

**FROM OIL CRISIS TO GREEN GROWTH:
A CONCEPTUAL ANALYSIS OF THREE CENTRAL CONCEPTS AND
THEIR RELATION TO POLITICAL GOALS IN DENMARK'S ENERGY
PLANS FROM 1976 UNTIL TODAY.**

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ABSTRACT

The present thesis analyzes how the three concepts of security of supply, socio-economics, and environment, as they relate to each other and to Danish energy policy goals, have developed since the publishing of *Dansk Energipolitik 1976* until today, in order to investigate the implications for the setting of political goals in Danish energy policy. Existing studies on Danish energy policy highlight the three as central political objectives but attribute little, if any, attention to the conceptual level, thereby understating the importance of conceptualization in driving forth policymaking. In order to analyze the relationship between conceptual shifts and policymaking, the thesis constructs a two-fold analytical approach. In a first leg, inspiration is drawn from Reinhart Koselleck's conceptual analysis in order to identify and analyze the most significant conceptual shifts that take place over the course of the energy policy plans. This first leg is interposed by a second leg, where the concepts and their relation to two meta-concepts are withdrawn from their empirical use, in order to problematize and reflect on this tension. The analysis shows how a number of conceptual shifts take place, where one concept supersedes another, where the tension between concepts shift from being constrictive to beneficial, and where concept and counter concept merge and create a new concept. In addition, the analysis shows that the conceptualizations of security of supply, socio-economics, and environment cannot be understood as mute descriptors, as their conceptualizations are both products of and productive towards an ongoing process of ontologizing. As a product of these implications, the thesis contributes to conceptual analysis a number of new ways of thinking about conceptual tension and highlights the importance of disentangling conceptualizations for policymaking and for public discourse more generally.

Keywords: Danish energy policy; energy security; energy economics; Danish climate policy; conceptual analysis; Reinhart Koselleck.

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Reading guide:

{ } (Braces) indicates that a cited or paraphrased source is translated from Danish to English.

“ ” (Quotation marks) indicates direct quotes.

‘ ’ (Apostrophes) indicates paraphrasing.

Name (00:00): References to interviews are indicated by name and time in the interview.

1. INTRODUCTION

On June 29th, 2018, the Cabinet of Lars Løkke Rasmussen III presented an energy policy agreement signed by every political party represented in the Danish parliament. The Danish Minister for Energy, Utilities and Climate, Lars Christian Lilleholt, contentedly announced its adoption as “the broadest energy policy agreement ever”, while the Danish Minister for Finance, Kristian Jensen, stated that the agreement ensured that Denmark would “remain in the forefront of the green transition”, and that Denmark would “continue to be a country that shows the way for others” {Energi-, Forsynings-, og Klimaministeriet, 2018}. The agreement was described as the latest example of a long tradition of making broad, foresighted political agreements for the Danish energy sector, a tradition that has attained Denmark international acknowledgment as “a pioneer country with regards to climate and energy” {Energi-, Forsynings-, og Klimaministeriet, 2018}. Forty-two years ago, however, when Denmark was nearly completely reliant on imported oil for its energy needs, Denmark’s situation was less auspicious, as the onset of the first oil crisis prompted the publishing of Denmark’s first ever energy plan, *Dansk Energipolitik 1976*.

Since then, the Danish energy sector and along with it, Danish energy policy, has gone through several extensive transformations. The onset of the second oil crisis in 1979, the emerging threat of climate change, and the European Union energy market opening are just some events that produced fundamentally new realities. Throughout this time, however, three political objectives have been central to policymaking: security of supply, socio-economics, and environmental concerns. Although changing political realities have brought forth changes to their priority, the three objectives have remained at the forefront of the political goals set forth in the ten energy plans that have sought to outline and coordinate policymaking for the Danish energy sector since 1976. This is the story that I was told by Flemming G. Nielsen, a former employee with the Danish Energy Agency, who had worked with Danish energy policy since 1981. As it will be shown, the same impression can be found in the literature on Danish energy policy.

In my conversation with Flemming G. Nielsen, however, it became apparent that the three objectives had not only changed in the way they were prioritized but also in the very meaning that underlie their definitions. The ways in which security of supply, socio-economics, and environmental concern have been understood demonstrates that rather than mere words, they can fruitfully be understood as political conceptualizations of the shifting meaning that they are attributed with. These conceptualizations have been subject to changing political realities just as much as they have been productive to policymakers in acting and thereby recreating those political realities. Thus, as it is argued in the context of the present thesis, security of supply, socio-economics, and environment can be fruitfully understood as continuously developing concepts that escape stable definitions, the changes in which cannot be explained as linear, unidirectional movements between policymakers and political goals. Inspired by the German historian Reinhart Koselleck's conceptual analysis, the present thesis illustrates how the relevant policy principles and instruments available to policymakers in addressing the concepts of security of supply, socio-economics, and environment are as much shaped by their conceptualizations as they are responsible for shaping them.

In order to investigate how shifting conceptualizations have been produced and have been productive within Danish energy policymaking, a two-fold analytical strategy is employed. In a first leg, conceptualizations found in the various energy policy plans that have been published since 1976 are submitted to conceptual analysis as it is developed by Reinhart Koselleck. Here, the analysis shows how a number of conceptual shifts take place in the historical development of Danish energy policy, and how these conceptual shifts relate to the political goals of the energy plans. In the second leg of the analysis, two meta-concepts that are productive to the internal logic of the three concepts analyzed in the first leg of the analysis are withdrawn from the empirical setting of the energy plans, and submitted to an iterative analysis, where a number of social science and philosophical readings and qualitative interviews with former ministers with responsibility for the energy area are employed. Here, the intention is to problematize and reflect on how the dynamics of these meta-concepts are productive and constrictive to the internal logic of the three concepts analyzed in the first leg of the analysis.

2. RESEARCH DESIGN

The present section provides an overview of the research design and describes how this research design is operationalized into a methodological approach that underpins the analysis. Firstly, an indicative selection of existing analyses of the development of Danish energy policy is outlined in order to distinguish and position the analytical approach of the present thesis, after which the two-fold analytical approach of the present thesis is described. Studying the conceptualizations of security of supply, socio-economics, and environment necessitates a methodology for conceptual analysis, which is found in Reinhart Koselleck's work. In addition, it requires the selection of appropriate empirical material, in which the changing conceptualizations can be studied in a representative fashion. For that reason, the first leg of the two-fold analytical approach is grounded in document analysis of the energy plans that have been published since 1976. In the second leg of the analysis, the empirical departure in the energy plans is complimented with three qualitative interviews and selected writings in social science and philosophy.

2.1 Existing analyses of Danish energy policy

The ways in which Danish energy policy and policymaking can be, and have been, studied are manifold. The present section introduces and outlines an indicative selection of existing studies that all deal with Danish energy politics in one way or another. These studies include Lund & Hvelplund (1997); Hadjilambrinos (1999); Grohnheit & Olsen (2002); Toke (2002); Kristinsson et al. (2007; 2008); Loring (2007); Rüdiger (2007); Isabelle de Lovinfosse (2008); Karnøe & Buchhorn (2008); and Rüdiger (2007). In doing so, the intention is to outline the analytical approach of these studies, in order to distinguish and position the analytical approach of the present thesis.

Lund & Hvelplund (1997) studies how the implementation of the European Union directive on environmental impact assessments (EIA) from 1985 has influenced technology changes in the Danish energy sector. In three case studies, they show how the adoption of the directive into Danish national law hindered technological change, and

thereby a political aim of reducing CO₂ emissions. Grohnheit & Olsen (2002) study the historical evolution of the electricity supply industry in Denmark and shows how the tradition of co-operative ownership and decentralization led to the rejection of nuclear power and widespread adoption of decentralized combined heat and power, and union owned wind power. In a comparative study of Denmark and France, Hadjilambrinos (1999) shows how differences in political traditions have shaped energy institutions and technology choices. In doing so, he identifies how the path dependency of political traditions hinders the adoption of new energy technologies. Toke (2002) studies comparative differences in the deployment of wind power in Denmark and the United Kingdom as a matter of differences in how institutions have provided incentive structures in the tender processes. Kristinsson & Rao (2007) compares the emergence of the wind energy sector in Denmark and India by studying how institutional frameworks have stimulated innovation.

Loring (2007) studies the dynamic between authorities regulating land-use planning and the deployment of on-shore wind energy in an actor-network theory perspective in order to evaluate the project success of 18 case studies in England, Wales and Denmark. Rüdiger (2007) studies Denmark's energy supply system before and after the oil crisis in 1973 and argues that the oil crisis in 1973 probed the initiation of public regulation in an otherwise largely deregulated energy sector. Isabelle de Lovinfosse (2008) studies the historical evolution of Danish energy policy and identifies the then Minister for Environment & Energy, Svend Auken, as a key factor for the Danish adoption of the European Union energy market opening in the late 1990s. Karnøe & Buchhorn (2008) identifies how a parliamentarian majority for the support of wind power led to an increased political emphasis on wind power in Danish energy policy between the 1970s and 1990s.

The studies above are by no means an exhaustive representation of the studies that can be found on Danish energy policy¹. However, they provide an indicative insight into the type of studies that can be found. The studies can be categorized according to whether

¹ The indicated studies stem primarily from the academic journals *Energy Policy*, ISSN: 0301-4215; *Renewable and sustainable energy reviews*, ISSN: 1364-0321; and *Environmental politics*, ISSN: 1743-8934.

they seek to a) explain the emergence, adoption and/or outcome of specific policies or technologies, b) explain historical developments in Danish energy policy as a whole or c) conduct comparative analyses of developments in Danish energy policy to that of other countries. In addition, they can be categorized according to whether they attribute explanatory power to how politico-technical institutional settings have produced and constricted the development of Danish energy policy, or how actors have exerted their influence within those institutional settings. While the institutional and actor-oriented perspectives each have merit in their own right, their respective one-sided emphases are inadequate in describing the highly dynamic nature that exists between the two, and in particular in dealing with the conceptual level. The majority of the studies operate with largely stable understandings of how the concepts of security of supply, socio-economics, and environment are to be understood. In the event that they do highlight differences in their definition, these differences are generally described as resulting from changes in institutions or political governance. Therefore, the studies contain what might be called a linear theory of conceptual change, where actors and institutions are responsible for the setting of political goals in linear, unidirectional movements between institutions and actors on the one side, and political goals on the other.

Moreover, changes pertaining to how security of supply, socio-economics, and environment relates to Danish energy policy are not treated independently as a conceptual problem, that is, as a problem of semantics. But, as it is argued in the context of the present thesis, security of supply, socio-economics, and environment can be fruitfully understood as highly ambiguous concepts that escape stable definitions, the changes in which cannot be explained as linear, unidirectional movements between institutions, actors, and political goals. A central presupposition for the research design of the present thesis is that actors and institutions are as much shaped by the conceptualizations that adhere to political goals as they are responsible for shaping them. By submitting the concepts of security of supply, socio-economics, and environment as they pertain to Danish energy policy goals to conceptual analysis, it is shown how they can be understood as ‘conceptual battlegrounds’, in which shifting conceptualizations and conceptual relationships are both productive towards, and produced by, political contexts and goals. Doing so implies a

more dynamic and inquisitive treatment of the semantic properties of the concepts and allows for a more fluid understanding of how the dynamic between concepts, institutions, actors, and political goals develops.

2.2 Analytical approach

As stated above, the main objective of the present thesis is to submit the concepts of security of supply, socio-economics, and environment as they pertain to political goals in Denmark's energy policy since the first Energy plan of 1976 to conceptual analysis. This entails a two-fold analytical strategy primarily concerned with how changing ministries and governments take part in conceptualizing the concepts, their relationships, and their relation to the goals set in policymaking, as well as how the spheres of possible actions for the relevant actors are influenced by these conceptualizations.

The emphasis on conducting conceptual analysis, then, opens the question of where concepts should be found, and why those sources should be considered authoritative. In addition, submitting the concepts to conceptual analysis rests on a number of central assumptions and obstructions that have advantages and disadvantages for the research design and methodological approach. In other words, it requires a theory of conceptual analysis. In order to analyze the conceptualizations that are invoked when political goals are articulated, the analytical approach draws inspiration from Reinhart Koselleck's conceptual analysis (Koselleck, 1982; 1985). While Reinhart Koselleck's conceptual analysis allows for great empirical sensibility (Andersen, 1999, pg. 65), an important pitfall to avoid is analytical reductionism, in which the empirical setting "closes in on itself" (Ifversen, 2012, pg. 14).

For that reason, the second leg of the analysis entails the identification of two meta-concepts in order to expose, challenge and reflect on how they are productive to the internal logic of the concepts analyzed via the first leg of the analysis. By releasing the meta-concepts from the lens of the conceptual analysis approach in the first leg, they are released into a new setting, where empirical accounts of 'what' they mean are replaced in favor of highlighting 'how' they are productive.

2.2.1 Conceptual history and conceptual analysis

As previously stated, the central analytical methodology employed in the present thesis draws its inspiration from conceptual analysis as it has been developed, in particular, by the German historian, Reinhart Koselleck. For Koselleck, concepts are never neutral vessels that refer to something definite – they interact and interfere with the world. Concepts cannot, then, be understood only as the words with which they are expressed (Ifversen, 2012, pg. 11). Concepts always imply a certain degree of ambiguity in their reference to something and it is exactly this ambiguity that allows for concepts to extend into the future, and thereby contribute to shaping their surroundings:

According to Koselleck, words become concepts through the condensation of a multitude of social and political meaning. Concepts thus contain an indefinite meaning. They constitute a concentrate of meaning that makes them ambiguous. Without this ambiguity, the concepts would not be able to reach into the future {Andersen, 1999, pg. 69-70}

For Koselleck, the purpose of conceptual analysis is to map how, throughout history, concepts help bring forth social and political reality through differing interpretations. In Niels Åkerstrøm Andersen's (1999) exposition, Koselleck's conceptual analysis centers on two interwoven forms of analysis: the *diachronic* & *synchronic* analyses. In the diachronic analysis, attention is attributed to "how meaning is formed and condensed into words, that then become concepts that reach into the future in power of their constitutive effects on, among other things, the establishment of political agents, their identity and ability to act" {Andersen, 1999, p. 85}. Put differently, the diachronic analysis is concerned with the emergence of everyday words into concepts that have constitutive effects on social and political reality. In the synchronic analysis, attention is attributed to "how concepts always emerge in relation to other concepts in a semantic field. A semantic field is organized by relationships between concepts and their counter concepts." {Andersen, 1999, p. 86}. According to the synchronic analyses, then, concepts must be analyzed within the semantic fields they originate within, and the concepts to which they

are constitutively opposed – the counter concepts. In a last step, conceptual analysis implies the consideration of how the interplay between concepts and semantic fields relate to the larger ‘spheres of meaning’ [Danish: meningssfærer] (Andersen, 1999, pg. 86). Koselleck’s own use of the concept of spheres of meaning, according to Ifversen (2012) varies widely but can be understood as the meaning that resides in the wider socio-political conditions outside of the immediate tension between a concept and its counter concept.

Submitting the conceptualizations of security of supply, socio-economics, and environment found in the Danish energy plans to conceptual analysis thus implies the study of how, in the process of becoming concepts, their meaning is condensed and constituted by their relational interplay in semantic fields, and how this interplay between concepts and semantic fields relates to the socio-political spheres. As the semantic fields change, so does the conceptualizations that inhabit them, and thereby the relationships between concept and counter concept, and ultimately, the inhabited spheres of meaning. Analyzing the semantic fields inhabited by the concepts thus opens the analysis to the meaning that is embedded within the immediate tension between a concept and its counter concept, in order to show how this tension develops and contributes to the development of the semantic fields and spheres of meaning. This process of becoming concept, however, also implies that concepts may pre-exist as uncondensed meaning that has yet to be fully formed into a concept (Andersen, 2011, pg. 160). Conceptual analysis, then, implies analyzing how actors, institutions, and the conceptualizations they employ produce and are produced by, shifting configurations in semantic fields and spheres of meaning, through non-linear ‘semantic battles’:

Conceptual analysis thus outlines an analytical strategy that analyzes history as a semantic battle of making words into concepts through the condensation of a multitude of meaning into the concept. It is of course not a linear story: a word can be preserved but change meaning. A concept can be preserved but change word designation. A concept can survive but change content, etc. {Andersen, 1999, P. 70-71}.

The point, for Koselleck, then, is to show how changing conceptualizations, by shaping these semantic battlegrounds, interact and interfere with the world (Ifversen, 2012, pg. 13). The workings of concepts thus set up a central premise for the current thesis. Instead of evaluating and judging the correspondence between intended and realized outcomes related to a given concepts adherence to political goals, the analytical attention is attributed to changes within the semantic fields that exist within the area of Danish energy policy and the conceptual shifts that take place within them. Consequently, a central analytical objective is the identification of conceptual shifts. According to Andersen, conceptual analysis must pay attention to at least seven possible forms of conceptual shift:

1. The concept may remain constant while the counter-concept changes.
2. The concept may have changed while the counter-concept has remained the same.
3. Both concept and counter-concept may have been displaced.
4. Concept and counter-concept may be the same but the tension between them may be different.
5. The concept may be the same but may have moved to the position of counter concept.
6. The concept may have lost its counter-concept, which results in the creation of an empty category with unspecified counter-concept, which can be occupied later.
7. Concept and counter-concept remain the same, but the meaning dimension within which the distinction is defined may have shifted {Andersen, 2011, pg. 255}.

Conceptual shift can thus be said to arise from operations within four areas: In the concept itself, in the counter concept, in the relationship between concept and counter concept, and within the larger spheres of meaning. Understanding these conceptual shifts, according to Ifversen (2012), requires the reconstruction of the conditions under which the concepts change, while avoiding the reduction of the concept into something that can be understood exclusively from the context (Ifversen, 2012, pg. 14) Exploring the productive capacity of concepts and their properties as solely a question of semantic

history leaves open a pitfall of reductionism, where empirical semantics overly determines the object under study. This pitfall of reductionism, therefore, occasions the second leg of the analysis, in which the analysis seeks to take a step back behind the conceptualizations of security of supply, socio-economics, and environment found in the energy plans. It is important to note that the thesis does not in any capacity presume to conduct conceptual analysis in a manner identical to how it is found in Koselleck's own work. However, Koselleck's conceptual history provides a central theoretical and methodological point of departure capable of supporting the analysis significantly.

2.2.2 Three concepts

As previously stated, the three concepts chosen for analytical treatment are the concepts of security of supply, socio-economics, and environment. In Grohnheit & Olsen's (2002) study, they describe the three concepts as having been the three most important political objectives since the oil crisis of 1973, although their relative importance has changed over time according to political prioritization (Grohnheit & Olsen, 2002, pg. 142). In their account, this prioritization meant that one objective replaces another according to decisions made by policymakers. Grohnheit & Olsen then, provide a relatively simple account of the constrictive and productive dynamic between the shifting realities faced by energy policymakers, the conceptualization of the concepts, and the setting of policy goals. Over the course of the analysis of the energy plans, it is shown how the various conceptualizations and their relationships are subject to 'conceptual shifts'. An overview of these shifts as they pertain to the particular concepts can be outlined as below:

- **Security of supply** which over the course of the energy plans is expressed as or connotated to
 - Energy supply vulnerability
 - Self-supply
- **Socio-economics** which over the course of the energy plans is expressed as or connotated to
 - Socio-economic development
 - Societal investments

- Economics and employment
- Economic robustness
- Green growth
- **Environment** which over the course of the energy plans is expressed as or connotated to
 - Environmental qualities
 - Sustainable development
 - Climate obligations
 - Climate challenge

Aside from these shifting conceptualizations, an important point for the conceptual analysis is the changing relationships between the concepts. Charting the various conceptual shifts as they are expressed with regard to the concepts, their relationships and the setting of political goals, then, will be the most important objective of the analysis.

2.2.3 Conceptual Openings

As stated above, the second leg of the analysis entails the analysis of two so-called meta-concepts, in order to explore, problematize and reflect on how they are productive to the internal logic of the concepts analyzed via the first leg of the analysis. When they are described as meta-concepts, it is because their productive character preemptively configures the semantic fields of the political, economic, environmental and social realms, and thereby the concepts of security of supply, socio-economics, and environment. In other words, they are meta-concepts because they open and close the spheres of possible meaning for conceptualization. Although they have empirical expressions in the energy plans, the intention is to problematize how they, by merit of the preemptive nature of their configurative capacity, pose much more foundational problems than what is reflected in their use in the energy plans. These two meta-concepts are:

- ***Crisis*** as it relates to the oil crises of the 1970s and to climate change.
- ***Green growth*** as it relates to the relationship between socio-economic and environmental concerns.

Understanding how these meta-concepts productively and constrictively preempts the three analytical concepts of the first leg of the analysis implies releasing them from the empirical context in which they are found, submitting them to a problematizing and exploratory treatment, and thereafter reintroducing the outcomes of this treatment into the empirical use. The social science and philosophical writings that are applied are introduced and outlined in the sections where the second leg of the analysis is conducted, while the theoretical point of departure for the qualitative interviews with the former ministers responsible for the energy area is found below.

2.3 Source material

Conducting conceptual analysis offers the question of where concepts should be found, and why those sources should be considered authoritative. Because of the nature of the topic, a wide number of sources could be selected. The present thesis selects a two-fold approach based on document analysis and qualitative interviews. The most important sources and their application are described below.

2.3.1 Document analysis

The most important source of empirical material for the analysis is the energy plans that have been published from 1976 until today. The energy plans describe and determine long-term strategies, priorities, and initiatives for Danish energy policymaking, and are published by either the ministries in which the resort area is placed or by the cabinets in power. As written documents, the energy plans offer a first-hand account of how the three concepts are conceptualized, and how they pertain to the political goals of Danish energy policy. Submitting the energy plans to document analysis offers insight into the practice of policymaking for the Danish energy sector, as they can be perceived as authoritative documents that encapsulate, extend and regulate the mandated authority of policymakers (Dahler-Larsen 2005). The energy plans are simultaneously a product of the ministries and cabinets that publish them, just as they are productive towards those ministries and cabinets in themselves. Thus, the energy plans cannot only be considered as the outcome

of political processes but must also be considered as the starting point for succeeding political processes.

Studying how the concepts of security of supply, socio-economics, and environment are conceptualized in the energy plans, implies the study of the concrete conceptualizations found in the documents, and how these conceptualizations shift over time. The most important criterion for selecting which of the energy plans to analyze, then, is the question of whether they pose significant conceptual shifts. Treating the energy plans as primary sources, however, poses a number of obstructions. It poses an obstruction of continuity because analyzing them as historical products prohibits interpretation enabled by contemporary experience, attitudes, and norms, as this would pollute their historical representability. In extension, this temporal obstruction poses an obstruction of reliability and validity because the integrity of the representability of the energy plans cannot be judged by order of retrospection or comparison. Attributing the energy plans with such privileged representability, then, runs the risk of privileging a biased authoritative view on reality. This risk, however, can also be seen as a practical advantage for the research design because it allows for the energy plans to enunciate an uncontested understanding of the world, in which the conceptualizations can be taken from face-value into conceptual analysis.

2.3.2 Energy plans

Including the first energy plan, *Dansk Energipolitik 1976*, a total of ten energy plans have been published from 1976 until today. These include the energy plans of 1981, 1990, 1996, 2005, 2007, 2011, 2011, 2018 and 2018. From 1976 until 2007, each of the energy plans was published by the ministries in which the energy resort area was placed. They were published when urgent affairs for the energy policy area were emerging. The two energy plans of 2011, however, were both published directly by the cabinets in power and can be seen as an expression of a new climate for the political processes related to the development of energy policy. Energy policy agreements had largely been short-term implementations of the long-term directionality set by the energy plans until 2011, after which the scope of the energy policy agreements incorporated the long-term perspective.

Thus, while two long-term energy policy agreements lasting from 2008 until 2011 and 2012 until 2020 put in place the overall political framework conditions, the energy plans from 2011 and 2018 can be interpreted as much as energy policy proposals for the political negotiations that led from one energy policy agreement to another. For that reason, the last document analyzed is the energy policy agreement signed at the time of writing the present thesis, on June 29th, 2018. As previously stated, the criterion for selecting which of the energy plans to analyze is the question of whether they pose significant conceptual shifts. While this question is answered in the analysis, it suffices to state here which of the energy plans are treated in detail in the analysis. These are:

- The first energy plan of 1976: *Dansk Energipolitik 1976*
- The third energy plan of 1990: *ENERGI 2000*
- The fourth energy plan of 1996: *Energi 21*
- The fifth energy plan of 2005: *Energistrategi 2025*
- The seventh energy plan of 2011: *Energistrategi 2050*
- The energy policy agreement of 2018

In order to provide context and ensure continuity between the analyzed energy plans, the most important developments for Danish energy policy in their interim periods are briefly summarized in each section that introduces the energy plans².

2.3.3 Qualitative interviews

Aside from document analysis, a number of qualitative interviews have been conducted with three former ministers charged with the energy policy resort area. The interviews are included in the second leg of the analysis in order to create an additional foundation for problematizing and reflecting on the dynamics between the conceptualizations of security of supply, socio-economics, and environment identified in the first leg of the analysis, and their relationship to the meta-concepts of crisis and green growth.

² The Danish Energy Agency [Danish: Energistyrelsen] has a directory with all the political agreements that have been signed into agreement from 1985 until today on their website. The agreements are referenced in the text when relevant and included in the list of references. In addition, a number of different sources are referenced to in order to briefly document developments in the interaction with e.g. the European Union and the United Nations.

The interview questions were designed in an explorative, semi-structured manner, in order to generate new ways of thinking about the subject matter (Kvale & Brinkmann, 2009, pg. 109). In this regard, it is important to stress that the interviews are not intended to confirm or reject the accuracy of the analysis through verification from the respondents, the validity of which would be difficult to argue for by the merits of qualitative methodology (Kvale & Brinkmann, 2009, pg. 245). In other words, even if qualitative interviews are generally considered to be primary sources, in the context of the present thesis, they are treated as secondary sources able to assist in the primary analytical objective of analyzing the conceptual dynamics found in the energy plans. The three respondents and their role related to Danish energy policy are specified below, while the transcripts of the interviews can be found in Appendix 1.A-C.

Date of the interview	Respondent	Relevance
17/5/2018	Rasmus Helveg Petersen	Member of Parliament (B) and previously Minister for Energy, Climate and Buildings (2014 – 2015)
29/5/2018	Martin Lidegaard	Member of Parliament (B) and previously Minister for Energy, Climate and Buildings (2011 – 2014)
29/6/2018	Connie Hedegaard	Former Member of Parliament (C) and previously Minister for Climate and Energy (2007-2009)

2.4 Research question

As previously stated, the designation of Denmark as ‘a pioneer country within energy and climate’ resides on a policymaking history influenced by conceptual shifts. Even if studies have sought to highlight these changes, they have done so in a manner that does not attribute sufficient attention to the highly productive dynamic of how the conceptual level has influenced Danish energy policy. Accordingly, this lack of attention in previous studies is translated into the following research question that will guide the inquiry:

- How have the concepts of security of supply, socio-economics, and environment as they relate to each other and to political goals in Danish energy policy exhibited conceptual shifts over the course of the analyzed energy plans, and what have been the implications for the setting of political goals?

2.5 Structure of the thesis

Having outlined the research design and the analytical approach, the thesis henceforth proceeds with the two-fold objective of submitting the energy plans to conceptual analysis while opening up the analysis to the two meta-concepts. Henceforth, the thesis is structured based on the chronology of the energy plans with sections named after their titles, and with two interposing sections where the meta-concepts are opened. Following the conceptual analysis & conceptual openings, the main implications of the analysis are discussed in relation to the research design and research question, leading to conclusive remarks.

3. CONCEPTUAL ANALYSIS & CONCEPTUAL OPENINGS

3.1 Dansk Energipolitik 1976 – Denmark’s first energy plan

As a product of the Yom Kippur war of 1973, the price of a barrel of crude oil rose from 3 USD to 11.65 USD over the course of four months. At the time, around 86 percent of the Danish energy supply was fueled by imported oil³ (Handelsministeriet, 1976, pg. 9). Until then, the energy sector in Denmark had been largely unregulated (Rüdiger, 2014, pg. 94). It was up to the Cabinet of Anker Jørgensen I to respond to the crisis. The responsibility for administering the energy policy area was placed under the Ministry of Trade and Commerce, held by Minister Erling Jensen. Early initiatives included the implementation of car-free Sundays, and an energy conservation campaign directed towards households (Rüdiger, 2007, pg. 44).

In 1974, a policy review entitled *Danmarks energiforsyning: mål og midler i energipolitikken* was published by the Ministry of Trade and Commerce under the Cabinet of Poul Hartling. The review deemed it necessary to consider the oil crisis as a permanent issue and laid the foundation for the creation of an energy policy strategy based on central planning and a departure from the unidirectional supply based on imported oil (Handelsministeriet, 1974). Denmark’s first ever energy plan *Dansk Energiplan 1976* was published by the Ministry of Trade and Commerce in 1976. *Dansk Energiplan 1976* can be seen as a follow-up and concretization of the review of 1974. The most central objective was to decrease Denmark’s dependency on imported oil for its fuel needs, which was sought realized through the creation of a multidirectional energy supply scheme. Three main goals for the creation of a Danish energy policy were listed, which can be summarized as follows:

- a) Decreasing Denmark’s vulnerability with regards to the supply of energy and the build-up of a multidirectional energy supply system

³ The precise figure differs in a number of sources; i.e. Basse (2011) and de Lovinfosse (2008) state that the figure was 90 percent.

- b) Halting growth in the energy consumption by a targeted energy conservation effort and more efficient use of energy
- c) A coordinated and intensified research and development effort for the energy area {Handelsministeriet, 1976, pg. 24}.

Having outlined the overall political goals of the first energy plan of 1976, the section now proceeds with an analysis of the conceptualizations of security of supply, environment, and socio-economics found in the plan.

3.1.1 Energy supply vulnerability

Although the concept of security of supply was of central importance to the goals of *Dansk Energiplan 1976*, the concept in itself is not mentioned explicitly. Instead, *Dansk Energiplan 1976* sought to reduce the ‘energy supply vulnerability’ stemming from the increasing oil price. In a section listing the main goals for the period until 1995, the first of three goals for the future energy supply is phrased in the following way:

- (a) to reduce our vulnerability with regards to the supply of energy and especially our dependence of the supply of oil as fast as it is possible in compatibility with the goals for the economic and social development and the demands for environmental qualities {Handelsministeriet, 1976, pg. 24}.

In the above quote, the formulation of ‘reducing our vulnerability with regards to the supply of energy, and especially our dependence of the supply of oil’ is essentially a matter of strengthening Denmark’s security of supply. In order to displace the imported oil and thereby reduce the supply vulnerability, the plan outlined a number of short and long-term initiatives gathered in the strategy of developing a politically regulated multidirectional energy supply. The various initiatives were assessed according to the future availability of fuel sources and the socio-economic impact of their use in a 20-year perspective.

The inexplicit conceptualization of security of supply by way of ‘energy supply vulnerability’ illustrates Andersen’s (2011) point, that concepts pre-exist their general form in particularized meaning. While the concept of security of supply does not figure in the plan, the meaning that is inferred by the concept is of central importance. Thus, it can be said that in *Dansk Energiplan 1976*, security of supply figures as a developing concept for which its generalization and condensation of meaning had yet to come to conclusion.

3.1.2 Environmental qualities

Dansk Energiplan 1976 makes several references to ‘environmental qualities’, ‘the environment’, and similar formulations. Section 3.6.1. refers to a review conducted by the Ministry of Environment which identified air pollution and the deterioration of natural areas as the two most important environmental aspects of the goals of the energy plan. The plan stated that while the current levels of air pollution were not directly unacceptable, efforts might be taken towards reducing it “in-so-far as it was possible within reasonable economic conditions” {Handelsministeriet, 1976, pg. 63}.

The plan states that the most important source of air pollution stemmed from the combustion of fossil fuels, which polluted air quality with sulfur compounds, sulfur dioxide, and fiber dust. The ionized radiation stemming from the emission of cooling water and ventilation air from the proposed construction and operation of uranium-powered nuclear plants was described as posing no health risks to the population, as strict provisions would be taken for the treatment and storage of radioactive waste (Handelsministeriet, 1976, pg. 113).

Overall, *Dansk Energiplan 1976* states that its completion contained environmental benefits (Handelsministeriet, 1976, pg. 113). The planned energy supply scheme was projected to lead to a total reduction of sulfur compounds emissions of 20-30 percent compared to 1975, thereby decreasing air pollution significantly, most importantly in urban areas (Handelsministeriet, 1976, pg. 65). Thus, the conceptualization of environment through use of the concept ‘environmental qualities’ in *Dansk Energiplan 1976* referred exclusively to a local conception that implied primarily urban air pollution and the deterioration of Danish natural areas. What was at stake was the air quality of

urban areas and use of land in natural areas in Denmark. In addition, it was stated that any efforts towards improving the environmental impacts of the energy supply would only be possible within reasonable economic conditions.

3.1.3 Socio-economic development

On several occasions, *Dansk Energiplan 1976* refers to the ‘general socio-economic development’ in Denmark as an important aspect of the initiatives of the plan. The oil crisis occasioned the development of a Danish energy policy, first and foremost, because of its future detrimental effects on Denmark’s ‘general socio-economic development’. In the introduction to the plan, the prospect of increased fuel prices and scarcity is described as necessitating long-term planning and management, as well as comprehensive and costly investments in alignment with, and in assurance of, the general socio-economic development (Handelsministeriet, 1976, pg. 7). The conceptualization of socio-economic development related mainly to the relationship between Denmark’s economic growth, its currency balance and the consumption of energy. The oil price increase and Denmark’s ‘almost complete dependency on imported oil’, led to a growing deficit in Denmark’s balance of payments and in its net foreign debt. The net import of fuel contributed to approximately 7 percent of the cost of total import of goods and services in 1973 and grew to approximately 14 percent in 1974 (Handelsministeriet, 1976, pg. 20).

Another important facet of how the concept of socio-economic development was conceptualized, was the intention of implementing the politically regulated energy supply scheme governing the development in the supply and consumption of energy. This implied a conception of socio-economic development, in which governmental regulation and central planning were perceived as necessary for three main reasons. Firstly, because the energy conservation effort was likely to bear costs in the short run. Secondly, because ensuring the intended development in the energy mix was perceived to require planning and regulation. And lastly, because the largescale transition suggested for Denmark’s energy supply system involved large investment costs with significant risk and long-term investments horizons (Handelsministeriet, 1976, pg. 23-25).

The planning scheme allocated 170 million kr. over five years for investment in this transition. The funds were targeted the attempt to develop a domestic oil and natural gas

industry, exposition of the energy planning, and for research and development in what the plan calls “alternative energy sources”, which included both nuclear power plants and “the so-called renewable energy forms” {Handelsministeriet, 1976, pg. 114-115}. A comprehensive heat plan was initiated, with the purpose of identifying and optimizing investment opportunities in district combined heat and power (Handelsministeriet, 1976, pg. 81). It was assessed, that the development in market conditions would make investments in nuclear power plants more attractive than investments in renewable energy. For that reason, renewable energy was described as a marginal component in the multi-directional energy supply scheme, which required a significant improvement in economic competitiveness to become relevant (Handelsministeriet, 1976, pg. 32-33).

With the concept of socio-economic development, the plan places great emphasis on both the economic conditions created by the oil crisis and how these, in turn, condition the development of a Danish energy policy. The various investments in the energy supply system, the research and development efforts related to the energy supply, the development of a domestic exploration and fuel extraction suggested in the plan, are all evaluated based on their mid and long-term socio-economic benefits. Accordingly, the conceptualization of socio-economic development was determinant to how energy policy might be developed.

3.1.4 Concepts, relationships, and political goals

As previously illustrated, the inexplicit conceptualization of security of supply was set into relation to the concepts of socio-economic development and environmental qualities as a relation that requires ‘compatibility’ between, on the one hand, the reduction of vulnerability in the energy supply, and on the other, socio-economic goals and environmental qualities (Handelsministeriet, 1976, pg. 24). Throughout the plan, the relationship between energy supply vulnerability, socio-economic goals, environmental qualities, and the overall goals of the energy plan are described in a number of similar ways, with formulations like “compatibility”, “constrain” and “reconciliation”. In using these formulations, *Dansk Energipolitik 1976* conditions and delimits how a meaningful semantic configuration of the three concepts might be translated into future Danish energy policies.

In addition, the concepts are placed in a pattern of order based on how their relationships are articulated. Firstly, as indicated, the possible conceptualizations of the concept of security of supply is subject to the overall socio-economic development and environmental qualities. Any policymaking directed towards the Danish security of supply was to be conditioned in such a way, that it had to offer a socio-economic benefit while respecting environmental qualities. Secondly, the concept of environmental qualities is subjected to the overall socio-economic development since the mitigation of air pollution was a worthwhile endeavor only in-so-far as it would be completed within reasonable economic conditions.

In effect of their relationships and ordering, the concepts can be interpreted as mutually determining counter concepts. Although they don't figure as mutual antonyms, each concept "pulls" the other concepts in their own direction, thereby conditioning and delimiting the possible meaning that can be attached to them. In other words, the relationships between the concepts are simultaneously constrictive and productive for the possible semantic content that can be attached to each of them, which in turn conditions the reservoirs of possible utterances, actions, and opinions available to policymakers.

In the present section, it was illustrated how the concept of security of supply figures as a central political goal, although it remains unconceptualized in its general form, how the conceptualization of 'environmental qualities' and "air pollution" referred exclusively to a local conception, and how the concept of socio-economic development had a two-fold role of firstly legitimizing the use of central planning, and secondly conditioning the possible development in the security of supply and means allotted towards environmental objectives. In this relation, it was shown that the energy plan orchestrates the ordering of socio-economic development into a prerequisite for the mitigation of air pollution, while both conditioned the possible future security of supply. Having indicated the conceptual status of the selected concepts, their relationships and their importance to the political goals of the first energy plan of 1976, it now becomes important to include in the analysis the conceptual shifts that the concepts and their relationships are subject to in the political goals of the remaining energy plans and political agreements.

3.2 ENERGI 2000 – Denmark’s third energy plan

Fourteen years passed between the publishing of *Dansk Energi 1976* and the third energy plan, *ENERGI 2000*. In 1976, The Danish Energy Agency was founded under the Ministry of Trade & Commerce. In 1977, the electricity supply act came into effect, and tariffs on electricity and oil were implemented. In 1979, a formative contract gave Dansk Undergrund Consortium (DUC) and the nationally owned Danish Oil and Natural Gas (DONG) permission for the extraction and production of natural gas from the Danish continental shelf. A legal act [Danish: Anlægsloven] gave permission for the use of natural gas in power plants (Nielsen, 2016, pg. 3). The heat supply act of 1979 [Danish: varmforsyningsloven] created a legal framework for collective heat planning and for the advancement of natural gas-fired combined heat and power plants (de Lovinfosse, 2008, p. 117). The Cabinet of Anker Jørgensen IV founded the Ministry of Energy, and Poul Nielson was constituted as Denmark’s first Minister for Energy. The Iranian revolution brought forth a second international oil crisis, which more than doubled the crude oil price from 14.85 USD per barrel in January 1979 to 39.50 USD in April 1980.

In 1981, Denmark’s second energy plan, *Energiplan 81* was published by the Ministry of Energy, which was heavily influenced by the negative impact of the first and second oil crises of 1973 and 1979 (Energiministeriet, 1981). Between 1976 and 1990, four energy policy agreements were implemented, addressing the conversion of heating plants into combined heat and power plants, the inauguration of the extraction of natural gas and oil in the North Sea, the use of natural gas for heating and combined heat and power, and subsidies for the construction of windmills (Energistyrelsen, 1985b; 1986; 1990). On March 20th, 1985, motion B 103 on public energy planning without the use of nuclear power was adopted. From then on, nuclear energy would not be included in Danish energy policy planning (Energistyrelsen, 1985a).

In 1987, *Our Common Future*, henceforth referred to as the Brundtland report, was published by the United Nations following the Brundtland Commission. Although environmental deterioration had previously been addressed multilaterally by the United Nations, i.e. in 1972 during the United Nations Conference on the Human Environment, the Brundtland report had greater success in pushing environmental issues to the forefront

of the international and national political agendas (Borowy, 2014). It set the target of developing a multilateral framework and partnership for the advancement of ‘sustainable development’, a term coined and popularized by the report (Kates et. al., 2005).

In April 1990, Denmark’s third energy plan *Energi 2000* was published by the Ministry of Energy. *Energi 2000* was in its entirety influenced by the sustainable development agenda, which was mentioned in the first paragraph of the document and several times throughout. *Energi 2000* was the world’s first political plan for reducing CO₂-emissions (Nielsen, 2016, pg. 6), which was included in its overall goal:

The overall goal for the action plan is to create the foundation for a reduction of the Danish energy sector’s CO₂ emissions by 20 percent, and a further reduction of SO₂ and NO_x emissions by 2005, with a baseline set to 1988, while at the same ensuring that the Danish society’s needs for a secure, effective and economic energy supply is ensured {Energiministeriet, 1990, pg. 13}.

In *ENERGI 2000*, a series of significant changes arose with regards to how the three concepts were conceptualized, and particularly with regards to how they were set into relation and formulated into political goals.

3.2.1 Security of supply

As illustrated by the overall goal quoted above, the concept of security of supply figures as an attachment to the overall goal of reducing CO₂ emissions in *ENERGI 2000*. The plan describes that while security of supply had been the natural overall goal in the 1970s during the two energy crises, “the gravitational point” had shifted during the 1980s towards the energy systems’ impact on the physical environment {Energiministeriet, 1990, pg. 89}. *ENERGI 2000* describes how the Brundtland report had accentuated this development, by stressing the global environmental risks implied by a continuation of the contemporary tendencies in energy production and consumption (Energiministeriet, 1990, pg. 89). In order to accommodate for the overall goal, the plan describes how a number of technical changes in the energy supply system were necessary.

This involved conversion from coal and oil to biofuels or natural gas, the increased use of decentralized combined heat and power, the conversion of existing heat plants to combined heat and power plants and a goal of establishing 100 MW of wind power capacity by 1994 (Energiministeriet, 1990, pg. 13). With regards to the concept of security of supply, *ENERGI 2000* describes how the changes in technical design and fuel mix in the energy system would have to attain a high degree of ‘flexibility’ and ‘robustness’ in the future. In this regard *ENERGI 2000* contains a conceptual shift from how the concept of security of supply had previously been conceptualized.

In *Dansk Energipolitik 1976*, the technical aspects were treated with ‘sporadic importance’, as the concept of security of supply instead implied the conversion of the fuel inputs used in the existing technical design. In *ENERGI 2000*, the concept of security of supply was perceived as an important medium for accommodating the conversion to ‘cleaner energy and new technologies’, for which reason the technical design had to be flexible and robust enough to support their implementation in a way that would not compromise the security of supply. Accordingly, the concept of security of supply had abated the connotations of oil supply vulnerability and become a medium for the overall goal of emissions reduction.

3.2.2 Sustainable Development

As evidenced by the above, the conceptualization of environmental impact was the center-most important concern for the political goal set forth by *ENERGI 2000*. As mentioned, the plan states how the gravitational point had shifted, making the environmental impact of the energy system the most important goal for Denmark’s energy policy. In that regard, a significant shift in the prevalence of the concept had occurred. Environmental concerns were no longer relevant ‘in-so-far as they were within reasonable economic conditions’, or something to be treated with ‘significant weight’ as in *Energiplan 81* – they now informed the overall goal for policymaking. The observance of the Brundtland report marked another important conceptual shift, as environmental concerns were no longer conceived exclusively within domestic borders:

The goal set by the action plan of the government is to ensure a marked reduction of the environmentally harmful impact of the energy system. This includes both local, regional and global environmental and resource issues {Energiministeriet, 1990, pg. 90}.

In *ENERGI 2000*, then, the conceptualization of environment relates to domestic, regional and global problems. This was different from its predecessors, where it was conceived as a domestic concern or one in which regional impacts had to be ‘taken into consideration’. This shift towards global attention was followed by the inclusion of a number of new related terms that informed the semantic field inhabited by environmental concerns. Firstly, *ENERGI 2000* distinguishes between “environment”, and “climate”, whereas preceding energy plans had only referred to “environment”. Secondly, whereas environmental impact had previously been conceived as a matter of urban air pollution, *ENERGI 2000* adds areas of concern such as the ozone layer and the greenhouse effect⁴.

Simultaneously, the focus was shifted from the emission of sulfuric compounds to the emission of greenhouse gases – CO₂, methane, nitrous oxide, ozone, and CFC compounds. In *ENERGI 2000*, three suggested developmental processes for the energy supply are described as gauging tools for the optimal compliance with the overall goal of greenhouse gas reduction. They are evaluated based on energy conservation, socio-economic costs and fuel mix in areas of application, but are ultimately assessed based on their contribution to the reduction in emissions of CO₂ and other greenhouse gases (Energiministeriet, 1990, pg. 70-76).

Thus, the conceptual order was reversed. In *Dansk energipolitik 1976*, the starting point was the socio-economic optimality of the proposed energy supply scheme. The starting point in *ENERGI 2000* was the mitigation of environmental impact, the optimality of which was evaluated against socio-economic costs. *ENERGI 2000* contained a number of significant conceptual changes in the way environmental impact

⁴ Although the concepts had not previously figured in Danish energy plans, they had existed in scientific circles for decades. Svante Arrhenius is generally attributed with being the first to describe the greenhouse effect in 1861 (Heide, 2018), while the discovery of the ozone layer is attributed to French physicists Fabry and Buisson in 1913 (McElroy & Fogal, 2007)

was conceptualized. Firstly, the concept itself changed from a local matter of air pollution to a global concern related to greenhouse gas emissions. For the same reason, the meaning dimension in which the concept resided had shifted, as the Brundtland report and the ‘sustainable development’ movement had pushed a more sophisticated understanding of the detrimental impact of energy production and consumption into energy policymaking.

3.2.3 Societal investments

As indicated above, the conceptualization of socio-economics was heavily influenced by the new role that environmental concerns assumed. In the three developmental processes, the socio-economic impact was now reformulated from a prerequisite to something that ‘had to be given attention’, much like environmental qualities in the first energy plan. In the preface written by the Minister for Energy, Jens Bilgrav Nielsen, it is stated that the plan allows for an environmentally friendly transition “without even negatively affecting continued economic growth” {Energiministeriet, 1990, pg. 3}. The quote indicated a departure from previous conceptualizations, in which socio-economic development and socio-economic prerequisites determined the treatment of environmental concerns, to a policy setting in which the goal was to ‘not affect economic growth negatively’.

Thus, the evaluation of the three developmental processes outlined in *ENERGI 2000* was assessed firstly based on their contribution to emissions reduction, and secondly, based on their socio-economic costs. As previously mentioned, the plan describes a newfound importance in the need to invest in technical changes in the energy supply system. These investments, however, were described as uncertain and their profitability hard to immediately document. The alternative of not acting was described as having the potential to lead to drastic and critical consequences (Energiministeriet, 1990, pg. 89). Thus, these investments, described as ‘societal investments’ [Danish: samfundsmæssige investeringer], were seen as a necessary measure of due diligence. In contrast, however, the plan also describes how the investments had to be seen in a business policy perspective. Whereas the ‘societal investment’ perspective was uncertain and might potentially not demonstrate profitability, investments from a ‘business policy perspective’ implied significant development and export opportunities (Energiministeriet, 1990, pg. 90)

Thus, the investments proposed were described as having two very different returns. The plan intended to finance the investments in part with proposed levies on CO₂ and SO₂, which would raise the price of energy for consumers. The differences in return, then, stems from public funds being redistributed into investments that would benefit businesses able to capitalize on export opportunities. The acceptance of the associated degree of uncertainty and potential lack of societal profitability underlines the break with earlier energy plans, in which investments in research and development of renewable energy technologies was determined only by potential commercial outlook. The importance of environmental concerns in *ENERGI 2000* implied that investments in the advancement of renewable energy technology were quintessential for an energy system able to comply with the overall goal of reducing greenhouse gas emissions.

Taken together, the language used in *ENERGI 2000* signified a general downgrading of the importance of socio-economic concerns, in favor of reducing the environmental impact of the energy system. Socio-economic concerns were not excluded but were superseded by environmental concerns. This superseding was also reflected in the manifold reference to the Brundtland report, which acknowledged the importance of solving environmental and climate challenges, while simultaneously maintaining a positive development in living standards (Energiministeriet, 1990, pg. 8) Thus, it cannot be stated that the tension between environmental concerns and socio-economic goals disappear. Instead, their ordering was reversed, according to a more general change in the meaning dimension in which the tension resided.

3.2.4 Concepts, relationships, and political goals

The most significant change in *ENERGI 2000* compared to its predecessors was the promotion of environmental concerns. The Brundtland report significantly influenced the outlook for the future development in the energy sector as concepts like climate change, greenhouse effect, and global warming refined the understanding of the negative impacts of the energy supply system on the natural environment domestically, regionally and globally. As shown, the plan still formulated all three concepts although their conceptualizations, and in particular, their relationships and ordering in policy goals, have changed.

ENERGI 2000 stated, that while it addressed matters of security of supply, economics, and environmental demands, the point of departure for the energy plan was the environmental concerns associated with climate change and global warming. The ‘main aim’ was to create a foundation for developing the energy system in a direction that would comply with the goals associated with an ‘environmentally and resource sustainable development’ {Energiministeriet, 1990 pg. 89}. As the gravitational point for the political goals of the energy sector shifted from security of supply towards the negative impact of the energy supply system on the natural environment, security of supply shifted from being a primary political concern towards being an intermediate concern for the ambition of reducing greenhouse gas emissions. The relationship between environmental concerns and socio-economic development was reversed, compared to how it figured in *Dansk Energipolitik 1976*.

In 1976, negative environmental consequences were a secondary concern, to be addressed only insofar as it was socio-economically possible. In *ENERGI 2000*, environmental concerns informed the primary political goal and were to be favored ‘as far as it would be possible’ given acceptable costs. Although the formulations appear similar, the change can be interpreted as an illustration of Koselleck’s point that it is possible for concepts and counter-concepts to change place. In this interpretation, the relationship between the concept, socio-economic development, and counter-concept, environmental impact, is reversed. As environmental impact becomes the primary goal for policymaking, it was no longer conceptualized as an object for the socio-economic development. Simultaneously, socio-economic development assumes the role of counter-concept because it is conceptualized as posing negative restraint on the primary goal of advancing sustainable development.

3.3 Energi 21: Denmark’s fourth energy plan

In 1996, Denmark’s fourth energy plan *Energi 21: Energihandlingsplan 1996* was published by the Ministry of Environment & Energy. Between 1990 and 1996, three energy policy agreements sought to advance the construction of natural gas and biomass-fired combined heat and power plants, and the connection of wind power and combined

heat and power into the electricity and heating distribution networks. This involved regulatory alterations, including changes in the heat supply act and fuel quotas, the introduction of a CO₂-levy, as well as the banning of electrical heating in existing buildings (Energistyrelsen, 1990; 1992; 1993).

With the inauguration of the Cabinet of Poul Nyrup Rasmussen II in 1994, the Ministry of Environment and the Ministry of Energy were merged into the Ministry of Environment and Energy, and the former Minister for Environment, Svend Auken, became Minister for Environment and Energy. *Energi 21*, the energy plan of 1996, confirmed and maintained the overall goal of reducing Denmark's CO₂-emissions by 20% in 2005 compared to 1988 levels set by *ENERGI 2000* but found it necessary to propose a number of further measures. In addition, the plan sought to address the developing establishment of an internal European Union energy market. The overall goals of the plan were divided into nine areas:

- Sustainable development
- An activist energy policy
- Consumer influence and engagement
- A driving force in the international development
- Security of supply
- Economics and employment
- The global environment and the effort against climate change
- The Danish CO₂-effort after 2005
- Nature and environment in Denmark

The nine areas were translated into a number of goals relating to their specific area. Their relevance for the conceptualization of security of supply, socio-economics, and environment is elaborated below.

3.3.1 Self-supply

In *Energi 21* the conceptualization of security of supply is complemented with a new concept that had not appeared in any earlier plans: self-supply [Danish: selvforsyning]. The inauguration of the oil and natural gas production in the North Sea had shown significant results, and in 1993 80 percent of Denmark's oil and natural gas consumption came from its own production in the North Sea (Miljø & Energiministeriet, 1996, pg. 34). The concept of self-supply introduced a completely new reality for how the concept of security of supply was conceptualized. From being 86 percent dependent on imported oil, Denmark had come to supply 80 percent of its fuel consumption and had reversed the negative influence of imported oil on the national accounts to a positive balance of payments through the export of oil and natural gas products (Miljø & Energiministeriet, 1996, pg. 14).

Since prognoses of the North Sea reserves assessed that Denmark could be self-supplying well into the next millennium, the concept of security of supply had temporarily abolished the connotations to foreign policy vulnerability it had acquired during the oil crises of the 1970s. However, global climate change was increasingly considered a crucial geopolitical risk with major implications for the design of the energy supply system. Therefore, *Energi 21* describes how the "comfortable supply-situation" was considered a temporary respite, which would fund an "offensive push" for developing renewable energy technology into a "sensible alternative" for fossil fuels, in order to tackle the new challenge of climate change {Miljø & Energiministeriet, 1996, pg. 4-5}.

Another important development for the concept of security of supply was the ongoing energy market opening in the European Union. The creation of a common European Union energy market required the integration of the fifteen member states' extensively different energy systems, varying greatly in ownership structure, fuel mix, technical design and operational efficiency. This presented new challenges for the requirement of an increasingly flexible energy supply system, able to effectively trade and transfer energy to neighboring countries (Miljø & Energiministeriet, 1996, pg. 12). The ambition of using the comfortable supply situation offensively expressed an ambition of ensuring that the integration of the diverse energy supply systems would enhance the ability to deal

with environmental concerns rather than the opposite, so that ‘bad environment’ would not become a factor for competition {Miljø & Energiministeriet, 1996, pg. 4}.

The success of the oil and natural gas production in the North Sea and the amplification of the EU energy market opening ignited a significant change in how the concept of security of supply was conceptualized in *Energi 21*. The emergence of the concept of self-supply signified a new era, in which Denmark no longer suffered from the energy supply vulnerability that had been so detrimental in the 1970s and was now able to generate a trading profit from its domestic oil and natural gas production. Self-supply can be seen as a lateral concept because it expanded the meaning dimension that the concept of security of supply resided in without replacing it. In the short term, the concept of security of supply implied the efficient retrieval, distribution, and consumption of fuel as well as the technical optimization of the energy supply system in accordance with the European Union market opening. In the long-term perspective, the self-supply with oil and natural gas would run out, and the increasing need to accommodate for greenhouse gas mitigation would require an energy supply relying on renewable energy technologies. Consequently, the conceptualization of security of supply had shifted from emphasizing the access to fuel, to increasingly emphasizing changes in the technical design according to shifting geopolitical influence.

3.3.2 Sustainable Development

In *Energi 21* the first and foremost goal was described as mitigating the challenge of climate change by advancing sustainable development domestically, in the European Union, and globally (Miljø & Energiministeriet, 1996, pg. 3). The international emphasis is described as an acknowledgment of the border-transcending nature of the environmental challenges and is attached with a highly explicit ambition of making Denmark and Danish energy policy a “driving force” [Danish: drivkraft] for international sustainable development {Miljø & Energiministeriet, 1996, pg. 11}. A deciding factor for this, the plan states, was the continued development of renewable energy technologies and solutions so that they could be ‘marketed internationally as part of efforts to combat climate change’ {Miljø & Energiministeriet, 1996, pg. 11-12}.

Renewable energy technologies, which were initially perceived as an unviable and costly technology, were now seen as a deciding factor, which would make Denmark able to exert international influence in the effort towards climate change. Thus, while environmental challenges were conceptualized as a global challenge and were attributed primary attention in energy planning goals, it was simultaneously conceptualized as providing a promising market opportunity for Danish renewable energy technologies. Where *Dansk Energipolitik 1976* had stated that any efforts towards improving the environmental impacts of the energy supply would only be possible within reasonable economic conditions, *Energi 21* perceived environmental concerns as a promising market opportunity.

In order for Denmark and Danish energy policy to be a driving force for sustainable development, the plan sought to influence the market opening in the European Union towards ‘high levels of environmental protection’ in order to avoid ‘bad environment’ becoming a factor for competition {Miljø & Energiministeriet, 1996, pg. 4}. The conceptualization of environment thus underwent a seminal shift in *Energi 21*. No longer were environmental concerns articulated against socio-economic costs, but something that occasioned significant market opportunities that existed in a positive feedback relationship with the commercialization of renewable energy technologies.

3.3.3 Economics and employment

In a section describing how policy goals were related to the area of economics and employment, the first sentence reads “Concerns for the global environment compels us to focus on energy efficiency and renewable energy.” {Miljø & Energiministeriet, 1996, pg. 15}. As in *ENERGI 2000*, the conceptualization of socio-economics appears primarily in connectivity to environmental matters. But whereas *ENERGI 2000* described the tension between the two as implying uncertainty and potentially indemonstrable profitability, *Energi 21* implies a positive relationship, as demonstrated in the above exposition of the conceptualization of sustainable development. A central element of this development was the prospective outlook of a growing market for Danish renewable energy technologies.

The domestic production of oil and natural gas in the North Sea had reversed the negative economic influence of imported oil and provided an economic foundation for

developing Denmark's "leading position" within renewable energy and environmental technology and the "explosively increased" exports in Danish energy technology, thereby attaining "large positive returns in the future" {Miljø & Energiministeriet, 1996, pg. 14}. The transfer of profits from the domestic production and export of oil and natural gas, into investments in renewable energy technologies was another expression of 'using the comfortable supply situation offensively' as a lever for furthering domestic, European and international climate mitigation, while simultaneously furthering the positive feedback between Danish renewable energy technology and environmental goals.

Another important factor for the conceptualization of socio-economics in *Energi 21* was the new market conditions that would arise from the opening and integration of the EU energy market. The plan sought to further the case for positive feedback between environmental protection and Danish market opportunities for renewable energy technology by advocating for equal market conditions based on a high level of environmental protection. This implied working towards common technical and product standards, minimum norms for fuel mix and common environmental tariffs (Miljø & Energiministeriet, 1996, pg. 12). The same ambition was to be taken up with regards to other international institutions, in particular in OECD's International Energy Agency (IEA), the World Trade Organizations Energy Charter Treaty, and the United Nations Climate Convention. The plan stressed, that the prioritization "resides on good environmental business acumen [Danish: på et godt miljømæssigt købmændskab]" {Miljø & Energiministeriet, 1996, pg. 13}.

As demonstrated, the conceptualization of socio-economics in *Energi 21* was tightly knit together with the conceptualization of environment. The two concepts were conceived in such a way, that a positive feedback based on high levels of environmental protection and investments in renewable energy would provide large long-term returns for Denmark, the EU and globally. The difference in returns for 'society' and for 'business interests' found in *ENERGI 2000* disappeared, as the positive feedback was perceived to benefit both Denmark as a whole and the business interests invested in renewable energy. The positive socio-economic contribution from the domestic production of natural gas and oil was to be utilized as a long-term economic foundation

for developing renewable energy technologies, thereby benefiting the Danish economy and the global climate. This was to be realized in part by assuming a leading position as a pioneer nation - i.e. exerting Denmark's energy policies in international fora.

Energi 21 contained several conceptual shifts in the conceptualization of socio-economics. Firstly, the international community no longer posed a threat to Denmark's energy supply as it did during the oil crises in the 1970s. Rather, the plan perceived the international community as a platform for furthering the positive feedback between climate change and the market prospects for Danish renewable energy technologies. Secondly, Denmark's supply situation had shifted to such a degree that an economic surplus could be used actively to promote long-term growth opportunities and employment. And lastly, investments in the energy supply system were no longer only a geopolitical necessity, but a part of furthering Denmark's leadership and pioneer status.

3.3.4 Concepts, relationships, and political goals

Energi 21 brought forth significant conceptual shifts with regards to all three concepts as well as their relationships. The international developments – climate change mitigation efforts and the opening of the European Union energy market – were posed simultaneously as challenges and opportunities for Danish energy policy. The most central aspect of this was the long-term strategy of creating a positive feedback between a push for sustainable development and the market for Danish renewable energy technologies. Whereas the preceding energy plans had articulated environmental concerns as subject to socio-economic costs of relative importance, the investments towards climate change mitigation proposed in *Energi 21* are articulated as a matter of short-term costs for attaining large positive returns in the future, for the environment and for the Danish economy as a whole.

The plan thus cemented the ambition of developing the commercial success of Danish renewable technology in order to create an export market. The conditions for this ambition now resided on a positive economic foundation from the domestic energy supply and from the prospect of a positive feedback between environmental protection in energy policies and renewable energy technology development. This had implications for all three concepts. The lateral concept of self-supply shifted the conceptualization of security

of supply. Denmark had advanced decidedly from dependency and vulnerability to becoming an own producer with a resulting positive balance of payments. In the long-term, renewable technologies and the market opening in EU posed new needs for the flexibility and robustness of the energy supply system in order for a secure supply. The concept of sustainable development was now perceived as a platform for Denmark to be a 'driving force' for high levels of environmental protection in Denmark, the EU and globally, which would develop Denmark's status as 'pioneer country' and further its 'leading position' in renewable energy technologies, thereby benefiting the local, regional and global environment as well as the Danish economy.

3.4 Conceptual opening #1: Crisis

In the present section, the second leg of the two-fold analytical approach is pursued. As previously stated, this entails the opening up of empirically generated meta-concepts in order to expose, challenge and reflect on how they are productive to the internal logic of the three concepts analyzed via the first leg of the analysis. The first such meta-concept is the concept of crisis which, as has been shown, was used to describe the political, economic, environmental and social realities for energy policymaking that emerged during the oil crises of the 1970s. In addition, the concept of climate change is described in the derivative form of crisis in *ENERGI 2000*, as posing 'critical threats to the global environment' {Energiministeriet, 1990, pg. 7}. The section initially outlines how the concept of crisis figures in attachment to the oil crises and climate change in the energy plans of 1976, 1990 and 1996, after which the concept of crisis is opened to a reading of philosophical and social science literature.

3.4.1 The oil crisis concept as described by the energy plans

As shown in section 3.1, *Dansk Energiplan 1976* described the first oil crisis as a permanent issue governing the formulation of Danish energy politics, as international political unrest had led to drastic increases in oil supply scarcity and prices. *ENERGI 2000* described how security of supply had been the natural overall energy policy concern during the two 'energy crises' of the 1970s. The oil crises were described interchangeably as 'energy supply crises', 'supply crises', 'oil crises' and 'energy crises', all closely

related formulations that articulated how the import of foreign oil had consequences for energy policymaking. Thus, the crisis concept in relation to the oil crises was inscribed with a root cause (political unrest in oil exporting countries), a gauging and interpretation of its consequences here and now (increased energy prices and thus increased socio-economic strain), which in turn led to policymaking reaching into the future (oil displacement through the establishment of a multidirectional fuel supply scheme).

3.4.2 The crisis concept and climate change

When *ENERGI 2000* introduced the concept of climate change it was described as posing ‘critical threats to the global environment’ that had to be met with global cooperation towards sustainable development based on ‘markedly reducing’ the greenhouse gas emissions of the energy system (Energiministeriet, 1990, pg. 7). *Energi 21* furthered this perception, stating that ‘environmental issues will be tomorrow's challenge in the energy field’ and described the alternative of not acting as leading to ‘violent climate changes’ (Energiministeriet, 1996, pg. 3).

While the concept of crisis is only found in its derivative from ‘critical’ in the plans, interchangeable formulations like ‘climate change’, ‘global warming’ and ‘greenhouse effect’ are described as ‘critical threats to the global environment’ with the prospect of “disastrous consequences”, “violent change”, and setting “the future of the earth, as we know it today, at stake”. Thus, the prospect of climate change and global warming is described as the prospect of a future critical juncture calling for action now. Again, it is possible to identify a narrative structure that makes the prospect of climate change intelligible. The root cause (greenhouse gas emissions and resource depletion) implied a current state of prospective crisis (energy policy and the energy supply system had to be restructured) which led to policymaking reaching into the future (greenhouse gas mitigation, controlling global temperature increase etc.)

3.4.3 Crisis as a philosophical and social science concept

The concept of crisis related to the oil crises and climate change is treated in a rather straightforward fashion in the energy plans. Current or prospective changes produced a reconfiguration of the present outlook on the future. The element of crisis consisted of the unexpectedness of the change, the speed at which it was introduced, and the affiliated

negative outcomes the change produced. In other words, the oil crises and climate change were crises in so far as their introduction required a reconfiguration of the political, economic and environmental spheres toward uncertain realities. The introduction of the crises, as was shown, were affiliated with narrative structures describing their cause, consequences, and solutions. In other words, the reality of what the crises implied was problematic, while the concept of crisis, in itself, was not.

In philosophy and the social sciences, the concept of crisis has been treated with considerable attention. Much more than a straightforward concept, crisis is described as an ambiguous concept with philosophical properties in its capacity to ontologize phenomena. Writing about the introduction of the concept of crisis to climate change, and the transition towards a 'post-carbon economy', Martin McQuillan (2012) implies, involves "a rethinking of the experience of the environment, and the environment as experience, as an encounter with an irreducible presence and perception of a phenomenality that is also an experience of the other, the wholly other, and of difference." (McQuillan, 2012, pg. 272) Understanding something as a crisis requires simultaneously 'an experience of the other, and of difference' – an encounter with something which is not yet made intelligible in contemporary experience. Thinking of that which is implied by a crisis and the crisis itself, involves thinking of that which is outside of the empirically conceptualized – of the irreducible 'other' that inflicts the productive demarcation and difference to that which is positively given in the ontologizing capacity of the concept of crisis. Understanding something as a crisis simultaneously implies the identification of a way of naming and explaining the phenomena involved in the crisis – as well as excluding phenomena that otherwise could or could not have been involved. In doing so, the future prospect of the crisis is 'domesticated' in current experience, thereby neutralizing the effects of its unknowable future:

... to identify an event as a crisis is always to ontologize it and to submit it to the model of the crisis that would explain it and domesticate it. To name this process and event as a crisis would be to appropriate it for the present and for a metaphysics of presence. In giving the event of climate change a form and a certain calculability one

has begun to neutralize the effects of its unknowable future and to erase the experience of alterity at the heart of an encounter with the wholly other. To name it as a crisis is to subject it to the temporality of “the crisis,” namely that it will one day come to an end and a state of normativity will be restored. (McQuillan, 2012, pg. 274)

Before the first oil crisis emerged in the 1970s, Denmark was perceived as having great business acumen because of its ability to bargain for oil contracts at relatively favorable prices (Basse, 2011). When the oil crises emerged, this was as much a crisis for an established ontology as it was a confrontation with a radically new reality. The ability to purchase oil at relatively favorable prices had expressed a competitive edge and had thus produced a contemporary experience reaching into the future – Denmark had been ‘ahead of the competition’. The oil crises thus required simultaneously a break with past and present experience, as well as the departure from a prospectively desirable future into an uncertain future.

The ambition of introducing a centrally planned fuel scheme was an attempt at deciphering the unintelligible, of reducing uncertainty, and of building a coherent ontology of the past, present, and future for Denmark’s energy supply. When Danish power plants had converted their fuel supply distribution from being based 86 percent on oil and 14 percent on coal in 1974, to being based 81 percent on coal and 19 percent on oil in 1980, the goal of oil displacement was described as successful (Energiministeriet, 1981, pg. 20). This, in combination with the successful establishment of an oil and natural gas trade supplied by the North Sea, had put Denmark in a uniquely advantageous situation by the early 1990s. Denmark was ‘self-supplying’.

As shown, the ambition of using ‘the comfortable supply situation’ as a platform for offensively pushing for environmental protection in *Energi 21* shows how Danish energy policy was again faced with having to make decisions reaching into an uncertain future, this time with regards to climate change. Throughout *ENERGI 2000* and *Energi 21*, the prospect of climate change and global warming is attached with a great deal of uncertainty related to both the understanding of the phenomena and to the probability and severity of possible consequences. Both, however, mentioned that lack of action would produce

‘disastrous consequences’, ‘violent change’, and setting ‘the future of the earth, as we know it today, at stake’. The narrative structure related to how climate change is conceptualized and politicized in *ENERGI 2000* and *Energi 21*, illustrates McQuillan’s point in relation to how crises are able to domesticate the unknowable future into current experience, through selecting, naming, and explaining the phenomena involved in the crisis. Even if the concept of climate change was poorly understood, it sufficed to know that it would imply negative outcomes in the future, for which reason current (political) action was necessary. Because the multidirectional energy supply scheme had not excluded renewable energy technologies, their development was a readily available medium towards domesticating the uncertainty of the future.

Through understanding the ontologizing capacity of the concept of crisis, it becomes visible how Danish energy policy uses the concept of crisis to accommodate for – and co-create – the changing realities policymaking was faced with. As McQuillan puts it, the naming of something as a crisis is to ontologize it, to appropriate it for the present and to inscribe it with a certain calculability able to manage the effects of its unknowable future. What is at stake, then, is the temporality of the concept of crisis. In McQuillan’s disposition, ‘the temporality of the crisis’ returns to a state of normality, although the nature of this normality is the object of the infamous scientific debate about the legitimacy of anthropogenic climate change. While this debate is not found explicitly in the energy plans, it is worthwhile to briefly mention McQuillan’s point that one side might argue that the return to normality implies sustainable development, while another might argue that climate change is, in fact, an expression of normality for a planet that has seen multiple radical changes in climate through its 4.5 billion years of existence (McQuillan, 2012).

When this is relevant, it is because it highlights the fact that any conceptualization of crisis – in this case, oil crises and climate change – is a politicizing endeavor. Both crises faced by energy policymaking implied solutions based largely on the merits of western culture – the extension of reason into science and technology. The conceptualization of crisis found in the energy plans illustrates what McQuillan calls a retainment of “the vestiges of an irreducible humanism and the parochialism of western metaphysics”

(McQuillan, 2012, pg. 276). As shown by the disparity of what normality might imply, the climate crisis might be interpreted as an anthropic crisis rather than a foundational threat to the planet.

Climate change, then, is only a crisis because it poses a critical problem to western intellectualism, science, and technology, which was not readily solvable. As McQuillan puts it “Climate change accordingly is a challenge to reason and so too philosophy as the custodian of western reason.” (McQuillan, 2012, pg. 276). Similarly, the oil crises were a challenge to the economy of the western idea of a capitalist world order. Beyond a challenge for the global hegemony of western geopolitics, the oil crises and climate change posed crises because the same tools that were suggested for their solution – science and technology – were the ones responsible for creating the crises in the first place. The concept of crisis, then, as it relates to the oil crises and climate change, expresses a much more complex and problematic ontology than the one found when taking the conceptualization found in the energy plans at face value.

While McQuillan’s (2012) disposition of the concept of crisis is useful for thinking of the ontologizing capacity of the concept, his treatment of the temporality of the concept is less developed than the one found in Reinhart Koselleck’s work. Koselleck (2005) traces the origins of the concept of crisis back to ancient Greece and identifies how the concept becomes associated with an ambiguous multitude of temporalities, in which past experience, present expectations, and future realities are configured. In his disposition, the concept of crisis can be associated with at least five temporalities: Firstly, in Archaic Greek medicine, crises implied “the point in time in which a decision is due but has not yet been rendered” and is associated with a future return to normality (Koselleck, 2005, pg. 358). Secondly, in its legal use in Greece, crisis implied making a verdict in the face of ‘a critical juncture’, after which ‘if not everything then much will be different’ (Koselleck, 2005, pg. 359). Thirdly, as the legal connotation became linked to theology, crisis implied a singular, transformative eschatology of damnation or salvation. Fourthly, in radical political developments like the French revolution, the concept is associated with an epochal period of transition, which reconfigures entirely the past, present, and future.

And lastly, in economic theory of the 19th century, crises become an inherent part of the economic system and expresses a series of recurring events (Koselleck, 2005, pg. 370).

These different temporalities associated with the concept of crisis are interesting because they all express different versions of emergence, effectuation, and dissolution with regards to the conceptualization of crisis. In their immediate treatment, the most important temporal difference between the oil crises and climate change was their effectuation. Whereas the oil crises are described in the energy plan as past events, which brought forth immediate negative consequences in the form of rising oil scarcity and prices, climate change brought forth a future prospect of ‘disastrous consequences’ and ‘violent change’. But when the interpretation of their effectuation is released from this immediate interpretation, their temporalities become much more blurred. In the event of inaction, the effects of the oil crises *also* implied a future crisis, in which the goal of economic growth could not be sustained under the given development in fuel prices and availability. The emphasis on the overall socio-economic development, the currency balance, and the build-up of a long-term strategy express as much. Similarly, the actualized interpretation of the future detrimental effects of climate change *also* produced immediate negative consequences for economic, social, and environmental goals, as the mitigation of the greenhouse effect and global warming required large-scale investments in the short term.

By applying Koselleck’s temporalities of the concept of crisis, the oil crises of the 1970s might be interpreted as both an epochal event, a critical juncture or as a recurring crisis. Epochal, because it implied a radically new reality for Danish energy politics, and as such, for the concepts of security of supply, environment, and socio-economics. A critical juncture, because previous instability in the oil price, as during the Suez-crisis of 1956 and the Lebanon-crisis of 1958, might be interpreted as symptomatic precursors to the ‘definitive’ oil crises of the 1970s. And lastly, the oil crises can be interpreted as a recurring crisis, exactly because the events of 1956 and 1958 might be interpreted as part of the same history, and because the price and scarcity of oil have continuously risen since.

Similarly, climate change might be interpreted as an epochal event, a critical juncture, as a recurring crisis or as a crisis of eschatology. Epochal, because the concept of climate change ushered in a radical 'new era', in which Danish energy politics and the concepts of security of supply, environment, and socio-economics are faced with the need for a completely reconfigured semantics. A critical juncture, because although the greenhouse effect and its detrimental effect on the bio- and stratosphere had been well documented for decades (McElroy & Fogal, 2007), the concept of sustainable development now rendered political goals like investments in renewable energy technology a matter of due diligence. A recurring crisis, because, as McQuillan indicated, the predicament of anthropogenic climate change is but one radical change in the physical environment of the planet in a long line of recurring events of ice ages, meteoric impacts and so on. And lastly, climate change can be interpreted as an eschatological crisis for westernized science and technology-based culture, where the poisonous effects of industrial society must be rendered into medicine in order for secular salvation.

This exposition of the concept of crisis illustrates the importance of the ontologizing effects of conceptualizations, as the various ontologies and their implied temporalities make up radically different configurations for the political, economic, environmental and social spheres. These configurations have enormously important impacts for how the concepts of security of supply, environment, and socio-economics are produced and how they are productive, in their interplay with the reality of the oil crises and climate change. Solving the oil crises with divestment into coal and natural gas was a viable solution only until climate change came to pose a new challenge for the inputs and technical design of the energy supply system. And conversely, building a positive feedback between environmental protection and Danish exports of renewable energy technologies was meaningful only because the multidirectional energy supply scheme had not excluded the development of renewable energy technologies. Both the oil crises and climate change can be just as meaningfully posed as geopolitical or economic crises, as they are crises for the energy supply system. Any such configurations and interpretations depend greatly on how the oil crises and climate change are ontologized and temporalized.

3.5 Energistrategi 2025: 2005: Denmark's fifth energy plan

The present section continues with the first leg of the analysis and takes over from when *Energi 21* was published in 1996. Between 1996 and the publishing of Denmark's fifth energy plan in 2005, a number of significant developments took place that greatly affected Denmark's energy policy. Firstly, the Cabinet of Anders Fogh Rasmussen I abolished the Ministry of Environment & Energy, after which the resort area was moved a number of times. In 2001, it was moved to the Ministry of Trade and Industry, ministered by Bendt Bendtsen, in 2005 to the Ministry of Transport and Energy under Flemming Hansen, who was succeeded by Jakob Axel Nielsen in 2007, and lastly, also in 2007, to the Ministry of Climate and Energy, ministered by Connie Hedegaard.

The opening of the European Union energy market had progressed, and a number of directives had been ratified and adopted into Danish national law. These directives were aimed at the establishment of a common market framework for oil and natural gas, giving consumers the freedom to choose between electricity and gas suppliers, the separation of commercial and system operational activities in the energy value chain, and the establishment of an EU CO₂-quota trading system⁵. In 1996, the Public Service Obligations (PSO) system was introduced, which placed a levy onto consumer's electricity bills and obliged all distribution companies to purchase a share of their electricity from renewable energy sources at a fixed price. The funds generated from the PSO-levy targeted research and development efforts in renewable energy (Trong & Limann, 2009: 42-43).

In 1998, Denmark became a signatory of the United Nations Kyoto Protocol along with the remaining European Union member states and set a target of reducing greenhouse gas emissions by 8 percent by 2012 with a baseline in 1990 (United Nations Framework Convention on Climate Change, 1998). In 1999, a political agreement initiated a reform of the electricity sector according to the EU energy directives (Energistyrelsen, 1999). In 2000, Denmark became a member of the Nordic energy exchange, Nord Pool Spot, which was the world's first multinational electricity exchange.

⁵ The various directives and the dates for their adoption into national law can be found at eur-lex.europa.eu.

In 2005, Denmark's fifth energy plan *Energistrategi 2025: Perspektiver frem mod 2025 og oplæg til handlingsplan for den fremtidige el-infrastruktur* was published by the Ministry of Transport and Energy. The plan was described as part of the government's overall strategy of making Denmark a "leading growth-, knowledge- and entrepreneurial society and making Denmark the world's most competitive society by 2015" {Transport & Energiministeriet, 2005, pg. 6}. It sought to 'create balance' between security of supply, environmental concerns, and economic growth, and determined its goals within five areas:

- Economic robustness
- Environment
- Well-functioning markets
- Development of new technologies
- Electricity infrastructure

The goals were complemented by the following energy policy principles:

- Making the energy policy of the future cost-effective, market based and internationally oriented, balancing security of supply, economic growth, and environment.
- Basing energy policy on market-oriented instruments, development, and use of new technology with significant Danish business potential and an active international effort towards Danish energy policy interests.
- Making energy prices competitive. Designing public supply obligations in the energy supply towards lowest possible costs {Transport & Energiministeriet, 2005, pg. 33-34}.

The relevance of the five areas and the energy policy principles for the conceptualization of security of supply, socio-economics, and environment is elaborated below.

3.5.1 Security of supply

As shown, the overall political goals in *Energistrategi 2025* were attached with energy policy principles that sought to make the future energy policy ‘cost-effective’, ‘market based’, ‘market orientated’ and ‘competitive’. These principles permeated the conceptualization of the three concepts – socio-economics was again the most important factor. The first overall goal headlined “Economic robustness”, stated that the high level of security of supply was to be maintained so that it could contribute to general ‘economic robustness’ {Transport & Energiministeriet, 2005, pg. 33}. In the two preceding energy plans, flexibility, robustness, and efficiency in the energy supply system was a necessity because of the prospect of climate change and the resulting need for renewable energy technologies with fluctuating generation output. In *Energistrategi 2025*, the flexibility, robustness, and efficiency of the energy supply system affecting the security of supply was an economic matter.

Whereas the *Energi 21* had an ambition of leveraging the self-supply into an energy supply system based extensively on renewable energy, *Energistrategi 2025* again attributes importance to the supply of oil from ‘politically unstable countries’ {Transport & Energiministeriet, 2005, pg. 3}. Thus, geopolitical risks were in focus again, as politically unstable countries were expected to cover an increasing share of the Danish oil consumption in the future as the own production would decline. The emphasis on geopolitics and oil prices signified a return to the language used in the first and second energy plan, but also a departure from the ambition of reducing the dependency on fossil fuels for environmental reasons, as in the more recent energy plans. As in the 1970s, the associated risks were interpreted as posing risks for the security of supply, which again posed risks for Denmark’s economy. In that sense, the concept of security of supply reassumes the connotations it had in the energy plans of 1976 and 1981.

The tight knitting of security of supply and economics was also expressed in the perception of how Denmark’s participation in the Nord Pool energy exchange was to be designed. Nord Pool brought forth entirely new market conditions, as Danish electricity producers would now compete against producers from Norway, Sweden, Finland, and Germany. The separation of commercial activities and system operational activities in the

energy supply system, as mandated by a European Union directive, sought to reduce bottleneck profits arising from imbalances in the cost structure of the international energy value chains. The plan describes how this separation would lead to increased competition among electricity producers, which in turn would benefit consumers with lower electricity prices. The new market conditions implied that the security of supply and the construction of new energy generation capacity would be decided by the ‘market mechanism’, i.e. by the demand and supply from market actors (Transport & Energiministeriet, 2005, pg. 19).

The new market conditions thus signified a substantial break for the concept of security of supply. Whereas all the preceding energy plans had determined the future planning and mix of new generation capacity by means of political regulation, *Energistrategi 2025* established that in the future, it would be determined by price signals from the market. The break is significant because the instrument of central regulation and planning had been perceived as an important political instrument in the realization of several different goals, including the displacement of oil and the mitigation of climate change. The development in the energy sector, *Energistrategi 2025* stated, should take departure from the needs of consumers and businesses for cheap energy (Transport & Energiministeriet, 2005, pg.3).

3.5.2 Climate obligations

The turn towards economically rationalized energy policy principles was accompanied by a departure from the rhetoric affiliated with the environmental conceptualization in *Energi 21*. With regards to environmental concerns, *Energistrategi 2025* stated that “considerations related to the environment and security of supply must be addressed at a lower cost than before and seen in close conjunction with developments in the international energy markets.” {Transport & Energiministeriet, 2005, pg. 3}. The focus on cost-effectiveness and international developments in environmental matters were described in close relation to the EU market liberalization and the introduction of the CO₂-quota system.

With the CO₂-quota system, Denmark had secured the “decisive tool” to “live up to its international climate obligations” established by the Kyoto protocol “in a cost-effective way” {Transport & Energiministeriet, 2005, pg. 27}. By setting a price on CO₂-

emissions, the cost structure of investing in renewable energy technology and energy efficiency would be relatively more attractive. Thus, although *Energistrategi 2025* acknowledges the threat of greenhouse gas emissions and the influence of the use of fossil fuels in the energy system, it makes no indication of furthering the preceding energy plans' ambition of making Denmark's energy policy a driving force in establishing high levels of environmental protection in Denmark, EU and globally. Instead, *Energistrategi 2025* espoused a more passive, domestically oriented compliance approach, where the market would determine the rate of transition. Denmark, it was stated, was in itself unable to alter the global development towards increased greenhouse gas emissions, but able to ensure that it was "capable of meeting its own end of the global challenges" {Transport & Energiministeriet, 2005, pg. 3}.

The conceptualization of environment in *Energistrategi 2025* thus focused on the domestic aspect and how to "live up to international obligations" as it broke with the ambition of using Denmark's energy policy offensively towards the establishment of high levels of environmental protection internationally. Formulations like 'pioneer country' and 'leading nation' that were used to describe environmental policy goals in the preceding plan were abandoned in favor of seeking 'lower costs'. The ambition of using the domestic oil and gas production as an economic foundation for furthering the conversion to environmentally friendly technologies was replaced, in favor of allowing market-based principles determine the pace in which new generation capacity would be constructed.

3.5.3 Economic robustness

In *Energistrategi 2025*, the concept of 'economic robustness' is applied throughout as the end-goal of the abovementioned energy policy principles and the link to the government's overall strategy of making Denmark 'the world's most competitive society'. Economic robustness in the energy area implied a flexible and cost-effective secure supply, energy efficiency, and increased use of market-based competition. This encompassed a redesign of the expansion of new energy generating capacity and the financial support mechanisms for renewable energy technologies. Instead of politically enforced expansion, the market would provide the basis. This implied a significant shift for, particularly renewable

energy. Allowing the market to determine the expansion, it was believed, would be more cost-effective than a politically determined expansion. Until the EU energy market opening, renewable energy capacity expansion, and energy generation capacity expansion, in general, had been subject to central planning.

During the years covered by the preceding energy plans, central planning had been an important tool in the attempt to remodel the energy supply system according to the prospect of climate change. Purchase obligations and economic subsidies in the form of production grants and added surcharges had sought to promote the expansion of renewable energy production capacity and the use of renewable electricity in the grid. The shift to market-based principles and the ambition of addressing environmental concerns at a lower cost than before implied a restructuring of the financial support mechanisms for the expansion and production of renewable energy. Tariff funded subsidies were altered so that they supported the produced effect of an energy plant, rather than the total generation capacity. The energy plan describes this as a part of the government's focus on reducing energy costs for environmental concerns because the expansion and production of renewable energy would depend on market-based demand rather than publicly supported financial incentives (Transport & Energiministeriet, 2005, pg. 5-7).

Energistrategi 2025 thus reinstated a conceptualization of socio-economics in the energy policy area reminiscent of the found in the energy plans of 1976 and 1981, except for an emphasis on market forces instead of central planning. The goals were similar, but the means were different. The socio-economic concept was again conceptualized as something that was threatened by increasing fossil fuel prices and the potential of geopolitical vulnerability. The expansion of new energy generating capacity and the addressing of environmental concerns was to be regulated by market principles, in order to maximize cost-efficiency. All of this in order for Denmark to be 'economically robust', to lower prices for consumers and businesses, and to increase Denmark's ability to compete in international markets. The concept of socio-economics in *Energistrategi 2025* thus went back to a negative, constricting concept/counter-concept relation between environmental and socio-economic concerns, as the willingness towards 'investing' in

high levels of environmental protection found in *Energi 21* is replaced in favor of lowering the costs related to environmental concerns. Thus, *Energistrategi 2025* represented a significant departure from the conceptualization of socio-economics in *Energi 21*, where the relationship between environmental and economic concerns was seen as producing a positive feedback loop.

3.5.4 Concepts, relationships, and political goals

As shown in the above, *Energistrategi 2025* again placed socio-economic concerns as the primary concern for Danish energy policy. The plan presented an outlook, where the energy policy principles based on market orientation, cost-effectiveness and competition permeated the way the three concepts were conceptualized. First and foremost, this represented a directional change from the preceding energy plan's ambition of using Danish energy policy offensively in order to push for high levels of environmental protection in Denmark, the EU and globally.

In *ENERGI 2000* and *Energi 21*, flexibility and robustness were a necessity for designing an environmentally friendly energy supply system based on renewable energy technologies. In *Energistrategi 2025*, robustness and flexibility were equated to economic robustness in an outlook where long-term price increases on oil would negatively affect the economy of the energy supply system. As it was in the 1970s, the conceptualization of security of supply was determined by socio-economic conditions. Because market prices would determine which type of energy generating capacity would be installed, the plan implicates that oil would continue to be a significant fuel input as long as renewable energy was unable to compete on price per kWh produced. For that reason, the concept of security of supply again implies geopolitical risk from the import of oil from politically unstable countries.

It was an explicit goal of *Energistrategi 2025* to ensure that environmental concerns were addressed at a lower cost than before. This was a significant departure from the preceding plans, which saw the costs related to environmental concerns as an investment. The overall goal of making Denmark 'the world's most competitive society' superseded the ambition of making Denmark a leading nation in furthering climate change mitigation. Thus, *Energistrategi 2025* returned to a negative, constricting concept/counter-concept

relation between environment and economics. Danish energy policy should ensure compliance – rather than leadership – with regards to international affiliations. Just as the concept of sustainable development had disappeared, so had the ambition of furthering a positive feedback between environmentally friendly energy policies and an international market for renewable energy technology. The commercial success of renewable energy technologies would be determined by market forces, not by central planning and political support.

3.6 Energistrategi 2050: Denmark’s seventh energy plan

Energistrategi 2050, Denmark’s seventh energy plan separates *Energistrategi 2025* by six years. In the interim period, the sixth energy plan *En visionær dansk energipolitik 2025* was published by the Cabinet of Anders Fogh Rasmussen II in 2007. The plan stated in its first sentence that it was “the vision of the government” that in the long run, Denmark would “free itself from fossil fuels” and instead use renewable energy {Transport & Energiministeriet, 2007, pg. 1}. Because the goals, principles, and conceptualizations found in the energy plan published in 2007 are largely continued into *Energistrategi 2050* published by the Cabinet of Lars Løkke Rasmussen I in 2011, *Energistrategi 2050* is included in the analysis, while *En visionær dansk energipolitik 2025* is not.

In 2008, the *Danish Commission on Climate Change Policy* [Danish: Klimakommissionen] was established and tasked with producing independent analyses for policymaking (Den Store Danske, n.d.). An energy policy agreement covering the years of 2008-2011 sought to accommodate the implementation of the latest string of EU directives, dubbed the “2020 Climate & Energy package” (ec.europa.eu) and set targets for energy conservation, energy efficiency improvements, and the share of renewable energy in gross energy consumption. In addition, it adjusted energy tariffs and the financial support for renewable energy technology (Energistyrelsen, 2008).

In 2011, the Cabinet of Lars Løkke Rasmussen I published Denmark’s seventh energy plan *Energistrategi 2050 – fra kul, olie og gas til grøn energi*. The plan describes how a

‘new age for energy policy’ required making Denmark independent of oil, coal and natural gas. The goals of *Energistrategi 2050* can be summarized as follows:

- Making Denmark a green, sustainable society among the top three countries in the world with regards to raising the share of renewable energy, and among the top three most energy efficient countries in the OECD by 2020. This implied decreasing gross energy consumption by four percent compared to 2006, raising the share of renewable energy in final energy consumption to 30 percent and the share in the transport sector to 10 percent by 2020.
- Gradually reducing emissions in non-quota-regulated sectors by 20 percent by 2020 compared to 2005 as part of an EU target of reducing emissions by 20 percent in 2020 compared to 1990.
- Working towards the EU as a whole reduces its total greenhouse gas emissions by 30 percent by 2020 compared to 1990 levels. {Regeringen, 2011a, pg. 8}.

The goals were addressed via the following energy policy principles:

- A cost-effective transition
- Durability in public finance
- Maintaining competitiveness
- Utilization of international frameworks {Regeringen, 2011a, pg. 9}.

The relevance of the goals and the energy policy principles for the conceptualization of security of supply, socio-economics, and environment is elaborated below.

3.6.1 Security of supply

Energistrategi 2050 projected an outlook in which the global security of supply was under pressure. While the demand for fossil fuels was expected to grow, their availability was in decline, particularly with regards to oil. In addition, fossil fuel reserves were increasingly concentrated in a few number of countries, and especially the OPEC countries were expected to control an increasingly large proportion of the supply of oil.

This increased concentration, it was stated, gave oil producing countries disproportionate political bargaining power and increased vulnerability to accidents, war, and terror (Regeringen, 2011a, pg. 12). This increase in geopolitical vulnerability was highlighted as a factor in itself for the ambition of an energy supply based entirely on renewable energy, although this also posed a contrasting challenge for the security of supply. The concept of security of supply in *Energistrategi 2050*, then, is similar to the one found in *Energistrategi 2025*. An important difference, however, was that *Energistrategi 2050* perceived the mitigation of environmental concerns through renewable energy expansion as an opportunity to simultaneously reduce the geopolitical vulnerability from fossil fuel imports.

Energistrategi 2050 pursues its goals through a combination of market mechanisms and political regulation. Political regulation was seen as necessary in areas where long-term goals for the design of the energy supply system infrastructure was halted by short-term price dynamics, which included the integration of renewable electricity, the infrastructure for biogas in electricity and heat production, and the construction of an infrastructure for electric vehicles (Regeringen, 2011a, pg. 12). Although *Energistrategi 2050* emphasizes a cost-effective transition, maintained competitiveness and durability in public finance in its energy policy principles, the combination of political regulation and market mechanisms represents a shift from the singular emphasis on market mechanisms found in *Energistrategi 2025*.

In many ways, the concept of security of supply in *Energistrategi 2050* can be interpreted as a hybrid between the one found in the energy plans of 1996 and 2005. It combines principles of cost-effectiveness with environmental protection, market mechanisms with political regulation and short-term costs with long-term returns in fuel independence and environmental protection. The increased emphasis on geopolitical vulnerability from the foreign supply of fossil fuels is dealt with in conjunction with environmental concerns, through the expansion of renewable energy in the supply system. Even though renewable energy expansion posed a challenge for the security of supply, it was pursued because it was perceived to be a solution for both climate change mitigation and fuel supply dependency.

3.6.2 Climate challenge

As shown above, environmental concerns were again central to the energy policy goals in *Energistrategi 2050*. Whereas *Energistrategi 2025* emphasized compliance with domestic obligations and cost-effective compliance, *Energistrategi 2050* signifies the return to a conceptualization of environment more similar to the one found in *Energi 21*. Again, Denmark's perceived role is to be an active driver for domestic, European and global energy policies with ambitious environmental protection, rather than a passive recipient concerned with domestic compliance. Solving the 'climate challenge' simultaneously implied a transition to a "global green economy", which offered large economic growth potential for Danish exports of green technology solutions {Regeringen, 2011a, pg. 41}. Thus, just like *Energi 21*, *Energistrategi 2050* described a positive feedback between energy policies based on ambitious environmental protection and the market potential for Danish green technology exports.

Energistrategi 2050 states how the Danish economy had grown 78 percent since 1980, while the gross energy consumption had been largely constant (Regeringen, 2011a, pg. 5). This "solid experience" in ensuring economic growth without increasing the consumption of energy would become the vehicle for the Danish advocacy work. Thus, *Energistrategi 2050* seeks to "continue to work for ambitious global reduction targets" and to "work against green protectionism", just as *Energi 21* sought to ensure that bad climate would not become a factor for competition {Regeringen, 2011a, pg. 5}. *Energistrategi 2050* saw it necessary to "push in international forums for the green transition to take place globally" so that the ability to compete was not "skewed unfavorably for the most ambitious countries" {Regeringen, 2011a, pg. 41}. Environmental protection, then, was simultaneously described as a necessary means for ensuring Denmark's ability to compete globally.

The outlook of a global green economy emanating from climate challenge mitigation affirmed that Danish energy policy should once again push forth a positive feedback between environmental protection and Danish business and socio-economic interests in renewable energy technology. However, even if it had a similar perception of this positive feedback, its conceptualization in *Energistrategi 2050* contains a significant difference to

Energi 21. When *Energi 21* sought to avoid bad environment becoming a factor for competition, it was to avoid a race to the bottom towards low environmental protection standards. In *Energistrategi 2050*, working towards ambitious environmental targets can be interpreted as a converse formulation, where environmental protection becomes a means for ensuring Denmark's ability to compete globally. Environmental goals, thereby, become means to other ends, those of socio-economic concerns.

3.6.3 Green growth

Energistrategi 2050 signified the return to a relationship between economic and environmental concerns characterized by positive feedback. Like the concept of security of supply, the concept of socio-economics found in *Energistrategi 2050* can be interpreted as a hybrid between the conceptualizations found in the energy plans of 1996 and 2005. It equated climate change mitigation with business opportunities and combined market mechanisms and cost-efficiency with political regulation, tariffs, and central planning. *Energistrategi 2050*, was described as the first of its kind, in Denmark and the world, because the contained initiatives up until 2020 were fully financed through a redesign of existing tariffs, a suggested tariff on security of supply and redeployment of existing appropriations (Regeringen, 2011a, pg. 5).

As previously mentioned, *Energistrategi 2050* conceptualized the relation between economic and environmental concerns in a fashion similar to *Energi 21* – where short-term investments posed large long-term returns. In *Energistrategi 2050*, however, a new conceptualization of this relation emerged, which essentially encompassed both environmental and economic concerns: green growth. On several occasions, green growth was mentioned as the intended outcome of initiatives of the plan. *Energistrategi 2050* describes the intention of creating a 'Global Green Growth Forum' that would facilitate dialogue between international politicians, the business sphere, experts, and investors, on the role of the business sphere in the green transition and the financing and political regulation of green growth (Regeringen, 2011a, pg. 41).

In the section describing the creation of the forum, the term 'climate challenges' is used several times in the first three paragraphs. In the final paragraph, however, 'climate challenges' is replaced with the term 'growth challenges' {Regeringen, 2011a, pg. 41}.

This synonymy implied that the challenge of climate change was perceived in *Energistrategi 2050* just as much as a challenge to economic growth. For many industries, divesting from fossil fuels would require completely new business and operating models. Thus, the threat of climate change posed just as much a threat to economic growth as long as alternatives based on renewable energy were economically unfavorable. In its experience with building marketable capabilities within renewable energy and creating economic growth without growing its energy consumption, Denmark is described as a case example for how to successfully drive green growth and thus advance the climate challenge and growth challenge simultaneously.

In *Energistrategi 2050*, the conceptualization of socio-economics is once again perceived to be in a relationship of positive feedback with ambitious Danish, European and global environmental protection policies, fathomed by the concept of green growth and green economy. In the long-term, socioeconomic ends were perceived as relying on the equation between global climate change mitigation and economic growth opportunities. As a mix between previous energy plans, *Energistrategi 2050* combines market mechanisms and cost-efficiency with political regulation, tariffs, and central planning. Although the notion of a positive relationship between environmental and economic concerns is found in previous energy plans, the emergence of the concept of green growth signified both a conceptual shift with regards to how the concepts of environment and socio-economics were related, and with regards to the meaning dimension in which they exist. Green growth is portrayed as a mutually beneficial conceptualization of the relationship between economic growth and environmental concerns, in which accelerated investments in green technologies would accelerate the ability to reduce greenhouse gas emissions in a cost-efficient manner, which would, in turn, accelerate (green) economic growth.

3.6.4 Concepts, relationships, and political goals

In *Energistrategi 2050*, the concepts of security of supply, environment, and socio-economics are comparably more positively related than in any previous energy plan. Responding to climate change through the expansion of renewable energy was simultaneously a response to the geopolitical threat implied by rising fossil fuel prices

and concentration on a few number of countries. This, in turn, necessitated investments and research and development in building an energy supply system capable of handling the fluctuating output of energy from renewable energy resources. This, again, posed a positive long-term investment, as it would strengthen the advocacy effort for ambitious climate goals, which would benefit market opportunities for Danish renewable technology.

The most significant conceptual shift is found in the emergence of the concept of green growth. Although the emergence of the concept of green growth signified both a conceptual shift with regards to how the concepts of environment and socio-economics were related, and with regards to the meaning dimension in which they existed, green growth can be seen as posing a type of conceptual shift not highlighted in Andersen's seven varieties (Andersen, 2011). Green growth cannot be fully understood as a new form of tension between environmental and economic concerns, nor can it be understood exclusively as stemming from a change in the meaning dimension in which the two concerns resided.

Rather, the two concerns had gone from being negatively to positively related, to now occupying a single concept that occupied both fields of concerns. Along these lines, green growth can be understood as a combination or merging of the historically opposed concept/counter concept relation between environment and socio-economics. Taken at face value, green growth represented neither a subjugation or usurpation of socio-economic connotations by environmental connotations or vice versa. Green growth cannot be interpreted as a polysemic construct, because although it refers to two related senses – environment and socio-economics – its reference to one of these senses cannot exclude the other. Nor can it be interpreted as a homonymous construct because the semantic properties it inhabits are not related because of e.g. morphologic coincidence. Rather, green growth in *Energistrategi 2050* explicates a conceptualization where environmental goals are a prerequisite for economic growth, and where economic growth is a prerequisite for environmental goals. Climate change mitigation was necessary for investments just as investments were necessary for climate change mitigation. Green growth, then, was one coherent solution for tackling the now synonymous 'climate

challenge’ and ‘growth challenge’. Accordingly, green growth, in the way it is conceptualized in *Energistrategi 2050*, is more appropriately interpreted as a hyperonomous neologism which appropriates the meaning that was previously implied by the conceptualizations of environment and socio-economics.

3.7 Conceptual opening #2 – Green Growth

As in section 3.4, the present section pursues the second leg of the two-fold analytical approach of opening up empirically generated meta-concepts in order to expose, challenge and reflect on how they are productive to the internal logic of the concepts analyzed via the first leg of the analysis. The second meta-concept is the concept of green growth. The concepts of ‘green growth’ and ‘green economy’ appear in both energy plans of 2011 numerous times, although they are never formally defined or explained (Regeringen 2011a; 2011b). The present section identifies the emergence of the concept of green growth and its treatment in philosophical and social science writings in order to problematize and reflect on the how the conceptualization of green growth in the energy plans configures the concepts of security of supply, socio-economics, and environment. As the three ministers interviewed were all involved with policy affected by the conceptualization of green growth in one way or another, the qualitative interviews are included as an additional source of inspiration.

3.7.1 Green growth in philosophical and social science literature

In the wake of repeated failures in international climate negotiations and the financial crisis of 2008, Zysman & Huberty (2012) describes the emergence and popularity of the concept of green growth in the late 2000s as unsurprising, because it offered an alternative strategy by which the pursuance of climate change mitigation and economic growth could be unified. Green growth has been brought forth as a guiding policy principle by the European Union Commission (2010), the Organization for Economic Cooperation and Development (OECD, 2011; 2013), the World Bank (2011a; 2011b), and the United Nations (UNEP 2010; 2011). Jänicke, (2012) describes how, as the concept disseminated, it took on a number of varying definitions, all of them commonly centered, however, on

the idea that economic growth and environmental concerns can co-exist, if not even mutually benefit and accelerate each other.

In stark opposition, other scholars have argued that the pursuit of accelerated economic growth is the very cause of environmental concerns in the first place (Heinberg, 2011; Jackson, 2009; Klein, 2015). Rather than pursuing minute alterations in the concept of economic growth to allow for its continuance and acceleration, they call for radical alternatives for solving climate change e.g. ‘beyond growth’ (Eisenstein, 2011; Johnsen et al., 2017) or through pursuing ‘de-growth’ (Demaria et al., 2013; Kallis et al., 2012).

Green growth and de-growth thus offer two radically opposed understandings of the relationship between environmental concerns and economic growth. In their essence, though, they are both answers to the question of how the two should be related when dealing with climate change. Painter-Morland & ten Bos (2016) pose this as a question of whether ‘environmental concern should pay off’. In expounding the philosophy of Martin Heidegger, they argue that although environmental concerns might possibly benefit from being posed as an economic argument, equating environmental efforts to “good business” implies an instrumentalist notion of environmental concerns. Instead of an end in itself, environmental protection becomes a mean to a different end. In doing so, concerns and efforts related to the environment lose their intrinsic value and can be legitimized only in-so-far as they can also benefit economic growth.

3.7.2 Green growth in Danish energy policy

Prior to the energy plans of 2011, the Cabinet of Lars Løkke Rasmussen I launched *Grøn Vækst Pakken* in 2009, describing it as a master plan [Danish: *helhedsplan*] in conjunction with the energy policy agreement made for the energy policy area between 2008 and 2011, as well as policy initiatives within a number of other areas. The vision in the master plan was the advancement of “a new green growth economy” through the creation of services and solutions that “contributed to solving climate, environmental and nature challenges, thereby creating growth and jobs” {Miljø- og Fødevarerministeriet, 2009, pg. 3}. The idea of green growth, then, can be seen as an extension of the idea of a positive feedback between environmental protection and growth in renewable energy technologies, found in *ENERGI 2000* and *Energi 21*, where solving the challenge of

climate change simultaneously occasioned the creation of an export market for green products and services.

This positive feedback was translated in *Energistrategi 2050* into a transition towards a 'global green economy' which offered large economic growth potential for Danish exports of green technology solutions. In *Energistrategi 2050*, green growth would accelerate the mitigation of greenhouse gas emissions while accelerating (green) economic growth, tackling both the "climate challenge" and "growth challenge". Denmark's 'solid experience' in ensuring economic growth without increasing the consumption of energy, made it able to lead by example in international advocacy work, which would in turn spur investments able to accelerate green technology development, which would benefit Denmark's strongholds within wind power, combined heat and power, energy efficiency etc., and the fight against climate change.

The three ministers with whom interviews were conducted all had some degree of involvement in how green growth was dealt with in Danish energy policy in their time as ministers between 2007 and 2015, even if they represented different parties and different cabinets. Connie Hedegaard was Minister for Climate and Energy between 2007 and 2009 in the Cabinet of Anders Fogh Rasmussen III when the Green Growth master plan and the energy policy agreement lasting from 2008-2011 was released. Martin Lidegaard was Minister for Climate, Energy, and Buildings between 2011 and 2014, when the Cabinet of Helle Thorning-Schmidt I released the energy plan *Vores Energi*, which described its purpose as "securing the Danish society for the future by creating a green economy in growth" {Regeringen, 2011b, pg. 3}. Following Martin Lidegaard, Rasmus Helveg Petersen became Minister for Climate, Energy, and Buildings in 2014 in the Cabinet of Helle Thorning-Schmidt II, after which much of *Vores Energi* had been translated into the energy policy agreement of 2012, lasting from 2012-2020. In the interviews with Connie Hedegaard, Martin Lidegaard and Rasmus Helveg Petersen, the concept of green growth came up multiple times, primarily as an expression of the relationship between business interests and environmental protection (e.g. between emissions reductions and job creation, environmentalist groups and lobby organizations).

In the interview with Martin Lidegaard, he described how he had been tasked with converting the preceding energy plan (*Energistrategi 2050*) into a plan from the cabinet he sat in (*VORES ENERGI*) when he first became minister (Appendix 1.B, Martin Lidegaard, 01:13). He described how he had initially been surprised about how hard and how important it was to acquire support from the business sphere. However, after the energy policy agreement of 2012 was made, he experienced a ‘paradigm shift’ because the business sphere became his ‘greatest ally’ in the agreements continuation, when the Cabinet of Lars Løkke Rasmussen II sought to repeal it in 2015 (Appendix 1.B, Martin Lidegaard, 04:53). His surprise became a revelation, as he realized that it is with the financial support from the business sphere towards improving the price of technologies for mitigation, that climate change mitigation ‘really moves’:

06:01 (Martin Lidegaard): For det danske erhvervsliv er det blevet et brand og i stedet for at se det som en omkostning at gå grønt så ser man det som en business mulighed og at man kan kombinere det her, og det er tror jeg, det der skal ske. Jeg har haft min tvivl om hvor vigtigt det var at få erhvervslivet med men altså det at du får de store penge ind, de store investeringer, milliardinvesteringer i at gøre teknologierne billigere, det er det der virkelig rykker det her felt og det at vi ene land i verden har reduceret f.eks. omkostningerne til havvind med 60% på 3 år, det er altså noget af det der ændrer den globale dagsorden og derfor så er det så afgørende at have de store private investorer med.

As the quote shows, Martin describes the combination of ‘going green’ with seeing it as a ‘business opportunity’ as ‘what needs to happen’. Creating a branding opportunity for Danish businesses in going green, and thereby recruiting the business sphere, enabled the attraction of ‘the large investments able to develop technologies towards making them cheaper’ and thus more relevant in changing the global agenda. Combining going green with business interests, i.e. green growth, then, can be interpreted as a means for the business sphere to legitimize itself towards shareholders, towards consumers, towards policymakers – in short, the environments in which they operate – in the face of global

environmental challenges. Simultaneously, green growth becomes a means through which policymakers could attract the engagement of the Danish business sphere in the environmental agenda, and along with it, its investment capital, thereby spurring a synergistic relationship between corporate profit-making and political efforts towards climate change mitigation.

Rasmus Helveg Petersen, when interviewed about the notion of green growth, described it as having a ‘built-in dilemma’ (Appendix 1.A, Rasmus Helveg Petersen, 21:58). He explained how the setting of long-term political agreements required the build-up of a ‘big alliance with many different concerns’, and that it was the ability to accommodate for those different concerns that allowed for broad, long-term agreements stretching across the political spectrum (Appendix 1.A, Rasmus Helveg Petersen, 07:25). Although green growth might have a ‘built-in dilemma’, it is exactly this ambivalence that made it a platform for broad political agreement. Petersen described how the idea of a positive relationship between environment and business interests helped create foresighted regulatory frameworks, which fostered the Danish development of e.g. wind power technologies ‘as a first mover’ (Appendix 1.A, Rasmus Helveg Petersen, 24:46). Having fostered a first-mover position, Denmark and Danish business were then able to export both regulatory experience and products to other countries:

29:08 (Rasmus Helveg Petersen): Hvis vi tager det idealistiske syn, altså det der med at gå ud og hjælpe de fattige lande både ved at have lavet teknologiudviklingen og ved at sige, ”Hey, vi har nogle reguleringserfaringer som i kan læne jer op ad” så laver man det der med at man sætter sig selv i stand til at påvirke sin egen fremtid og virkelighed. (...) Pludselig så kan et lille land så faktisk gå forrest. Men det utrolige for mig ved den strategi, som jeg køber, det er at hvis du går ud og laver regulering, som vi gør og bagefter laver reguleringseksport, det vil sige snakker med lande som ikke har noget som helst opbygget, sjovt nok så passer deres markeder i takt med at de vokser så perfekt på de danske produkter.

Being a first-mover, Petersen stated, implied making Denmark able to affect its own future and reality. By pursuing a positive feedback between the mitigation of climate change and the build-up of a technological capacity to do so, Denmark made itself able to actively steer the challenge of climate change. Green growth, in this perspective, can be interpreted as a response to a necessary and unavoidable future – first movers and late-comers alike would, sooner or later, have to respond to climate change. In taking charge of the challenges of the future, Denmark acquired regulatory and technological experience, which made authorities and businesses able to export that experience to other countries lacking experience themselves. Denmark's experience in building green growth, in this perspective, can be interpreted as a form of due diligence that became an international competitive advantage, because it made regulators and businesses able to shape and exploit foreign markets, thereby simultaneously helping those countries in their efforts towards mitigating climate change.

When interviewed, Connie Hedegaard stated that the idea of strengthening the business case in the feedback between environmental concerns and Danish business interests was visible throughout the majority of the history of energy policymaking in Denmark, although the concept of green growth provided a new way of 'talking about it' (Appendix 1.C, Connie Hedegaard, 25:01). According to her, security of supply had been the main concern in the 70s and 80s, the environment had been the main concern in the 90s, following which a wake-up call [Danish: et praj] had emerged, stating "Hello, we live in a capitalist economy", the continuance of which was required for making technologies that enabled decoupling from environmental impact {Appendix 1.C, Connie Hedegaard, 25:58}. When asked about the emergence of the concept of green growth in the late 2000s in European and Danish policy formulations, she described how socio-economic goals are often the supporting argument in the end, no matter how much Europe, Denmark, and others want a sustainable profile:

20:28 (Connie Hedegaard): ... når man i årene derefter virkelig gør meget ud af klima og energimålene på EU plan også, og kan man sige, business casen, den samfundsøkonomiske case og jobcasen, så er det jo fordi at uanset hvor meget Europa

og Danmark og alle mulige andre gerne vil have høj profil på at være bæredygtig så når det kommer til stykket, også selvom man siger at målene er sideordnede, så er det med ”hænger det samfundsøkonomisk sammen”, ”hvordan er jobmulighederne”, det ender alligevel ofte med, altså nogle gange så kan man mene, det burde måske ikke være sådan, men det er bare det der i sidste ende er det bærende argument, ikke.

In a capitalist economy, then, technologies need firstly to be economically competitive in order to gain traction. Even if the goals (of the EU 2020 and 2030 packages) were said to be lateral [Danish: sideordnede], socio-economic soundness and job creation is the supporting argument in the end. The quote illustrates a conflict in opinion, as Connie states how ‘sometimes one could be of the opinion that maybe it shouldn’t be like that’. In addition, it illustrates the ambivalence of the concept of green growth in a critical sense. In Connie’s account, the idea of green growth is not always a combination of environmental concerns and economic growth in fruitful synergy or even as two equally distributed concerns, because economic arguments are ‘often’ the supporting arguments in the end. Consequently, economic competitiveness is a precondition for climate change mitigation because technologies won’t win acceptance as long as the economic argument is the supporting argument. In the account of Martin Lidegaard and Rasmus Helveg Petersen, we see how Denmark and Danish technologies had been able to compete in such a system by becoming a first-mover, exploiting that position in cooperation with the business sphere, and thereby enabling the export of regulation and technologies.

When the concept of green growth has a ‘built-in’ dilemma to Rasmus Helveg Petersen and produces a conflict in Connie Hedegaard’s response, it can be interpreted as a by-product of the instrumentalist notion of dealing with climate change that Painter-Morland & ten Bos (2016) criticize. Even in a converse scenario where green growth implied that environmental concerns were the precondition for economic growth, as in the concept of sustainable development, the concept is problematic because it equates and combines concerns that are subject to enormously diverse and complex distributions of opinion and consequence. This equation and combination will, as argued by Connie Hedegaard, incidentally lead to scenarios or interpretations, in which one concern is

prioritized over another. In Painter-Morland & ten Bos' vocabulary, one concern becomes a means to an end of another concern, instead of both being treated as two intrinsic ends in themselves.

This issue is apparent in the differences in why *Energi 21* and *Energistrategi 2050* respectively sought to work towards 'high levels of environmental protection' and 'ambitious environmental targets'. Whereas *Energi 21* perceived high levels of environmental protection as necessary to avoid a competitive race to the bottom towards low environmental protection standards, working towards ambitious environmental targets in *Energistrategi 2050*, implied a converse formulation, where environmental protection was essentially a means for ensuring Denmark's ability to compete globally. Although the formulations appear synonymous, they are distinctly converse to each other, because they ultimately imply the subordination of either environmental or socio-economic concerns.

This subordination poses both a practical and a semantic challenge to the conceptualization of green growth found in *Energistrategi 2050*, where it was conceptualized in the form of a hypernym. If contextual details imply that one sense of the hypernym will supersede over another, whether that is the sense implied by environmental or socio-economic matters, then green growth cannot be understood as a hypernym but has to be treated as a polysemy that distinguishes between the two related – but distinguishable – senses of environmental or socio-economic matters. When green growth is treated as a hypernym instead of a polysemy in *Energistrategi 2050*, it makes it less discernible that a trade-off will eventually take place as contextual details increase the ambivalence of the concept.

When the concept of green growth has won impasse at the scale it has, however, it is because the ambivalence of the concept is simultaneously highly productive in approaching common ground for opposing concerns. This is reflected in the energy plans when they are able to combine environmental protection with cost-effectiveness, and market-orientation with political regulation. As the interviews with the ministers indicated, the notion of combining economic and environmental concerns enabled policymakers to make stable, unifying long-term agreements that spanned the political

spectrum, and allowed for the recruitment of the business sphere in actively supporting ‘going green’ through lobbying and financial support. At the same time, going green offered a means for the business sphere to legitimize itself towards the environments in which they operate, in the face of global environmental challenges.

Green growth has been criticized extensively as an attempt to solve the problems faced by contemporary capitalism within its own paradigm and thereby posing an insufficiently radical alternative to the wide-scale exploitation of nature necessary to uphold the governance regime of economic growth. (e.g. Kenis & Lievens, 2015). But dismissing green growth as merely a perpetuation of an arguably detrimental system of global governance misses the productive capacity of the concept and undermines the fact that it does construct a broad appeal towards center-seeking policymaking where environmental concerns, however subsuming or insufficiently, are included.

3.8 Energiaftale 2018

The present section takes over from when *Energistrategi 2050* was published in 2011 and contains the last part of the first leg of the analysis. In 2012, an energy policy agreement set the overall framework for Danish energy policy from 2012 to 2020. The agreement sought to establish stable, long-term support for the adoption of the EU 2020 Climate & Energy package (Energistyrelsen, 2012), which was elongated in 2014 with the “EU 2030 Climate & Energy Package” (EU Commission, 2013). In April 2016, Denmark, along with the remaining European Union Member States, became a signatory to the United Nations Paris Accord, which set the overall goal of limiting global warming to “well below 2 °C” and reaching zero net anthropogenic greenhouse gas emissions by 2050 (UNFCCC, 2015).

A number of additional political agreements were made between 2011 and 2018. The regulatory framework and financial support for household-based solar power and smaller renewable energy facilities were restructured (Energistyrelsen, 2012; 2013). The existing tax agreement with the operating parties in the DUC was sought balanced (Energistyrelsen, 2017). In 2014, the security of supply tariff proposed in *Energistrategi 2050* was rolled back (Energistyrelsen, 2014a). A climate change act was passed into law,

which formed an independent climate council and established a legal framework for parliamentary reporting and policymaking activities related to the climate area (Energistyrelsen, 2014b). In 2016, the PSO-tariff system was abolished in favor of a support scheme funded by the annual budget act negotiations (Energistyrelsen, 2016).

On June 29th, 2018, an energy policy agreement was signed into agreement by all political parties represented in the Danish parliament, in pursuance to the energy policy agreement active between 2012 to 2020. The agreement establishes initiatives effective between 2020 until 2025, 2030 and 2050, in accordance with the EU 2020 and 2030 Climate & Energy Packages, and the Paris Accord. The agreement describes the following goals:

- The establishment of a tender for an 800 MW offshore windmill park and two more tenders in 2021 and 2023, both at a minimum of 800 MW.
- Submitting renewable energy to market conditions
- Establishing a smart and flexible energy supply system
- Relaxation of electricity tariffs
- Denmark to lead exports of green energy solutions
- Working towards zero net greenhouse gas emissions no later than 2050, in accordance with the Paris Agreement
- The phase-out of coal in the production of energy by 2030

The relevance of the goals for the conceptualization of security of supply, socio-economics, and environment are elaborated below.

3.8.1 Security of supply

The energy policy agreement of 2018 extended the language used in more recent energy plans with regards to how security of supply is conceptualized. The goal of becoming a low emission society by 2050 through divestment from fossil fuels continued to form the overall guiding principle for how the energy supply system was to be designed technically, and for which fuel types would be employed. Reaching that goal implied a

market-driven expansion of generating capacity, a flexible energy supply system and increasing the economic and energy efficiency of renewable energy technologies. In contrast to earlier political deliberations, however, regulatory instruments and the methodology for inducing market-driven expansion was of primary attention. In order to maximize cost efficiency, earmarked funds towards subsidies for energy efficiency improvements in the business and household spheres were to be proposed under competition, so that improvements targeted areas that would provide the greatest cost-benefit ratio (Energistyrelsen, 2018, pg. 6).

Whereas public tenders for new generation capacity and financial support for energy efficiency improvements had generally been directed towards specific technologies ever since *Dansk Energipolitik 1976*, the political agreement of 2018 introduced the principle of technology neutral tenders. This meant that financial support for the construction of new energy generating capacity and subsidies for energy efficiency improvements would also be based on a cost-benefit analysis of the different renewable energy technologies (Energistyrelsen, 2018, pg. 2). The principles of submitting call for tenders under competition [Danish: konkurrenceudsættelse] and technology neutral tenders for new heating and electricity generation capacity conveyed a sophistication of the ambition of driving the green transition through market principles. Essentially, they espoused a mix of state intervention through various financial support mechanisms, and market mechanisms, by inducing competition among technologies based on cost-benefit.

In addition, the energy policy agreement of 2018 sought to advance the adoption of renewable energy through a remodeled tariff and levy system [Danish: tarifer og afgifter]. In order to replace the use of fossil fuels for heat production, the agreement sought to advance electrification throughout the energy supply value chain, which implied heating from heat pumps powered by electricity generated by renewable energy plants. The levies on energy, and in particular on electricity, were altered to promote electrification, electricity-based heating and in order to adjust consumer prices to a comparable level within the EU (Energistyrelsen, 2018, pg. 7). Production bindings, which obliged combined heat and power plants to use natural gas for a proportion of their fuel needs,

were abolished. The tariff system was sought changed, in order to allow for a flexible system that would adjust to peak hours for electricity demand.

The conceptualization of security of supply in the energy policy agreement of 2018, then, was reminiscent to the one found in the energy plans after 1996, in which the conversion to an energy supply system based on renewable energy put forth new technical and regulatory challenges. No longer, however, was the question of geopolitical vulnerability of much relevance because the supply of imported fossil fuels was attributed with a foreseeable end in 2050. As in the energy plans from 2007 and 2011, initiatives towards the advancement of security of supply were sought through a mix of political regulation and market mechanisms. Both take on a new meaning, however, as the levy and tariff systems were refined, while new methods for introducing competition into the energy sector were introduced.

3.8.2 Environment

The concept of environment in the energy policy agreement of 2018 figured as a primary political concern, although it is referenced to in little detail. This stemmed primarily from a decision from the Cabinet of Lars Løkke Rasmussen to treat climate policy in a separate policy agreement outside of the energy policy agreement, to be negotiated in the fall of 2018. The agreement does, however, describe the intention of ‘working towards’ the goals Denmark had already committed to via the EU 2020 and 2030 Climate & Energy packages, the Kyoto Protocol's second commitment period, and the Paris Agreement. A number of commitments had yet to be addressed in an energy policy agreement, including the goal of zero net greenhouse gas emissions by 2050 and the phase-out of coal for electricity production by 2030.

As a new development, the concept of environment implied a mix of the two approaches to Danish energy policymaking that had otherwise existed. Instead of a singular emphasis on pushing for high levels of environmental protection through setting an example, or a singular emphasis on compliance to obligations, the energy policy agreement contained a mixed approach, where some initiatives are based on compliance while others imply a more active role. As an example of the latter, the parties to the agreement agree on a Danish effort towards increasing a CO₂ emissions reduction target

set by the EU Commission from 30 to 40 percent compared to 2021 levels, as well as “working to set ambitious CO2 requirements for heavy vehicles” {Energistyrelsen, 2018, pg. 14}.

The positive feedback between environmental protection, climate change mitigation and the expansion of export markets for Danish renewable energy technology continued to appear in the political agreement of 2018. Research, development and demonstration efforts in new green solutions were highlighted as not only benefiting the green transition in Denmark but also as a foundation for exports, growth, and employment in the Danish energy sector (Energistyrelsen, 2018, pg. 12-13). Importantly, however, the changes made to the levy and tariff system implied that a portion of the funding for the construction of new renewable energy generating capacity and for the energy research, development and demonstration program (EUDP), would come from the annual budget act instead of the abolished PSO-levy. The restructured funding was part of the ambition of reducing the reliance on levies and tariffs in the advancement of renewable energy technologies and implied that the advancement of funding for the green transition would compete on the same basis with all other fiscal and budgetary concerns (Energistyrelsen, 2018, pg. 15).

As previously stated, although environmental concerns like climate change, global warming, and resource depletion were the primary reason for the overall goal of working towards zero net greenhouse gas emissions, the concept of environment was referenced to in little detail as a product of the separation of the energy policy and climate policy area. When environmental concerns were treated in the energy policy agreement of 2018, they were conceptualized as a matter that was to be pursued both through compliance and through active advocacy. The relationship between the concepts of socio-economics, and environment, which had been a central area of conceptual shift since *Dansk Energipolitik 1976*, continued to play an important role, although it was significantly altered in the changes made to the tariff and levy systems. The alterations would produce a situation in which a part of the funding for the green transition would be part of fiscal concerns and thus compete with all other budgetary elements.

3.8.3 Socio-economic gains

Just as the two other concepts found in the energy policy agreement of 2018 can be interpreted as a mix between previous conceptualizations, so can the concept of socio-economics. The concept implied budgetary control in some areas and increased public expenditure for others and implied a mix of market mechanisms and political regulation. While the overall policy goal continued to be the mitigation of greenhouse gas emissions and climate change, the plan introduced a number of policy instruments that were perceived to have greater cost-benefit outcomes for both socio-economic and environmental concerns. Although the concept of green growth was entirely absent, the changes to the tariff and levy systems and the continued ambition of furthering a positive feedback between environmental protection policies and Danish renewable technology exports implied that the concept continued to exert its influence, albeit inexplicitly. The agreement, however, makes extensive reference to how the alterations in policy instruments would bring socio-economic gains.

As previously shown, the remodeling of the tariff and levy systems was part of an intention to increase the electrification of the services offered in the Danish energy supply system. Increased electrification would replace fossil fuel and natural gas-fired heating with heat pumps fueled with electricity produced from renewable energy plants. This signified a reversal of previous policies since the conversion to electric heating was banned in a political agreement in 1994, which amended the heat supply act (International Energy Agency, n.d.) The remodeling also offered a reduction in the prices paid by consumers for the supply of electricity. The tariff and levy reductions were introduced, as the energy policy agreement describes how the commercial viability of particularly offshore wind energy without state financial support was ‘realistic within an overseeable number of years’ {Energistyrelsen, 2018, pg. 2}. Aside from the levy and tariff systems, the agreement sought to investigate the possibility of remodeling how subsidies were offered for tenders with new energy generating capacity. Specifically, it sought to make possible a selection between financial support based on a model based on surcharges [Danish: *pristillæg*], granting an amount per produced kWh, and a fixed-price model

[Danish: fastpris], which grants a fixed amount of financial support irrespective of production volumes.

The most significant change in the remodeling of levies, tariffs, and subsidies was the abolition of the PSO-levy, in favor of allocating funds from the annual budget acts. This was significant because part of the funding for research, development, demonstration, and construction of renewable energy would now compete with all other budgetary expenses included in the yearly budget acts. Expenses include income transfers for pensioners, unemployment benefits, and educational grants, operating expenses for public services like the police and defense forces, construction costs for roads and railways, interest expenses, block grants for services administered by regions and municipalities, including hospitals, nursing homes and primary schools, as well as other expenses, such as foreign aid and Denmark's contribution to the European Union. Thus, in doing so, funding for the green transition granted through annual budget acts would be susceptible to competition with a wide array of other, potentially pressing, budgetary concerns. In addition, because the budget acts are determined politically each year, the decision made funding for the green transition much more susceptible to volatility stemming from changing political representations, challenges, and objectives.

The conceptualization of socio-economics in the energy policy agreement of 2018 implied budgetary control in some areas and increased public expenditure for others, cost-control for some areas and long-term investments for others and implied a mix of market mechanisms and political regulation. The idea of green growth continued to exert influence as the positive feedback between environmental protection policies and Danish renewable technology exports subsisted, although green growth isn't mentioned explicitly. The ambition of promoting the commercial success of renewable energy, which had appeared in every single energy plan since 1976, was now perceived to be within reach. Geopolitical implications related to the fuel supply were absent, as the goal of zero net greenhouse emissions necessitated in itself the divestment from the use of fossil fuels in the energy supply system. The remodeling of the tariff, levy, and subsidy systems were intended to promote the electrification of Denmark, which would, in turn, benefit the use of electric heat pumps and lower electricity prices for consumers. The

remodeling, however, also involved that a portion of funding for the green transition granted through annual budget acts would be susceptible to annual political deliberation in competition with other budgetary concerns.

3.8.4 Concepts, relationships, and political goals

In the energy policy agreement of 2018, the prospect of climate change mitigation, expansion of renewable energy in the supply system, and divestment from fossil fuels continued to produce the most important concerns related to how the concepts of security of supply, environment, and socio-economics related to energy policy goals. However, although the concepts were not radically altered in their general semantic properties, the agreement ushered in an increased amount of deliberation as to how the various instruments employed towards reaching the goals affiliated with the concepts should be designed.

A consequential interpretation could be that the meaning dimensions the various concepts were embedded within had not exhibited substantial shifts, since the time of *Energistrategi 2050*. Whereas the energy plans of 1976, 1990, 1996 and 2005 were published because of the imposition of radical new realities that immensely affected how the three concepts could be meaningfully articulated – the oil crisis, climate change, the EU energy market opening – the energy policy agreement of 2018 was largely a continuation and elaboration of the same spheres of meaning which, granted, had intensified and developed, but had not produced any substantial ruptures or displacements for the meaningful configuration of the concepts.

Capturing environmental and socio-economic benefits from reducing greenhouse gas emissions and growing renewable energy technology exports continued to require research, development and demonstration, increased flexibility in the technical design of the energy supply system, and the advancement of new forms of (de)regulation. The remodeling of the tariff, levy and subsidy systems and the advancement of competition and technology neutrality in tenders was introduced towards those ends. Although the idea of green growth continued to exert influence inexplicitly, the remodeling towards funding for the green transition through yearly budget acts made it susceptible to annual political deliberation in competition with other budgetary concerns. In combination with

the perception that the commercial viability of renewable energy technologies without subsidies was foreseeable, the remodeling expressed the ambition of reducing public expenditures and advancing market-driven mechanisms for the green transition, which had appeared in Danish energy policy since *Energistrategi 2025*.

4. DISCUSSION & CONCLUSIVE REMARKS

The present thesis set out to investigate how the concepts of security of supply, socio-economics, and environment, as they relate to each other and to political goals, have developed since the publishing of *Dansk Energipolitik 1976* until today, in order to investigate the implications for the setting of political goals in Danish energy policy. Consequently, the three concepts as they appear in the selected energy plans and the energy policy agreement of 2018 have been analyzed according to the two-fold analytical strategy based on conceptual analysis and meta-conceptual interposing, in order to understand how conceptual shifts have been produced by and have been productive towards policy goals.

The concept of security of supply became a primary factor for energy policymaking during the energy crisis of the 1970s when it was conceptualized as a matter of reducing ‘energy supply vulnerability’. Political regulation was initiated in order to displace the import of oil with a multidirectional energy supply. While the displacement of oil with coal had reversed their respective share in the fuel mix by the 1990s, security of supply increasingly became a matter of improving the technical design of the energy supply system towards flexibility and robustness. And when Denmark had become an own producer, geopolitical concern became geopolitical opportunity, as climate change provided an investment opportunity. In the early 2000s, the demands towards ‘flexibility’ and ‘robustness’ in the technical design were reconceptualized so as to reinterpret these demands according to the overall vision of economic robustness. Flexibility and robustness no longer meant being able to accommodate the integration of fluctuating renewable energy but being able to accommodate for the fuel mix with the greatest cost-efficiency. And from 2011 until today, security of supply figures as a highly hybrid concept combining market mechanisms and political regulation.

The concept of environment, which was initially conceptualized as ‘environmental qualities’ and a matter only relevant ‘within reasonable costs’, inflates enormously in importance during the 1990s when concepts like the greenhouse effect, global warming, and climate change emerge. From then on, changing political perceptions determined

whether the role of Denmark and Danish energy policy was conceived as a 'driving force for high environmental protection standards' or as a 'complier'. This struggle for defining rights was simultaneously constrictive and productive towards the conceptualization of environmental goals, where alternations between ambitious leadership and cost-efficiency were ultimately sought resolved with the mutually benefiting concept of green growth until the energy policy agreement of 2018 excluded the climate policy area from energy policymaking.

The concept of socio-economics, initially conceptualized as 'socio-economic development', was the primary determining factor in the 1970s and all the way up until *ENERGI 2000*, where the economic impacts of the oil crises posed a significant threat to the economic well-functioning of Denmark's energy supply system, and the Danish economy as a whole. As climate change, global warming and greenhouse gas reduction made ingress into the conceptualization of environmental concerns, the order between environmental and socio-economic concerns was reversed. Then, as global climate change came to be interpreted as a market opportunity for Danish renewable energy technologies, the tension between environmental and socio-economic concerns was reinterpreted as an investment that would ultimately benefit both the Danish economy and the global climate. From 2005, socio-economic conceptualizations fluctuated between lowering costs by introducing market-mechanisms and pursuing positive feedback, while ultimately in 2018, a hybrid conceptualization proposed the simultaneous use of market principles and political regulation, funding rollbacks for some areas and increases for others.

The conceptual shifts are also mirrored by a number of policy matters that resonated with the constellation between conceptualizations and political directionality. Most importantly, this includes the decoupling of economic growth from the consumption of energy, the development of renewable energy technology, and Denmark and Danish energy policy's role internationally. The ambition of decoupling economic growth from energy consumption was a political objective ever since the first energy plan of 1976 but was associated with several different concerns. In the time of the oil crises, decoupling was seen as necessary in order to minimize the socio-economic impact of increased oil

prices. Then, as climate change began to influence policymaking, decoupling economic growth from greenhouse gas emissions was seen as necessary in order to mitigate the negative impacts of energy consumption on the physical environment. From the early 2000s and on, socio-economic and environmental concerns fluctuated in importance, while the political means towards decoupling was under question.

Renewable energy was firstly considered an alternative fuel source of marginal importance but was attributed with increasing importance, as global climate change made its ingress into the energy policy goals. In 1996, renewable energy technology came to be perceived as an important solution to climate change, which simultaneously offered market opportunities for Danish business and socio-economic benefit for Denmark as a whole. And from 2005 and onwards, the development of renewable energy technology was continuously altered towards cost-efficiency, competition, and leadership, as it became an increasingly entangled solution for geopolitical fuel dependency, climate change and Danish socio-economic and diplomatic interests.

Lastly, the perception of Denmark's and Danish energy policy's international role changed largely in accordance with the above. Although all the analyzed energy plans emphasize the connection between the domestic and international level, they highlighted different challenges and sought different approaches. The oil crises initially implied the displacement of imported oil with alternative suppliers and fuels, as well as working with international bodies to build up fuel stockpiles. *Energi 21* from 1996 set a highly explicit goal of making Denmark a 'pioneer nation' within climate change mitigation and saw Denmark and Danish energy policy's role as a means for pushing the international agenda. From then on, Denmark and Danish energy policy's role fluctuates between 'offensively pushing' the international agenda and complying with it, until today, where the energy policy agreement intends a combination of the two.

By illustrating and problematizing the ontologizing effect of conceptualization, the analysis has shown how non-linear semantic battles are always at play when the concepts appear in the energy plans. In this regard, the analysis has shown that shifts in conceptualizations cannot be understood as sequential or cumulative. Rather, conceptualizations shift in a much more disorganized and arbitrary way, where

geopolitical concerns, ideological differences, conceptual relationships and many other factors contribute. As it was shown, the three concepts are highly entangled throughout the entirety of the analyzed energy plans. For that reason, they have been interpreted as mutually determining concepts and counter concepts that push and pull each other in a variety of ways, as conceptual shifts take place. A number of shifts in this concept and counter concept dynamic have been illustrated, where one concept supersedes another, where the tension between concepts shift from being constrictive to beneficial, and where concept and counter concept merge and create a new concept.

This dynamic between concepts and policy goals illustrates a number of shortcomings in studies like that of Gronheit & Olsen (2002), where the three concepts were described as policy objectives, and where one objective replaced another according to decisions made by policymakers. As the analysis has shown, the prioritization of the three concepts evidently changes throughout the energy plans, but neither of the concepts was completely discarded at any instance. Neither of the three concepts disappears or exclude each other as they all continue to be important throughout the energy plans, but what differs is their relative importance. Secondly, the setting of political goals (or what Gronheit & Olsen calls objectives) cannot be adequately understood as the linear outcome of the actions of policymakers but is a much more complex interaction. When security of supply, socio-economics, and environmental concerns are described as objectives, they are treated as mute objects designated by an acting subject. As the analysis has shown, however, understanding security of supply, socio-economics, and environmental concerns as shifting concepts breaks with such an epistemology, and illustrates that as concepts, they are continuously altered and altering with respect to their semantic content, and thus effectively frame the spheres of possible interpretations and actions that are available for policymakers.

4.1 Contribution of the thesis

As a contribution to conceptual analysis, the analysis has shown that in the form in which it is developed by Andersen (1999; 2011), it might benefit from distinguishing between ‘negative’ and ‘positive’ conceptual tensions. As the analysis has shown, this

distinguishability was of central importance when tracing the conceptual shifts produced by the environmental and socio-economic conceptualizations that took place from *Dansk energipolitik 1976* to *Energi 21*, where the two concepts went from a constrictive tension in which socio-economic concerns superseded environmental concerns or vice versa, to a tension characterized as a positive feedback, where the advancement of one benefited the other. This distinguishability cannot only be explained as a shift in the concept/counter-concept relation or adequately understood as the emergence of a new form of tension.

In extension to this, the thesis has shown that conceptual analysis by way of Andersen & Koselleck lacks a well-developed understanding of conceptual shifts in which one concept is merged or combined with another, to form a new, singular concept as in the case of green growth. Green growth cannot be adequately understood as a new tension between conceptualizations of economic growth and environmental concerns, nor as a disintegration of a concept/counter-concept relation. Even though green growth does produce a new, mutually beneficial tension between economic growth and environmental concerns, this tension cannot be understood as a constitutive difference between concept/counter-concept. As it was shown, the highly ambivalent meaning implied by the concept of green growth escapes a clear classification of the concept as either a hypernym or a polysemy. Like a hypernym, green growth is a singular concept that resides over and appropriates socio-economic and environmental conceptualizations. However, because of its appropriation of the two, green growth will ultimately figure as a polysemy, because it has to answer for both of the areas of concern that it has replaced.

In highlighting the conceptual shifts, in meaning, tension and their adherence to the setting of energy policy goals, the thesis also makes a contribution to the level of policymaking and for public discourse more generally. The area of energy policy is heavily invested with questions that adhere to the underlying constitutive sciences, including the natural and social sciences, and cannot be detached from these. However, just as much the conceptual level cannot be understood in detachment of these, these cannot be understood in detachment from the conceptual level. Concepts are not just passive, mute signs but are important because they ontologize and condition the semantic

fields and thereby the space for interpretation for future policymaking. In that sense, concepts politicize as much as the policymakers that use them.

The analysis therefore highlights the importance of disentangling political conceptualizations that deal with matters like fuel scarcity and climate change – matters that affect the totality of mankind in a profound way – in order to understand how and why they pose foundational problems that might not be self-evident at face value, for the benefit of policymaking and for public discourse. Understanding these foundational conceptual problems are important when concepts resonate with much larger issues than the immediate domain in which they are found. Concepts like green growth, which encapsulates a much more foundational question about how to design society, answers on a behalf of a vast amount of interests and subject matter fields, and in doing so, conditions a certain sphere for policymaking and political action.

While the present thesis cannot presume to be able to verify or refute the Minister for Finance, Kristian Jensen's remarks that Denmark will "remain in the forefront of the green transition", and continue to "be a country that shows the way for others" as a product of the recent energy policy agreement, the present thesis has mirrored and expounded the fact that articulations such as these are not just passive descriptions. Rather, such statements are profoundly important because they produce and are produced by the conceptual battlegrounds inherent to the subject matter of Danish energy policy.

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