinking and green bond idea and see Sweden and its SF discourse built exactly around these.

Entire Network

To understand the actors' interconnectedness internationally, we will also discuss the most central actors in the entire network. In its entirety, we can see that 223 actors represent the network out of

which 35 are Governmental, 34 Association, 10 NGO, 39 Corporation Industry, 69 Corporation Finance, 32 Research and 4 IO bodies (Figure 18).

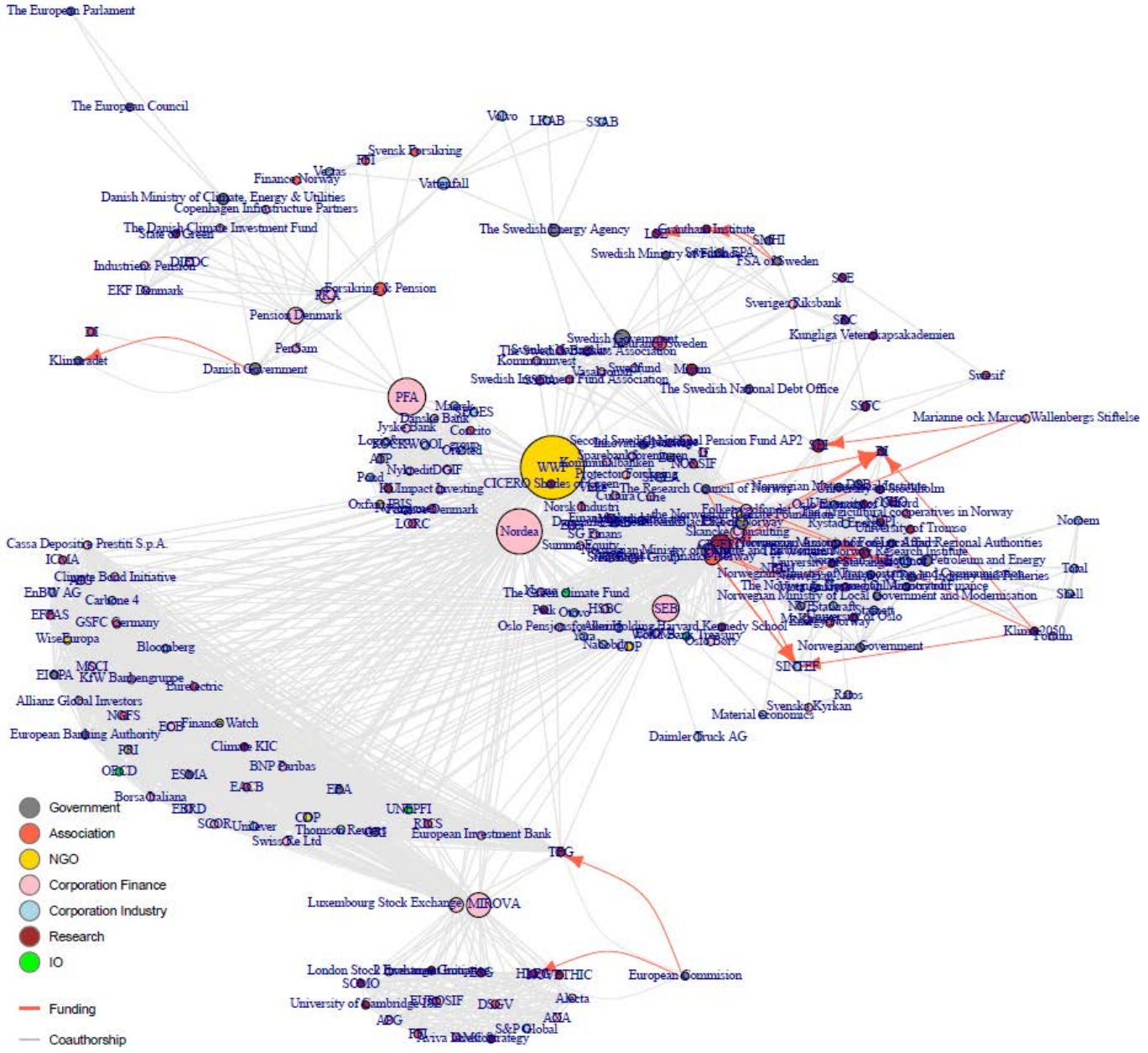

Figure 18. Overall Network

The network comprised is quite dense, however, we decided not to reduce it as it portrays every single document and actors that contributed to it. The five most central actors by the betweenness score are

WWF, Nordea, PFA, SEB, and MIROVA. We can see that WWF gained a very central position in the entire network, as well as Nordea and SEB, who were not the main actors in the national setting.

Central Actors

World Wildlife Fund (WWF) is an NGO that was established in 1961 with the mission to conserve nature. Today they operate in almost 100 countries where they collaborate with various interest groups to develop and deliver innovative solutions to protect wildlife and local communities. Regarding climate, they work on transforming markets and policies towards sustainability in the pursuit of a zero-carbon world powered by renewable energy. In 2015, the WWF started a global advocacy programme on green bonds and loans, climate transition bonds, and other debt capital instruments improving their technical expertise on the SF issue (WWF 2016). According to the betweenness score, WWF is the most central actor in the entire network connecting the EU with the Scandinavian countries. They gain a central position due to their broker status. Their ties to governments, financial associations, financial institutions, and other environmental NGOs across national borders provide a high degree of control. Confirming Henriksen and Seabrooke's (2016) findings, WWF's success relies on their ability to alliance with firms central to the governance of the SF issue. As members of the HLEG and the TEG, they connected with some of the most powerful actors within the financial sector, boosting the organisation's legitimacy concerning the issue (ibid).

Further, gaining information on the HLEG and the TEG's policy work put them in a position as the supplier of information that everyone else demands. In Norway, they collaborated with Finance Norway to make the 'Roadmap for Green Competitiveness' (2018). In Denmark, they collaborated with Finance Denmark on the report' Role of The Financial Sector in the Sustainable Transition' (2019). In Sweden, they worked with the Swedish government on the document 'Att framja grona obligationer' (2017). As a knowledge provider, they managed to bridge the EU level with the country-specific levels due to their ability to tie unconnected nodes in the network giving them the position to control the information flow on the SF issue.

Nordea is the largest financial service group in the Nordic region, established in 1997 after a merger between banks. The bank's headquarters is based in Helsinki, Finland, and has more than 10 million clients (Nordea 2015). Based on the betweenness score, Nordea is the third most central actor in the entire network, which is explained by their ability to move across national borders linking professional ecologies through their access to the EU's policy space, CICERO, and the financial

sector. Being a TEG member enables first-hand knowledge on the Green Bond Standard, the EU Taxonomy, and the Climate Benchmarks, which add to their technical expertise on the issue. They are eager to stay ahead of other banking sector actors to provide clients with tailored solutions for how to approach SF through debt services. Sustainability is also part of their branding in attracting more clients, showing that they care. As issue controller, they have access to organisations through their advisor status. Today they have the largest sustainability team in the financial sector, providing research and analysis across Nordea and ESG expertise for product and business implementation (ibid). Alongside their membership in the TEG, they participated in making of the two documents published by Finance Norway and Finance Denmark, which set the strategy for how the finance sector will approach the SF issue. They were also part of CICERO's research on climate risk, where they were highlighting the need for better disclosure through quantitative indicators across all sectors in line with the best reporting practices, such as the TCFD framework.

PFA is the third most central actor in the entire network. It has a strategic position between the actors involved in the SF issue in the Danish national context and the international actors. PFA has direct collaborations between the Danish government, other pension companies, the associations in Denmark and WWF and Nordea in the international space. This unique position allows PFA to act as an epistemic arbiter where their key resources are knowledge and assets that can be exchanged and transferred across and within the network, bridging the national and international levels.

SEB is another new actor with the fourth highest betweenness score for the network. SEB is a leading Nordic financial services group, founded in 1856 by André Oscar Wallenberg (SEB 2020a). It was Stockholm's first private bank and one of the first commercial banks in Sweden. The majority of the shares and the bank's management are still in the control of the Wallenberg's family (Wallenberg 2020). They have more than 4.4. million customers around the world, and 92% of their funds measure carbon dioxide emissions. SEB is one out of five banks with a mandate to execute the sale of Sweden's first sovereign green bond of approximately SEK 20 billion kronor (SEB 2020b). The proceeds will be linked to expenditures that go towards meeting Sweden's environmental and climate goals. Together with WWF and Nordea, SEB was a TEG member working on the Green Bond Standard. In Sweden, they were appointed by the Swedish state to be an advisor on this issue. We regard SEB the 'know-well' actor on Green Bonds by brokering the national and international levels. SEB is also prominent in three documents concerning climate risk where they collaborate with CICERO and SEI. This illustrates how they move between the two ecologies of climate science and finance allowing

them to benefit from the epistemic arbitrage in framing the meaning construction. Marianne and Marcus Wallenberg Foundation, which the SEB family manages, have funded several research projects done by CICERO in Norway and SEI in Sweden. This portrays that the bank is strongly invested in the SF issue formation and creation internationally.

MIROVA is the fifth most central actor and is acting as a broker at the EU level. However, it has not contributed to any of the documents that were discussed on the national levels.

To summarise, in the international context, we saw new actors that became prominent in comparison to the national settings. Transborder collaborations imply that the actors who are actively developing ideas in such a setting enjoy a strategically central position in the network and act as brokers between several groups of actors in the SF discourse creation.

Summary

In order to answer the research question *"How does the Sustainable Finance discourse appear in the different Scandinavian countries and the EU, and who are the actors that influence the creation of these ideas?"* the chapter presented an analysis that included institutional contexts of the EU, Denmark, Norway and Sweden, an analysis of the different SF topic ideas that are renowned in each segment, and a network analysis that provided an overview of the actors that create the discourse.

The analysis revealed some similarities and some differences between the ideas and the actors involved in shaping them.

Topic modelling provided insights into each countries' and the EU's discourses. Drawing on the theoretical framework of discursive institutionalism allowed us to identify the general assumptions, problems, and solutions that create the ideas and the discourse. We discovered that the main concern on the EU level is to use SF as a tool for economic growth. In the EU, ideas around climate change bare not only risks, but also opportunities, and it is argued that through SF it is possible to achieve growth while lowering GHG emissions. In Scandinavia, there are similar notions, however, differences are found depending on their institutional contexts and actors involved. In Norway, climate risk ideas are very prominent, while in Denmark, ideas concern further development of the energy sector and green transition, and in Sweden it is about investing in new green projects and renewable energy.

The network analysis was used to get an insight into who the main actors are in creating the discourse in each context. In the entire network, the organisations represent a wide variety of different actors, however, we see that the SF issue is somewhat private sector dominated. On the individual level, the EU ideas are private sector lead, where besides the EC, EIOPA, ECB, and ESMA, all other actors are mostly from the private sector. In Denmark, the state and pension companies have a strong central position whereas in Sweden it is the state, the research centres, and the state-owned energy company, similar to that of Norway's where a research centre and a state-owned company are the most central actors, followed by the state and a financial association. We then researched the organisations and drew on the theoretical frameworks of ideational power, structural holes and epistemic arbitrage and analysed why particular actors are involved in specific SF ideas. The findings suggest that the actors who bridge between the international and national communities, who have extensive knowledge on the particular idea, and actors who bridge between different ecologies, tend to be the most central in the network.

The composition of the topic modelling and network analysis allowed us to identify the ideas and organisations behind the SF issue. While SF is still an emerging institution, we saw that it differs nationally, and that it is usually a combination of several actors, usually driven by their own interests, that stand behind it.

Discussion

The discussion section will involve a broader dialogue around the key findings from the analysis. It will take its point of departure in the relevance of private-sector preferences and its implication for the SF issue's policymaking process at the EU level. Furthermore, SF is an emerging institution and will be discussed in the context of our theoretical framework to show how actors rival in creating a new institution. Our study confirms the theory of epistemic arbitrage by showing how actors have exploited the two knowledge pools of climate science and finance to gain issue control. In light of our findings, we will discuss the knowledge production process in more detail. Additionally, we will elaborate on how the EU structure creates freedom for the Member States to address the SF issue. Finally, we will address some of the limitations of our studies with a reference to what could be done differently in the future research.

Private Sector Preference

Throughout the topic modelling analysis, we see an increased cognitive notion that private finance should assist with the task of financing the green transition and mitigation for curbing climate change. A massive, publicly funded, USD 100 (DKK 627) billion climate finance commitment is, for example, anticipated for unlocking private capital aimed at scaling up low-carbon energy infrastructures, and to encourage innovations for tapping into new renewable – or green – energy sources (OECD 2015). Such needs position the finance sector in the spotlight of transformation policies embracing environmentally sustainable and socially just economies. A transition to sustainability would thus seek to go beyond an "ecological modernisation", i.e. "business-as-usual", or green capitalism approaches (Gibbs and O'Neill 2017; Krueger et al. 2017). The current economy will transform and would encompass the emergence of "*alternative*" economies (North 2016), dissociated from resource-intense growth and profit-maximisation logics through new forms of organisation, cooperation, and long-term thinking (Dorry and Schulz 2018).

Green investments have been gaining weight in the global investors' strategies and are argued by academia to be increasingly dominated by the private authority (Appell 2017; Green 2013). Such dominance insinuates, that the SF discourse is more private actor framed, with a particular underlining of the actor and its interests. Nevertheless, the SF discourse is still somewhat state-driven in the Scandinavian countries, focusing on public-private partnerships. While the countries might give the direction and set ambitious goals in each country's SF discourse, we see that knowledge production is constituted by private companies and associations, and research institutions. This implies that the governments rely on the private actors in framing the SF issue, which leaves the actors in a powerful position to exploit their expertise to harmonise the SF discourse following their own interests. In the next section we will elaborate on how private sector preferences may influence the meaning construction of the SF discourse at the EU level.

According to our EU network, the two most central actors, Luxembourg Stock Exchange and Mirova, and other private sector actors, participated in the HLEG and TEG and gave their recommendation for reporting on the EU taxonomy, the EU Green Bond standard, and the EU Climate Benchmarks. Knowing that most of the HLEG and TEG members came from across the financial sector, such as banking, investment, insurance, and utilities, we want to discuss how private preferences may have influenced how the SF discourse is communicated at the EU level. As other scholars have addressed (Griffith-Jones and Persaud 2008, Young 2016), financial regulation and financial markets are known

to carry many technicalities and complexities, creating demand for technical expertise that regulators often lack. Therefore, they seek recommendations from the sector they intend to regulate. The SF discourse creates new asset classes and is, therefore, subject to new regulations and laws. As a private sector actor, the incentive is to pay as little tax as possible and encourage policies that provide investment benefits such as subsidies. When the EC gave the expert group policy space in producing knowledge on the issue, and we argue that this created an opportunity for manipulation. The actors could express power through ideas by supporting certain elements of meaning, while excluding others when framing the ideas.

Today, the various reporting standards are framed as tools to be used in disclosing climate-related risks. This policy solution is based on trust in the investor's ability to make responsible investment decisions aligned with the EU's climate target as long as she has all available information. The question is if the financial sector will manage to live up to the vision of being responsible. The expert group's recommendations support a soft law approach, which means that the discussion about regulatory requirements for the financial sector is excluded from the policy sphere. This again, enables investors to continue investing in carbon-intensive activities without any legal consequences. By pushing forward a voluntary approach, it automatically excludes other policy options, such as brown asset penalties, from the discourse that might have been more effective for the transition. Consequently, the sector is free to invest in brown assets encouraging brown energy activities, and they will probably continue doing so as long as it is profitable. We then end up in a scenario where the institutional investor holds assets in both green energy and brown energy delaying the transition towards a climate-neutral economy. For future research, it would be interesting to study the policy-making process of the EU Action Plan on Sustainable Finance and the EU Taxonomy, and to trace how do the private sector's ideas and incentives reflect on the final recommended reports on the Taxonomy, the Green Bond standard and the Climate Benchmarks.

Sustainable Finance as an Emerging Institution

Sustainable finance generally refers to the process of taking due account of environmental, social and governance considerations when making investment decisions. In the EU's policy context, SF is understood as finance to support economic growth while reducing pressures on the environment and taking ESG aspects into account (EC 2020). SF is still an emerging institution where organisations are influencing the creation of ideas for its discourse. The actors are actively articulating and attempting to institutionalise their specific solutions for the created problems (Seabrook

& Tsingou 2015). We see that the rules are not yet established, allowing for the tension and struggle on the issue definition and which methodological solutions to use. Throughout our analysis we can see a notion that SF could help economic growth while mitigating climate risks. In order to invest sustainably, actors agree that there is a need of reporting standards to agree on what activities are to be considered as sustainable. Nonetheless, the conflict arises because there is no coherent way of how this should be executed.

Throughout the literature used in our analysis we identified some of the many existing reporting standards, disclosure frameworks, and methodologies that actors employ or create in the SF issue. Just to name a few, SEB and Nordea use the Green Bond Principles (GBP) that was developed by the International Capital Markets Association, while the EU, created its own EU Green Bond Standards (EU GBS) (TEG 2019). In addition, ESMA is creating a more coherent ESG reporting framework, while CFA Society Denmark, FSR – Danish Auditors, and Nasdaq Copenhagen wanted to contribute to the standardisation and professionalization of the ESG data and created their own reporting portal (ESMA 2020; Finans Foreningen et al. 2019). Furthermore, NBIM as an asset and investment portfolio manager is advising the companies to refer to the TCFD reporting framework, however have many of the companies have already implemented their disclosure through the CICERO's Shades of Green methodology (NBIM 2018; CICERO 2018, 2019). Even though we may find similar distinctions in the methodologies within the discourse the lack of coherence still creates the SF discourse to be actor fractured. There is a space for struggle and tension in politics around the meaning content of the SF institution (Kjær & Pedersen 2001).

The absence of a coherent methodology in a multilateral system can create competition and conflicts between actors and their ideas. We will further discuss one identified 'knowledge-fight' between the methodologies by CICERO and the EC. CICERO Shades of Green Methodology was introduced in 2015 and, as discussed previously in the Norwegian section, is a climate-science based rating method that focuses on avoiding a lock-in of greenhouse gas emissions over the assets' life time and promotes transparency on resilience planning and strategy (CICERO 2019). The EU Taxonomy was part of the 2018 EC Action plan on Financing sustainable growth and its entailed objective is to help direct private capital towards long-term and sustainable activities, and prevent false claims on the environmental nature of an investment product (TEG 2019). However, the initial two drafts of the Taxonomy received some criticism from CICERO's daughter company CICERO Shades of Green AS (CICERO SoG).

CICERO SoG was established at the end of 2018 and is a for-profit company that provides a number of second opinions on various organisations in the SF issue. (Proff 2020). In short, the conflict involves that several aspects that are currently considered to be included in the final Taxonomy are non-existent or different in the Shades of Green Methodology. Around 67% of second opinion ratings of the green bond frameworks provided by CICERO SoG might be non-compliant in the eyes of the Taxonomy. This means that if the taxonomy becomes the leading reporting standard for European companies, CICERO's methodology will lose its value. Today, CICERO is the most central actor in the Norwegian context and the 6th in the overall network. Its daughter company had a total operating income above NOK 10 million, with a profitability margin of almost 30% in 2019 (Proff.no 2020). The knowledge conflicts of the two methodologies, in which the ratings differ, may eventually lead to CICERO losing some of its "know-well" status, and CICERO SoG revenues might be jeopardized.

The legal document of the Taxonomy (Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088 (Text with EEA relevance)) was not part of this study. However, we suggest that the conflict identified in our analysis could be studied in more detail in the future. Scholars could inspect the underlying intentions and seeks of the organisations that engage in "knowledge-fights" and investigate whether they achieve their intentions by analysing the drafts, the comments, and the produce.

The different methodologies in the SF issue creates not only 'knowledge wars' but can also cause confusion among the investors in identifying which companies are actually "green". If some methods and frameworks use different definitions or metrics, they might be misleading and impossible to compare across different companies and investment possibilities. Greenwashing is an attempt to capitalize on the growing demand for environmentally sound products, and investments and companies employ such tactic to appear 'green' even though they are not. Recently, Shell announced an investment of US 300 million (ca DKK 1890) in 'natural ecosystems' and BP had a campaign that promoted its proposed low-carbon energy initiatives (Ethical Consumer 2020). However, both companies continued the extraction of fossil fuels from the ground, contradicting the very mitigation efforts they were promoting. Through incoherence and mislead of standards it might be difficult to distinguish on what level the company actually stands and what are their ESG policies. SF issue is still relatively new and the ability of shareholders, investment managers and individual investors to

judge the meaningfulness of various ESG factors is still evolving. Whether a company or fund manager is honestly committed to improving their ESG dynamics, and how crucial those elements are to ultimate financial success and sustainability, can be quite difficult to determine (Jones 2020).

The Knowledge Production of Climate-related Risks

Our study contributes to the theory of epistemic arbitrage by showing how central actors of the networks, emphasizing financial organisations and research institutions, have exploited the two knowledge pools of climate science and finance to construct new knowledge in framing the SF discourse to gain issue control. The knowledge production process is something we find worth discussing because, due to the private sector and research institutions' preferences, we argue that knowledge production becomes highly political, which puts the objectivity of the knowledge into question. The empirics show the ideas' climate-related risks' and 'green bonds' were often communicated by CICERO and SEI through their research reports where private sector actors, such as SEB (Marianne och Marcus Wallenbergs Stiftelse), Finance Norway, and Material Economics, funded the research and contributed with comments and data. CICERO, SEI, and Finance Norway are among the most central actors within the country-specific networks, and SEB is among the most central actors in the entire network. This indicates that they are well-positioned to influence the meaning construction of the mentioned ideas. We argue that their 'knowing-well' status comes from their ability to exploit the two knowledge pools of climate science and finance in constructing new knowledge and then mediate this knowledge across and within their networks. The collaboration between research actors and private sector actors in constructing new knowledge will be discussed in more detail, where we will address the idea 'climate-related risk.'

When private sector actors fund particular research, they do so because they have a specific interest in the object being studied – commonly, the profit motive. On the other hand, research actors tend to follow the research objectives due to the funding opportunities. We identify the climate as the research objective that private sector actors and research actors want to address. The funding and the implied profit motive of the private sector actors both steer and accelerate the research, setting the discursive frame for how the knowledge production on the SF issue is carried out (Bentley 2017). As we observed through our topic modelling, the climate object is problematized by being classified into transition risks and physical risks, and is measured and managed through scenario analysis and stress testing – two ways of dealing with the high level of uncertainty that climate change carries. The two methods are commonly used by climate scientists and financiers, and therefore allow the central

actors of the network to link the two knowledge pools of climate science and finance. The implied objectiveness of the risk methodology rejects the consideration of other meanings and practices for how the climate object should be treated, and thus giving the central actors the right to work on it. The new knowledge created on climate-related risks give actors the power to address the problems and the following solutions in maintaining their issue control status. One of our study's main challenges is the lack of disclosure on climate-related risks, making it hard for investors to make informed and sustainable investment decisions. The following observed solutions are the variety of reporting standards and methodologies that address and report climate-related risks.

Furthermore, by creating awareness about climate-related risks among investors, issuers, and corporations, may increase the demand for financial products, such as green bond that are assumed to be useful tools to manage climate-related risks. This means that by framing the idea about climate-related risks as a problem, private sector actors can create a market where they sell invented SF products and 'advisor' services that is based on the knowledge produced and hence function as the solution to the problem. On the other hand, the research actors use the produced knowledge to keep their 'knowing-well' status and attract more funding (or the CICERO way - creating a consultancy firm to offer advisor services). We find it reasonable to be critical about their knowledge production due to the profit motive involved.

The EU, and The Sovereign States

What we noticed through the topic modelling analysis is that the concepts and ideas at the EU level are very wide-ranging. The EU has a goal of being first fossil free continent, and wants to reduce the CO2 levels by 40%, however the existing EU legislation provides only some support for the Member States through minimum common standards, like for planning and monitoring (NetZero2050 2020). As an example, the Regulation for the Governance of the Energy Union and Climate Action, requires Member States to produce long-term climate strategies with a goal of decarbonisation, as well as integrated National Energy and Climate Plans (NECPs), which are packages of climate policies and measures for the near-term. These two obligations must be aligned with one another and in short, Member States should strive to meet their 2030 targets always with a clear eye on 2050 (ibid). However, so far, there is no substantial guidance as to what that obligatory coherence means, or how it could be verified, therefore we see national governments utilising their own methods to achieve these goals.

The EU consists of 27 Member States[1]*, however it is neither a fully- fledged European State, nor a loose federation of cooperating members. The EU can be seen as coercive in its dealings with the Member States, but has no coercive power of its own, and is therefore dominated by its members. We argue that such unique construction entails that the national governments can use legitimising language of sovereignty and representation for the exercise of power. The EU as a supranational is not able to create a "one fits all" legislation, as that might benefit some countries more than others. The issue of inequality in SF discourse is not what EU would need. In addition, we believe that not having complete authority as a supranational relieves some pressure of the EU body. We see this not only as an indicator of sovereign power that each Member State has, but we argue that Member States might "know better" what their capacities are. The analysis disclosed that national climate laws are emerging as key governance tools to help manage the green transition and to steer societies towards net-zero emissions. All the analysed Scandinavian countries created their own, more ambitious, however different, targets than set by the EU. Through our analysis we saw that each country has its own industry sector that make them competitive on an international level. The identification of the SF discourse revealed that all countries seek economic growth. This implies that the climate law needs to be adapted towards the countries' strategies on how to create economic growth, usually leading us towards the energy sectors. However, our study did not address the processes and reasons behind the target creations. The question that could be addressed in future studies is whether these countries compete to be the frontrunner in the green transition? Is it really the governments that initiate the change and create ambitions? Or maybe there are other underlying structures and explanations for the different targets set?

Limitations

The literature review revealed that there is a lack of previous research in the SF area. The studies identified, did not meet our needs for a clear theoretical foundation as to study the research problem that we wanted. Hence, we created our own theoretical framework. We believe that we have contributed to the existing literature by building up on the UNEP's research about SF partnerships network. We take it a step further and analyse not only the networks of SF, but also the discourse

[1] This section is also partly applicable for Norway. Even though they are not a member of the EU, they still consider the EU regulations, as Norway is still very dependent on the EU's policymaking in terms of trade. In addition, some of the EU regulations also apply for the EEA members, which Norway is part of.

within it, and how come it appears like it does in Scandinavia and the EU. However, the findings of this study must be seen in light of certain limitations.

Firstly, there are limitations with snowball sampling. The next document was found through the sources from the first one. This might create a sampling bias, meaning that the initial document might lead us to other documents that share the same traits and characteristics. In addition, identifying other actors through documents might mean that we obtained only a small subgroup that collaborates within a bigger population. Still, this was just an initial stage of the process, and we believe that we reduced the bias when we were more informed on the discourse, and able to search for actors independent of previous documents.

Secondly, a methodological limitation is that the documents chosen for the analysis are only those, written in the English language. Due to this, some of the discourse and actors are missed, since each country has documents in their own language too. The future research on such topic should consider translating the documents written in the native language as to portray the entire existing discourse. To add, SF is an emerging institution, and the documents collected and analysed are prior to June 2020. We acknowledge that the institution is still developing, and the discourse is changing. This study, therefore, is limited to its data frame as well as is a case study of the discourse and actors in Scandinavia, and the EU. What could be done differently, e.g. when the institution is established, is to map the discourse and the organisations yearly to see the change in the ideas, and actors' participation.

Lastly, organisations were chosen as actors that shape and create the ideas in the discourse. Yet, there were instances where independent individuals committed to the recommendations or comments, but since they did not belong to any organisation, they were not included in the network. This does not limit our own research in the study of organisations as actors per se, however, we believe that creating a two-level network in such study could bring even more insight into the actual discourse. We suggest that future research should build upon our findings, and consider a deeper look into professionals' education, connections or previous employment. This might shed light on why a particular individual is so interested in shaping a certain idea or why is it that that idea is so prominent in a particular context.

Conclusion

The thesis has attempted to empirically answer the research question: *How does the Sustainable Finance discourse appear in the different Scandinavian countries and the EU, and who are the actors that influence the creation of these ideas?"* by studying ideas, ideational power, discourse, institutional context, social networks, and knowledge creation. Following the theory of DI and social network theory, we first used topic modelling on the collected documents to identify the combination and expression of words and how they vary between the chosen countries' institutional settings. The words were then interpreted and categorised into topics, which allowed us to identify the content of the ideas that, in their totality, represented the SF discourse. We found that the meanings of the SF discourse are differed at the EU level and across the Scandinavian countries. According to DI, the meaning construction of the SF issue is not only sensitive towards its institutional context, but also the actors who communicate the ideas. To investigate the interactive process of actors in which ideas are generated, deliberated, and legitimized, we did a social network analysis to measure and map organisations' central positions and their connections to other actors. We used the documents from the topic modelling to determine what organisations to include for the network analysis. The organisations were either financiers or authors of the document. The betweenness centrality score enabled us to identify the most central actors of the different networks. Combining the topic modelling and the network analysis, we could then see what notions were the most prominent based on what ideas central actors of the network communicated.

A general finding is that there are similarities across the various SF discourses. All the countries and the EU are concerned about creating economic growth through sustainable development, and how to address climate change that is believed to cause major economic, environmental, and social damage if nothing is done to reduce the global GHG emissions. To solve the two problems, the various discourses emphasize the idea of steering investments towards renewable energy solutions, since this sector is argued to emit two-thirds of all the GHG emissions at the time being (IEA 2020).

At the EU level we found that the contextual condition of creating economic growth, finding sustainable solutions for securing future energy supply, increasing the public's legitimacy towards the EU institutions, and the desire for multilateralism set the condition for how the SF discourse evolves. Under this condition, the discourse promotes the idea of steering investments towards renewable energy solutions and circular economy projects to connect finance with the real economy. The

problem that then occurs is the need for capital to realize these developments. As a solution, the discourse highlights the idea of long-term investments in which the investor is encouraged to think long-term rather than short-term when making an investment decision. The idea is to disclose climate-related risks through reporting standards and create financial products, such as green bonds, to enforce such investment. Further, the EU network informs a close collaboration between the public and the private sector to shape and communicate the discourse. The central private sector actors, Mirova and the Luxembourg Stock Exchange, influenced the meaning construction of the ideas concerning climate-related risks and disclosure guidelines through the reporting standards through by being a member of the TEG and the HLEG. Furthermore, the EC is an epistemic arbitrageur that exploits different knowledge pools to create new knowledge to frame the overall SF discourse. Due to their connections to financial organisations, NGOs, and the EU institutions, they gain a central position within the network. As discussed, the high representation of experts from the financial sectors within the TEG and HLEG may explain why the understanding of the SF is in line with private sector preferences by supporting a soft law approach. This means that regulatory requirements are excluded from the policy sphere. It remains to be seen if such an approach will lead to an efficient transition towards a low-carbon economy. Additionally, the discourse is recognized as being diffuse, which we argue creates space for manipulation and adaption in which the member states can translate the issue to fit the country-specific meaning context. In this way, the EU avoids any conflicts of interest between the member states.

In Denmark, we found that two contextual conditions affect the way the SF discourse appears. First, the institutional set-up of the occupational pension schemes from 1987 has improved the pension companies' financial position and explain why the government is eager to use them as financiers for the green transition. Secondly, Denmark's long history of developing wind energy solutions makes it easier and less risky to invest in the Danish wind energy sector. Further, the Danish discourse is built on the assumption that Denmark should be a leader in the green transition, and that climate change presents not only risks, but also opportunities. The transition will require significant investment, and it is believed that the financial sector, together with the state, will have to finance sustainable solutions to achieve the climate target. It is believed that investment in the wind energy sector will increase Denmark's energy export to the European electricity market and increase competitiveness. The danish network informs that there is a close collaboration between the public and the private sector and that it is the government and the pension companies that are the main brokers of knowledge. The close collaboration with the pension companies allows the government to partake in financial knowledge,

while the pension companies can learn from the past implementation of policy techniques to reach energy stability. The most prominent ideas in the discourse are pushed forward by the government and the pension companies and represent the government's agenda for the emission target, the pension companies' investment in the green projects, and Danish renewable energy solutions.

In Norway, we found that the oil sector and the EU's priority areas for green technologies constrain the meaning construction of the SF discourse. If it had not been for Norway's economic dependency on oil, the SF discourse's central idea, climate risk, would not have gained such massive attention among policymakers, industry actors, and the public. It is assumed that an effective global climate policy may affect the Norwegian economy negatively due to the potential cost of stranded assets. To avoid the predicted scenario of stranded assets, the solution is to transform the oil sector by investing and developing technologies related to offshore wind energy, CCS, and hydrogen. Further, we find a close collaboration between the private sector, research centres, and the state. The leading knowledge providers in the network are CICERO, followed by Finance Norway, where they use their 'know-how' to shape and frame the ideas about climate-related risks and opportunities. Their epistemic arbitrageur status is gained through the ability to exploit the knowledge pools of climate science and finance to creating new knowledge on the SF issue and mediate their knowledge within their networks. Other observed epistemic arbitrageurs are the actors Equinor, the Ministry of Petroleum and Energy, and the Ministry of Climate and Environment. They show a capacity to combine knowledge from the brown energy sector and their long-time experience with climate and energy policies in constructing technological expertise on renewable energy solutions such as CCS, hydrogen, and wind energy.

In Sweden, we found that previous research and work on renewable energy solutions, industrial developments, and environmental policies have impacted how the SF discourse is understood. Further, the decreased demand and the negative normative notion about nuclear power production has forced politicians to think differently about the Swedish energy supply. To switch from nuclear power to other renewable energy sources an industry change is needed. This includes the development of electric vehicle charging infrastructure, batteries, hydrogen production, and wind energy. The transition needs a significant amount of investments, and the Swedish discourse suggests green bonds and ESG inclusion in the company reporting and disclosure, as this would allow for transparency, and could attract capital. The Swedish network portrays that the Swedish government and its agencies are the most central actors in the idea formation concerning green bonds, long-term investments, and

change of the Swedish industry. The other two most prominent actors are the research centres, Misum and SEI, that construct and mediate knowledge about the ideas of green bonds and climate-related risks and are argued to foster innovative thinking in the country.

In the entire network, we found that actors move across borders to enjoy a strategically central position in the network by acting as brokers between several groups of actors and national and international settings. The central actors identified were Nordea, PFA, SEB, and WWF. Further, we discussed the transborder collaborations between SEB and CICERO to show how knowledge can be highly political due to organisational interests.

The combination of the theories used enabled us to contribute to the research on the SF area by tracing the ongoing creation of ideas currently shaping the emerging SF institution. We see that rules are not yet established and allow for the tension and struggle about the issue definition and methodological solutions. Based on the various methodologies and reporting standards observed, actors are actively articulating and attempting to institutionalize their specific solutions for how to go about the SF issue. However, we discuss that the variation of international and national standards currently creates incoherence in the SF discourse, enabling space for persuasion of one's interests and further manipulation. Further, our study confirms the theory of epistemic arbitrage by showing how central actors of the networks have, in the pursue of issue control, exploited the two knowledge pools of climate science and finance in producing new knowledge to shape the meaning construction of the main ideas regarding climate-related risks, disclosure frameworks, longtermism, and green bonds. In doing so, they express power through and over ideas. We further discussed the knowledge production on the idea of climate-related risks and how it is political.

Our contribution has explored how the SF discourse is built in the EU and Scandinavia and portrays that the upcoming ideas are largely context and actor, as a sentient issue controller, dependent. We saw some differences and some similarities between the discourses in each segment, and we hence encourage the further academic work on the emerging institution of SF. We suggest that research could build upon our study in Scandinavia and explore other European discourses. Eventually, such studies might uncover other underlying factors that are nation dependent and could hinder an insight why countries deal with the SF issue differently.

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Appendix

Appendix 1. Overview of the Topic Terms for the EU, Norway, and Sweden

	EU					
	Topic 1	**Topic 2**	**Topic 3**	**Topic 4**	**Topic 5**	**Topic 6**
1	financ	sustain	benchmark	activ	green	energi
2	market	invest	climat	taxonomi	bond	chang
3	includ	risk	esg	criteria	verif	polici
4	asset	commiss	emiss	compani	issuer	climat
5	european	investor	disclosur	econom	market	price
6	requir	longterm	index	climat	project	emiss
7	develop	financ	methodolog	chang	extern	risk
8	climat	esg	scope	environment	standard	econom
9	inform	manag	invest	technic	european	bank
10	econom	compani	ghg	contribut	scheme	shock
11	sector	social	risk	adapt	recommend	increas
12	impact	bank	administr	object	provid	carbon
13	fund	factor	transit	screen	accredit	global
14	invest	system	minimum	mitig	review	transit
15	environment	account	intens	disclosur	commiss	central
16	need	europ	carbon	substanti	alloc	system
17	work	recommend	regul	perform	sustain	cost
18	relev	capit	rate	product	investor	scenario
19	energi	action	base	assess	propos	sourc
20	framework	assess	align	due	taxonomi	monetari
Topic name	**Climate Finan for Developm**	**Long Term Investments**	**Disclosure Guidelines**	**Classification of Sustainable Activities**	**Green Bonds**	**Change of the European Energy System**

	NORWAY				
	Topic 1	**Topic 2**	**Topic 3**	**Topic 4**	**Topic 5**
1	project	financ	insur	climat	compani
2	energi	sector	loss	risk	invest
3	shade	norway	damag	chang	manag
4	wind	green	natur	financ	board
5	impact	develop	municip	manag	sustain
6	green	industri	climat	econom	fund
7	equinor	climat	bank	sector	govern
8	region	sustain	chang	scenario	respons
9	carbon	norwegian	adapt	norwegian	right
10	offshor	emiss	hazard	polici	risk
11	emiss	technolog	compani	transit	portfolio
12	renew	govern	norwegian	increas	sharehold
13	scenario	new	prevent	assess	market
14	increas	busi	financ	impact	vote
15	confid	solut	servic	physic	global
16	flood	research	studi	norway	assess
17	product	competit	research	global	expect
18	chang	includ	share	compani	work
19	water	transport	access	emiss	sector
20	industri	recommend	import	inform	emiss
Topic name	**Energy Solutions**	**Financial Sector & Government's Strategy**	**Insurance & Climate Damage**	**Climate Risk**	**Sustainable Investments& Responsibility**

SWEDEN					
	Topic 1	**Topic 2**	**Topic 3**	**Topic 4**	**Topic 5**
1	asset	analysi	fossil	bond	climat
2	car	sustain	industri	green	risk
3	industri	work	free	sustain	chang
4	risk	longterm	sweden	adapt	financi
5	disrupt	issu	emiss	invest	econom
6	electr	invest	product	financ	carbon
7	strand	investor	vattenfal	project	polici
8	scenario	financi	roadmap	market	bank
9	develop	compani	swedish	issuer	global
10	power	import	competit	climat	asset
11	valu	market	steel	sector	emiss
12	market	time	sector	investor	price
13	figur	develop	invest	develop	effect
14	compani	firm	fuel	citi	transit
15	growth	intern	develop	framework	impact
16	price	need	energi	social	increas
17	new	research	transport	issu	stabil
18	billion	inform	increas	institut	insur
19	sector	studi	materi	privat	central
20	mani	perspect	construct	issuanc	sector
Topic name	**Stranded Assets**	**Long-term Investments**	**Swedish Industry Change**	**Green Bonds**	**Climate Risk Policy**