Swedish and Norwegian Renewable Energy Policy

– the Creation of the World's First International Green Certificate Market

Tove Rømo Grande

Masteroppgave ved institutt for statsvitenskap

UNIVERSITETET I OSLO

Spring 2013

2013

Swedish and Norwegian Renewable Energy Policy

– and the Creation of the World's First International Green Certificate Market

Tove Rømo Grande

http://www.duo.uio.no/

Trykk: Fritdjof Nansens Institutt (FNI), Lysaker

Summary

The research question addressed in this study is why Norway and Sweden embarked on a common support scheme for the promotion and use of renewable energy. This is an interesting question given the unique character of the joint Swedish-Norwegian green certificate scheme as the world's first international market for trade in 'green electricity'. The study analyzes the question through a 'domain-of-application' approach, using multiple theories to illuminate different stages of the process. Convergence theory has been employed as basis for investigating the emergence of similar preferences for the same policy tool in Sweden and Norway, complemented with perspectives of policy-learning. Domestic policy theory has been brought in to investigate specific national factors conditioning policy convergence and policy learning. International negotiation theory has been included for the purpose of investigating specifically the Swedish-Norwegian negotiation process which led to the final creation of a joint scheme. The main conclusions drawn from the study that the emergence of preferences for green certificates in the two countries was grounded in similar policy goals for renewable energy policy area *as such*, path-dependent policy tracks in relation to deregulated electricity markets and anticipated (but not realized) policy harmonization at the EU level, making green certificates more relevant for both countries.

Words: 27 912

Acknowledgements

First, I want to thank my supervisor, Åse Gornitzka, for being available at all times and for her invaluable advice throughout the whole process. I also want to thank the staff at Fridtjof Nansen Institute (FNI) for providing me with a wonderful working environment and support. A special thanks to Per Ove Eikeland with whom I have had the pleasure to discuss issues related to climate and energy politics almost on a daily basis. These discussions have been of great importance to my work. I would also make use of this opportunity to thank my sister, Elin Rømo Grande, who gave me shelter when I mistakenly rented my room to a Swedish girl only weeks before the deadline. And to the rest of my family: thank you for your support and encouragement during my five years of study. Great thanks to Rachel Jones down under, Per Ove Eikeland, Magnus Gabriel Aase, Ingvild Mangerud, Vilde Stuvøy Heggen and Morten Hansen for copy editing. And last but not least, I want to thank my friends and fellow students at the University of Oslo. Your humor and presence has been of great importance.

Contents

1 Introduction

The world's first international green certificate scheme for the promotion and use of renewable energy was introduced in Norway and Sweden at the beginning of 2012. This came in contrast to failed efforts over the past decades in the European Union (EU) to establish a harmonized green certificate scheme. As the world's first example of its sort, the Swedish-Norwegian green certificate scheme is an interesting object of study. Why did Norway and Sweden embark on a common support scheme for the promotion and use of renewable energy?

Renewable energy has attracted a lot of attention in the last couple of decades primarily due to its important role in combating human-driven climate change.[1] The energy sector, with its significant share of total global emissions (EPA 2008), is central to this fight. Politicians all over the world are confronted by two inextricably linked problems: the need to increase energy supply to secure growth and development, and the need to reduce energy related emissions to ensure such growth is sustainable. Renewable energy is regarded by many as a primary solution to both problems yet, due to its weak competitiveness vis-à-vis conventional energy sources, it has struggled without financial support schemes to incorporate renewables into the electricity networks.

The EU has aimed to be a global leader in the fight against climate change mitigation by setting goals and co-ordinating policies at the EU-level. At the same time, the EU has become increasingly aware of its vulnerable energy supply situation. As a result, an increased production of energy from renewable energy sources has become an integrated core strategic goal of the climate and energy policy area at the EU level. Strategies to promote renewables were part of the negotiations when the EU adopted its Renewable Electricity Directive in 2003 and, again, when deciding on the 2009 Renewable Energy Directive. Two issues became particularly contentious: whether or not there was a need for a *common* scheme at EU level, and what kind of policy measures would best create the desired results. The core of the discussions centered around proposals for price-driven support through (various forms of) *feed-in tariffs*, and quota-driven support through a market-based *green certificate scheme.*

[1] The two degree target recommended by the International Panel of Climate Change (IPCC) necessitates a reduction of greenhouse gas emissions from rich countries of 25-40 per cent by 2020 compared to 1990-levels.

Despite prolonged discussions at the EU level, no pan-European framework to stimulate renewables has resulted. Instead, the most recent Directive from 2009 adopted binding renewable energy targets, set individually for each Member State. While Member States have individual targets, the Directive also introduced voluntary flexibility measures to enable cooperation between Member States. Such flexibility measures include statistical transfers, joint projects between Member States and joint support schemes. Currently, 18 countries use different forms of feed-in tariffs and eight use green certificates as a means of reaching their national targets (REN21 2012, 70-71). Sweden and Norway are the only countries, however, that have opted for a common solution in the form of a joint support scheme for renewable energy promotion - namely the Swedish-Norwegian green certificate scheme. [2]

1.1 Purpose and Research Question

Against this background, this research project addresses the following question: *Why did Norway and Sweden embark on a joint green certificate support scheme for the promotion and use of renewable energy?*

Analytically, the question is separated into two parts. First, the study will investigate why the two countries chose green certificates as the preferred support mechanism for renewables. Next, the study will explore why the two countries agreed to implement a joint system. This is done because the establishment of an international green certificate scheme is grounded upon two necessary conditions: 1) that each country prefers green certificates (instead of something else) as policy instrument to promote renewable energy sources, and 2) that the two countries agreed on a common framework for a joint scheme.

Summed up, the two-tier approach generates two sub-questions:

1) Why did Norway and Sweden choose green certificates to promote renewable energy?
2) Why did Norway and Sweden reach agreement on a framework for establishing a joint scheme?

The questions posed are both empirically and theoretically relevant. Empirically, the international Swedish-Norwegian certificate system marks an innovation as the first of its

[2] Norway is not member of the EU but is associated with the Union through its membership in the European Economic Area (EEA). Through mechanisms in the EEA agreement, EU legislation on the field of climate and energy is incorporated in Norwegian national legislation.

kind in the world, adopted despite unsuccessful attempts by the EU to adopt a similar system for all its member states. Hence, an investigation of the rationales behind chosen policies in Norway and Sweden, as well as the process of creating a common scheme, could provide knowledge about why a common green certificate scheme became relevant in this particular region. The study should also be highly relevant for students of *national energy and climate* policy making in Norway and Sweden. The process of establishing the joint support scheme has been subject to much secrecy and confusion sudden reversals and unexpected conclusions over a period lasting almost ten years. The governments conducted two negotiations rounds, the first ending in a stalemate in 2005-2006, and the second, only a few years later, concluded within months.Through investigating the research questions set up new knowledge is gathered about both national policy processes and how they became interrelated.

Theoretically, the study is relevant because it relates to ongoing research attention to policy convergence and diffusion in a wide range of policy areas. In a study on the coordination of renewable energy policies in the EU, with particular focus on the evolution of feed-in tariffs in Germany, Spain and France, Jacobs (2012) develops an innovative theoretical approach to explain national policy making on the basis of theories of policy convergence and diffusion. This research project employs parts of this framework and comments on the theoretical findings of this study.

While acknowledging that Norway and Sweden converged in preferring green certificates as their primary renewable energy policy instrument, this study also notes that the countries went a step further by deciding to merge their national certificate systems. This changed the character of the policy process from one of convergence to perfect alignment, necessitating a different type of analysis through alternative theoretical lenses. This study will be informed by a multilevel approach of international negotiation theory for this purpose.

While acknowledging that Norway and Sweden converged in preferring green certificates as their primary renewable energy policy instrument, this study also notes that the countries went a step further by deciding to merge their national certificate systems. This changed the character of the policy process from one of convergence to perfect alignment, necessitating a different type of analysis through alternative theoretical lenses. This study will be informed by a multilevel approach of international negotiation theory for this purpose.

Summing up, this project takes a two-tier approach. As a first step, the study investigates a theoretically and empirically interesting trend of policy similarities on the field of European renewable energy policy, commenting on those theories of comparative politics aiming to identify the mechanisms behind converging policies within a European perspective and examining the innovative Swedish-Norwegian green certificate scheme as an empirically observed case. To explain how the two countries managed to agree upon a common scheme, the study employs theories stemming from the field of international relations, more precisely a multilevel approach of international negotiation theory. This compounded approach logically derives from the research question as it asks why Norway and Sweden embarked on a *joint* support scheme for the promotion and use of renewable energy. According to this logic then, both the choice of similar policy tools and the process leading up to the decision of the Norwegian and Swedish governments to establish a common scheme are taken into consideration.

1.2 A Brief Description of the Swedish-Norwegian Certificate Scheme

The Swedish-Norwegian green certificate scheme is a joint policy tool for renewables stimulation to encourage investments in new power capacity[3] based on renewable energy sources. The scheme establishes a common goal for renewables generation set at 26.4 terawatt hour (TWh) by 2020, with each country responsible for financing 13.2 TWh. The scheme is designed as a market for green certificates, where certificate liable actors (power distributors and certain large-scale electricity consumers) are obliged to purchase certificates from electricity producers according to the amount of renewable electricity produced (one certificates is issued per 1 megawatt hour). The extra costs are passed on to end-users in the form on an add-on on the electricity bill. The scheme is *technology-neutral*, meaning that the support does not vary between different technologies but is kept at the same level for all. Renewable technologies eligible for support are hydropower, wind power, solar power, ocean power, geothermal power and bioenergy (NMEP 2012). The joint Swedish-Norwegian green certificate scheme is a mandatory regulation.

[3] New power capacity includes maintenance, upgrading, and improvement of existing installations.

1.3 Delimitations

As the research question indicates, the study will concentrate on the policy process leading to the decision to establish a joint green certificate scheme in Norway and Sweden. The study does not aim to explain the emergence and development of Swedish and Norwegian renewable energy *as such*. Rather, the policy selection process in each country will be emphasized, followed by an investigation of the bilateral negotiation process on the establishment of the joint scheme. Emphasis will be placed on the explanatory factors outlined in the analytical framework in Chapter 2. Although the framework is designed with a broad and holistic analysis in mind, it is unlikely that the framework captures all intervening factors relevant to the emergence of the scheme. Such deficiency is unavoidable due to the limited time and resources of the project. Moreover, the study is unconcerned with the normative evaluation of policy tools. The concern here is not whether the decision to establish the scheme was wise economically and environmentally, but rather how it became possible politically. While economic and environmental conditions will be taken into account, as these conditions are usually important premises for decisions made by policy makers, the main focus will be on general political factors serving as premises for the introduction of the scheme.

1.4 Outline of the Thesis

In addition to this introductory chapter outlining briefly the background and the research question on which the empirical inquiry is grounded, the thesis has seven further chapters. Chapter 2 provides the analytical framework and the four main theoretical perspectives of the study, namely policy convergence, policy learning, the role of domestic politics and international negotiation theory. Methodological considerations are made in Chapter 3, including a presentation of the methods used for data collection. Chapter 4 serves as a background chapter which is mainly concerned with European developments on the climate and energy field with an emphasized focus on renewable energy issues, followed by a presentation of parallel historical developments in Sweden and Norway. The empirical inquiry in Chapter 5 provides a detailed review of the policy processes leading to the choice of green certificates in each of the two countries, and subsequently reviews the negotiation process leading to the establishment of the Swedish-Norwegian green certificates scheme. Chapter 6 links the theoretical considerations presented in the theory chapter and the

empirical findings of Chapter 5, and discusses the relevance of these in terms of an analytical discussion. Chapter 7 summarizes the main findings of the research project.

2 Analytical framework

The analytical framework is guided by the study's purpose and research question as presented in the previous chapter. The overall goal of the research project is to study the emergence of the Swedish-Norwegian green certificate scheme, and the two separate but closely interrelated processes which were considered to be necessary conditions for the establishment of a joint scheme. The task of the theory chapter is therefore to include both these processes in a common analytical framework. To this end, the framework presented below asks two sub-questions corresponding to the two processes, and draws on analytical elements from three different theoretical traditions: comparative public policies, domestic politics and international relations.

Table 1. *The analytical framework of the study.*

1) Why did Norway and Sweden choose green certificates to promote renewable energy?	Policy Convergence Policy Learning Domestic Political Factors
2) Why did Norway and Sweden reach agreement on a framework for establishing a joint scheme?	International Negotiation Theory

This compound approach corresponds with what Tallberg (2010, 637-638) denotes a domain-of-application approach holding that different theories have their 'home domains' and may together serve as explanatory complementarities in *substantive* terms in that they "explain different parts of a broader political phenomenon". The 'phenomenon' analyzed is the Swedish-Norwegian green certificate scheme. Hence, convergence and policy learning theory are applied as means of answering the first of the two sub-questions which refers to the specific policy selection process in Sweden and Norway, respectively. Reflecting criticism of this literature's lack of attention to domestic political factors conditioning the policy selection process (eg. Stang and Meyer 1993, Van Waarden 1995, Lenschow et. al. 2005), such factors are included in this analysis. Next, to answer the second sub-question of the study, namely how the two governments eventually reached agreement on a *joint* scheme, analytical elements are based on international negotiation theory, tailored to analyze the political processes leading to international agreement.

2.1 Policy Convergence

As the study's main theoretical approach, a definition of policy convergence is necessary. Policy convergence "describes the end result of a process of policy change over time towards some common point, regardless of causal process" (Holzinger and Knill 2005). Hence, convergence describes increasing policy similarity between countries. An important note in this regard, is that one might question whether this study actually deals with a case of policy convergence as Norway and Sweden have in fact embarked on fully merged system and not two individual policies that are similar to each other. However, a common scheme could not have been established if not for the fact that both governments chose green certificates as their preferred instrument to stimulate new renewable energy production and use. Hence, preceding policy convergence is perceived to be a precondition for the later realization of the common scheme.

Mechanisms explaining the emergence of similar policies across borders

Researchers have identified a wide array of potential convergence mechanisms, both within the domestic, transnational and international spheres. Several authors (e.g. Dolowitz and Marsh 1996, Busch and Jörgens 2005, Knill 2005) have reviewed the diverse literature, concluding that the most frequently used convergence mechanisms are *independent problem-solving, imposition, international harmonization, regulatory competition* and *transnational communication*. One of these mechanisms, imposition, is not regarded relevant for the purpose of this study. Imposition occurs when new policies are forced on a country by another authority, for instance, international organizations or another country. It thus involves a coercive top-down direction of convergence and is not relevant in our case as policy choice on the field of renewable energy does not involve any kind of coercive requirement to introduce a particular kind of support scheme. Although the EU introduced *binding* targets for the promotion and use of renewable energy for each member state (see section 4.2), EU legislation does not include any specific requirement as to how these targets should be reached. Another mechanism, transnational communication, will be presented further in the next section dealing with perspectives of policy learning (see section 2.2).

Independent but similar policy responses

This mechanism refers to a situation in which different national governments are confronted with a parallel problem pressure and *independently* choose to implement similar policies. In the literature, this mechanism is often referred to as independent problem-solving, but in the study of the diffusion of feed-in tariffs in Europe, Jacobs (2012, 224) suggests dividing 'independent problem-solving' into two sub-mechanisms: problem-driven and opportunity-driven policy convergence. The former arises from similar problem pressure and the latter from similar perceptions of opportunities in relation to technological advances. Jacobs suggests that the proposed sub-division necessitates a redefinition of the term 'independent problem-solving' and the author suggests the more general term 'independent but similar policy responses'.

It has been argued that independent problem-solving should be included in convergence studies in order to 'avoid the pitfall of inferring from transnational similarity of public policy that transnational explanations must be at work' (Bennett 1991, 231). This argument is still relevant despite the redefinition of the mechanism. Hence, independent but similar policy responses is included by means of examining to what degree the decision-makers' policy choices were a result of a decision-making process *independent of transnational mechanisms*. In this case then, convergence is a result of voluntarily and almost coincidental processes in two different political settings (Jacobs 2012, 14).

H_0: *Renewable energy policy measures in Norway and Sweden converged due to independent but similar policy responses driven by a) similar problem pressure, and b) perceptions of opportunity for technological advances.*

International harmonization

This mechanism involves the adoption of policies as required by international and supranational law. International laws differ in specification of whether total or minimum harmonization is required of national standards, the former giving no leeway while the latter allows for individual selection of appropriate instruments to comply with international policy objectives (Holzinger and Knill 2005, 787). This study deals with a policy area that has seen a rather low degree of specification in relevant international law. The EU directives adopted in the field to date do not specify requirements for national governments as to the type of

renewables support schemes. What makes this mechanism still relevant, however, is the possibility that national policy-makers formulated policies on the basis of an *anticipated* international harmonization. The European Commission pressed hard for a European-wide green certificate scheme prior to both the 2003 and 2009 directives on renewables. It is therefore not inconceivable that an anticipated introduction of a pan-European green certificate scheme came to influence the policy selection process of Swedish and Norwegian policy-makers.

H_1: *Renewable energy policy measures in Norway and Sweden converged due to an anticipated legal harmonization of renewable support schemes at the EU level.*

Regulatory competition

Two dimensions of regulatory competition are well described in the literature: economic competition and political competition. The former refers to a situation where the competitiveness of national industries' is affected by regulatory change in another country. The implication is that if one country changes its policy to create more favorable conditions for its industry, the competitiveness of other counties' industries will be weakened – a situation which might result in threats from the industry to move its activity to an area with more favorable conditions. This may in turn lead to regulatory change in other countries, presupposing, of course, integrated markets and free trade. Depending on the situation, economic competition may lead to a 'race-to-the-top', i.e. higher levels of subvention, or to 'race-to-the-bottom', i.e. removal of tax burdens. The implication would be policy convergence.

Political competition could well be described within the European context where EU Member States seek to influence the making of EU regulations on the basis of national regulatory experience. This situation is similar to what is referred to as "uploading" in the Europeanization literature where "Member States seek to shape European policy-making according to their interests and institutional tradition" (Héritier, 1994, 278). Uploading could be considered as an effective strategy to reduce the costs of 'downloading' EU legislation, that is, the process of "incorporating European policies into national policy structures" (Börzel 2002, 195), and by these means maximize the benefits of required regulatory standards according to European legislation. If new EU regulation is in accordance with

national policy styles and regulatory traditions, the political and economic costs of policy adjustments are minimized. In addition, such a situation could put a country in a relatively favorable position because it has more experience with the regulations involved than countries that are obliged to redesign their legislation in order to make it 'fit' with EU rules. This is commonly referred to as a first-mover advantage. The perceived ability to affect the shape of future EU legislation might therefore serve as drivers towards certain kinds of domestic regulation.

H_2: *Renewable energy policy measures in Norway and Sweden converged due to a) economic competitive pressures, and b) political competition to set an example for future EU legislation.*

2.2 Policy Learning

'Policy learning' or 'lesson drawing' is a sub-category of the convergence mechanism 'transnational communication' referred to above. It is distinguished from convergence mechanisms because policy learning does not necessarily lead to policy convergence, as policy-makers may also draw negative lessons which may lead to policy divergence (Rose 1991, 22). Policy learning is grounded in rational logics and suggests that decisions-makers evaluate policy programs and experiences of foreign environments and adopt policies based on these. This may lead to a complete or a partial policy transfer intended to solve domestic problems (Marsh and Sharman 2009, 271). Different elements that can be transferred include: policy goals, policy content, policy tools, policy programs, institutions, ideologies, ideas and attitudes, negative and positive lessons (Dolowitz and Marsh 2000, 12). The main focus of this study is the transfer of policy tools for stimulating renewables.

Determinants of Policy Learning Leading to Similar Policies across Borders

Problems are usually not unique for one particular country or region. Rather, policy-makers in different political environments frequently face the same types of problems. In today's globalized world, policy-makers may relatively easily gather information about experiences gained elsewhere. The task of theories dealing with policy learning is thus not to observe the fact that policy learning across borders takes place, but rather to identify from where lessons are drawn and what these lessons contain.

Successful policy tools

An obvious way for policy makers to recognize relevant policy measures is to look for solutions that appear to "work". In the case of support instruments for renewable energy this could first pertain to whether a policy instrument has worked effectively to generate new renewable energy production. Second, it may relate to the capability of a policy to promote *particular kinds* of renewable energy sources (wind power, solar power, hydro power etc.). Third, perceived success may be related to the capability of a policy to attain fixed goals. And fourth, success may be related to the ability to contain costs.

H_3: *Renewable energy policy measures in Norway and Sweden converged due to lessons learned from countries with successful policy tools.*

Similarity in economic conditions

Another source for lesson drawing is policy environments with similar economic conditions (Rose 1993, 98). When being faced with a complex set of alternatives, using experiences from other countries with similar economic conditions serves as an effective way to calculate the utility of specific policies and thus, as a useful method of shortcutting lengthy national policy processes. In the case of renewables support schemes, appropriate reference countries may be found by comparing the structure of the energy sector, industrial competitive pressures and budget constraints.

H_4: *Renewable energy policy measures in Norway and Sweden converged due to lessons learned on the basis of similarity in economic conditions.*

Close communication

Finally, it is an intuitive truth that people learn more from those they meet most frequently. Consequently, we can expect that policy models spread more rapidly between countries that are members of the same international institutions and that are subject to close bilateral relations. Frequent meetings within formal and informal networks create opportunities to learn and persuade as policy makers can continuously transmit information to each other about the efficiency of certain solutions. Relevant for this study is the observation that Scandinavian countries frequently tend to look for lessons from each other when faced with a

problem in need of a new solution (Nedegaard 2006, 422-440). Interestingly, this somehow moderates the perception of policy selection being purely rational. It rather suggests that the choice set of policy makers is somehow dependent on the alternatives that are immediately accessible to them (Kahneman, Slovic and Tversky 1982).

H_5: *Renewable energy policy measures in Norway and Sweden have converged over time due to lessons learned on the basis of close communication between countries.*

2.3 Domestic Political Factors and Path-Dependency

No countries are identical and have different contexts for domestic policy change which are likely to influence patterns of policy convergence. Therefore, the adoption of a certain policy is likely to be affected not only by the convergence mechanisms referred to above, but also "the domestic predisposition to react to one impulse but not another" (Lenschow et al. 2005, 799). It is therefore important not to neglect the role of domestic politics when studying the influence of international mechanisms on domestic policy change. According to this logic, the inclusion of domestic political factors is based on an assumption "that there is always an international and a domestic side to the international spread of policy innovation and convergence" (ibid.).

Domestic Political Factors with Implications for Domestic Policy Choice

Policy outputs are products of complex and time consuming political processes. Domestic factors such as cultural and administrative traditions and capacities, path-dependent policy tracks and economic and geographical conditions are often held to be determinant factors in the process of policy change (Lenschow et. al. 2003, 797-816). The mechanisms presented below are expected to function as national filters and national conditions under which policy learning takes place.

Path-dependent policy formulation

Theories of path-dependent policy development suggest in the most basic terms that history matters. This rather obvious statement may more precisely be defined as a situation where a country or a region has chosen a specific track which makes the costs of reversal very high (Levi 1997, 28). According to this logic, policy-makers are likely to opt for solutions that are compatible with already established standards and traditions in the policy field when being

faced with a set of policy options to solve the problem at hand. In our case, path-dependent policy formulation is expected to be relevant related to the more general regulatory model chosen back in time for the energy sector in the two countries under investigation. As will be shown in Chapter 4, the Swedish and Norwegian energy sectors have both been subject to fundamental regulatory and organizational restructuring to replace political steering with free trade and market competition. According to path-dependent logics, it could be expected that such earlier fundamental sector organizational changes had implications for later policy-making in the field.

H_6: *Renewable energy policy measures in Norway and Sweden is conditioned by path-dependent policy tracks in relation to market deregulation.*

Preferences of Domestic Actors

Policy-making on the energy field usually involves a large number of different actors representing both private and public interests. A wide variety of organized interests are engaged in both formal and informal negotiations and consultations in order to influence policy outputs according to their preferences. Within each sector there might be certain pivotal actors holding central positions in the decision making process according to the institutional setting, each of which is likely to exert influence on policy outputs (Lodge 2003, 163). Within the energy sector, traditionally influential (and competing) actors have been the large producers and the large consumers of energy. In Sweden and Norway, state owned companies, such as the large power producers Vattenfall in Sweden and Statkraft in Norway, have traditionally (and logically) had dominant positions within the sector. It is therefore likely that regulatory change on the field of renewable energy is conditioned by the support of these actors and their allies.

H_7: *Similar choice of policy tool is conditioned by the preferences of central domestic actors.*

2.4 International Negotiations

The preceding sections have mainly focused on mechanisms explaining why both Norway and Sweden made green certificates their preferred choice of policy tool for renewable energy, what was seen as a necessary condition for later arriving at a joint Swedish-

Norwegian system. The purpose of this section is to outline the analytical approach to the second sub-question. As argued in Chapter 1 (section 1.1), the emergence of the Swedish–Norwegian green certificate scheme required bilateral agreement on how the joint scheme should be designed (changing the character of the policy process from one of convergence to perfect matching). On the basis of this logic, the analytical focus now turns to the bilateral negotiation process and, more specifically, to why the two countries came to agree.

International negotiations are defined as "a process in which explicit proposals are put forward ostensibly for the purpose of reaching agreement on an exchange or on the realization of a common interest where conflicting interests are present" (Ikle 1982, 3-4). Hence, in negotiations collective decisions are made through agreement. This process is commonly divided into three theoretically defined phases: diagnosis, formula construction, and agreement on details (Hopman 1996, 78). The former refers to the process by which the problem is defined and a negotiation agenda is set, while the second refers to the process where the mutual framework for agreement is determined, and the third is concerned with the final details, or "the precise points of dispute" (Zartman and Berman 1982, 9) that make it possible to implement the framework for agreement. This study is mainly concerned with the latter because it was in this phase that disputes occurred, delaying a successful agreement over a period of 5-7 years.

Factors Explaining Agreement

The general assumption of the analytical framework of this study is that the policy processes leading to the establishment of the Swedish-Norwegian green certificate scheme is influenced and conditioned by both international and domestic political factors. This logic is in accordance with multilevel approaches of international negotiation theory which recognizes the influence of domestic and international political environments on the nature of negotiations (see e.g. Hopmann 1996, 153-174, 195- 220; Ikle 1968, 122-143, Putnam 1988, Milner 1997). Based on central factors and mechanisms discussed in international negotiation theory, hypotheses are formulated for the purpose of this study.

Process-Generated Stakes linked to Preferences of Domestic Actors

Underdal (1983, 190) concludes that "the process of negotiation itself tends to create certain stakes – a pot of potential gains and losses – extraneous to those constituted by the explicit

negotiation issues" (Underdal 1983, 190). Such process-generated stakes implies that the negotiator may face risks connected to loosing political support from domestic political and societal actors. In other words, the 'potential gains and losses' are connected to the negotiator's relationship with other domestic actors. Each negotiating party is likely to be held accountable for the final agreement in their respective home countries and their utility of an agreement may not only be ascribed to the substantive effect of the negotiated outcome but also to their image and reputation relative to domestic actors (Underdal 1992, 11). Above, the study expected the large state-owned power producers Vattenfall in Sweden and Statkraft in Norway, and their allies, to have been particularly influential in the initial choice of green certificates as preferred national support scheme for renewables, because of their dominant positions within the national energy sectors. It may be reasonable to expect the preferences and expectations of the same set of domestic actors are influential also in relation to the negotiation process for the establishment of a common scheme.

H_8: *The agreement reached between Sweden and Norway was connected to process-generated stakes linked to expectations and preferences of central domestic actors.*

Impact of the European Political Environment

Theory suggests the state of international relations as another pivotal factor likely to affect the nature of negotiations. Changes in such relations may break negotiations out of stalemate and advance or vice versa, to stalemate (Hopman 1996, 195). The negotiation process between Norway and Sweden coincided with the adoption in 2009 of the new EU Renewable Energy Directive that introduced binding targets for the share of renewable energy in the Member States and Norway. It is reasonable to expect that this changed the conditions for agreement.

H_9: *The agreement reached between Sweden and Norway was influenced by the adoption of the 2009 EU Renewable Energy Directive introducing binding national targets for the share of renewable energy in EU Member States.*

Asymmetric Issue-Specific Power

Another central concept in the literature, issue-specific power, is connected to the power balance of the negotiating parties. This factor is selected as likely relevant factor not least since the negotiations took place against the fact that Sweden had already established its own

domestic green certificate system. This concept refers to "an actor's capabilities and position vis-à-vis another actor in terms of a specific mutual issue" (Habeeb 1988, 19). Issue-power is often related to three components: *alternatives, commitment and control* (ibid., 130). 'Commitment' implies a situation where the 'weaker' actor puts more energy and effort into the negotiation process than the other because it is more eager to close a deal. 'Control' refers to a situation where one actor has control over resources that are important to the other. None of these components are relevant for the purpose of this study because a green certificate scheme is not likely to be an absolute 'must' for either of the parties, and none of the parties are in control of goods of particular importance to the other. The remaining component, then, is 'alternatives' which refers to one of the basic concepts in international negotiation theory: Best Alternative To Negotiated Agreement (BATNA)[4]. As noted, the issue-specific power balance was likely to benefit Sweden as its BATNA was to continue on its established track while Norway would have to design a new scheme which is likely to be more costly.

H_{10}: *The agreement reached between Sweden and Norway was influenced by the asymmetric issue-specific power balance that placed Sweden in a position to make Norway accept its requirements.*

[4] BATNA is "the principle through which negotiators determine their resistance points by comparing the value of agreement at any stage with the value of no agreement" (Hopmann 1996, 57). The assumption is that "an agreement will be acceptable only if it produces a better result than each party could attain in the absence of an agreement" (ibid.)

3 Method

The purpose of this chapter is to present the methodological approach of the study. The choice of method ought to be logically derived from the research question (Gerring 2007, 71). This research project addresses the following question: *Why and how did Norway and Sweden embark on a joint green certificate support scheme for the promotion and use of renewable energy?*

3.1 Choice of Method

The research project addresses this question by means of a theory testing in-depth case study using process tracing and pattern matching (congruence method). Case studies are defined as "a spatially delimited phenomenon (a unit) observed at a single point in time or over some period of time. It comprises the type of phenomenon that an inference attempts to explain" (Gerring 2007, 19). The case under investigation is the newly established Swedish-Norwegian green certificate scheme. The main research question is specified by the two sub-questions presented in Chapter 1 (section 1.1.) from which two analytical perspectives derive. The first part of the analysis aims to explain the emergence of similar policies in the two countries, and the objective of the second part is to explain how Sweden and Norway managed to agree on a joint scheme. The two countries are treated as two separate within-cases following the logic of embedded cases (Yin 1994, 45). Two within-case analyses are undertaken for the purpose of comparison.

The choice of undertaking an in-depth case study on the benefit of a broader cross-case study might be questioned on several grounds. As Lijphart (1971, 685) argues: "…if at all possible one should generally use the statistical (or perhaps even the experimental) method instead of weaker comparative method". Further, the statistical method dominates the field of comparative studies examining policy convergence. However, cross-case research on policy convergence has in recent years been criticized for being contradictory and inconclusive as some studies support the convergence hypothesis, while others reject it (Plümer and Schneider 2009, 990). It is argued that "the validity and reliability of empirical results in the literature on convergence are comprised by a theoretical under-specification of the convergence process on the one hand and researchers' reliance on testing convergence as some measure of variance of the other hand" (ibid.). Hence, despite the long tradition and

broad theoretical application of policy convergence theory, there are few studies on convergence that actually specify the causal process. It is therefore interesting to take a "step back" and investigate the underlying causes of policy similarities at a more detailed level. By means of pattern matching and process tracing, possible spurious effects and alternative explanations of the phenomenon may be detected. Second, the empirical interest of this study is, more generally, to explain the emergence of the unique Swedish-Norwegian scheme. This interest adds to the theoretically-based rationale behind the use of a single case approach. Hence, given the lack of understanding of the causal process and the unique character of the scheme, statistical methods are put aside in this study.

Pattern matching (or congruence method) is a useful approach as means of ascertaining the relationship between the causal factors presented in the theory chapter and the emergence of the Swedish-Norwegian green certificate scheme. The theory chapter developed hypotheses about the underlying causes of the observed policy outcome, and pattern matching is a way to examine whether or not these hypotheses fit with the empirical material. An attractive feature of pattern matching is that it can be used as a within-case method (George and Bennett 2005, 182-183). The within-cases are analyzed by investigating whether the same explanatory factors have been relevant in both cases. An additional advantage of this approach is its ability to contribute to the development of a "rich, theoretical framework [which] states the conditions under which a particular phenomenon is likely to be found (…)" (Yin 1994, 46), which is beneficial in light of the underdeveloped state-of-the-art theory of policy convergence. In light of the theory testing approach, pattern matching serves as a useful method.

Process tracing is used in combination with pattern matching to deal with the risk of a false inference of congruency between casual factors and policy outcome on the basis of possible spurious correlation (George and Bennett 2005, 183). As indicated by the term itself, process tracing places the emphasis on process and examines the relationship between intervening causes and the object to be explained. The advantage of process tracing is its ability to reveal false inferences by connecting and verifying the causal process assumed by theory (ibid. 2005, 206). Again, the nature of policy convergence theory makes process tracing particularly useful here as it is well adapted "to enrich theories that only posit a relationship between independent and dependent variables and have nothing to say about the intervening variables

and causal processes that connect them" (ibid., 182). Process tracing may serve to take a "step back" and look into the details of these mechanisms. As this study examines the policy selection process *in two countries*, it is necessary to undertake parallel process tracings.

3.2 Case Selection

The overall objective of the study is to explain the emergence of an empirically observed phenomenon: an innovative international support scheme for renewable energy sources in electricity networks. The case has therefore been selected on a substantial basis rather than a representative sampling. The theoretical grounding for the choice to investigate one single case (of which two within-cases are extracted) has been explained above. It was also argued that the innovative character of the scheme itself makes an in-depth case study interesting. This last point makes the number of cases from which to choose limited. The study starts out by noting that the Swedish-Norwegian green certificate scheme is the world's first example of its kind. As Yin (1994, 45) states: "the unusual or rare case, the critical case, and the revelatory case are likely to involve only single case, by definition."

It is worth acknowledging, however, that similar support schemes are also in place in other European countries. By focusing on the first of the two interrelated sub-questions presented in Chapter 1, that is, why both Norway and Sweden opted for green certificates, the universe of relevant cases expands. As accounted for in Chapter 1 (section 1.1), eight European countries use some form of green certificate support scheme. Following Lijphart's (1971) logic of including as much cases as possible, it could be argued that all cases where green certificates have been chosen as support tools should be included in the study. Nevertheless, the overall interest is, more precisely, the emergence of *this particular scheme*. Further, a complete evaluation of all eight cases would not be possible due to a limited amount of time and resources.

Within methodological traditions of case studies, a case is commonly referred to as either "most-likely" or "least likely", relative to the degree of likelihood for validating the predictions of a model or hypothesis (Gerring 2007, 213). Here, the case under examination falls within the definition of a "most-likely" case. As will be described in Chapter 4, Swedish and Norwegian electricity networks are already profoundly integrated both physically and economically. Both countries' energy markets are integrated in the same power exchange

Nasdaq OMX (formerly named Nord Pool), and electricity transmission networks are crossing the Swedish-Norwegian border from north to south. As Midttun et. al. (2003, 663) notes, it is curious that the Nordic countries have not developed common policies on renewables earlier. On these grounds therefore, the establishment of a common support scheme for renewables is "most-likely" to be introduced in the Nordic region.

3.3 Sources of Data

The introduction of a new policy tool necessitates legislative change and this guides the selection of sources of data. Hence, official documents pertaining to the formal legislative process within Norway and Sweden are the primary sources for this study. Further, the interaction among affected parties in both countries, and their responses to the chain of events leading up to the final decision on the establishment of the Swedish-Norwegian green certificate scheme is illuminated through an examination of position papers, press releases and personal interviews. The data covers the span of historical developments in the 1990s and 2000s.

Qualitative Document Analysis

The research project uses documents such as public records, position papers and newspaper articles as means of reconstructing the chain of events of relevant political processes. The documents have also served as a way of identifying arguments and positions of relevant actors. The sampling of documents is done on the basis of careful evaluation of the type of information and perceptions of credibility.

Public Records and Documents

Public records and documents published by relevant ministries, directorates and parliaments are the main sources of data. They were identified with the help of recommendations by interviewees who are insiders in the policy area, and from reference lists in relevant secondary literature. The documents provided useful information on the argumentation behind the perceived need for policy change in the field of renewable energy. Nearly all public records and documents used are available on the relevant organizations' web sites. The advantage of using public records is that they provide a viable historical memory of events and steps of the policy process. When interviewees were asked to recall historical facts, they often referred to public records and documents because they had difficulties remembering the specifics of

events, conversations and statements. What these documents do not provide, however, is information about potential conflicts and political dynamics necessary to comprehend the context of the issues discussed. Such information is acquired through media articles and personal interviews.

Media Articles

Relevant media coverage has been used to contextualize the information from the above-mentioned official documents and the information obtained through interviews. The online news portal *Retriever*, which provides a broad coverage of Norwegian and Swedish media articles, has been useful in getting an overview of relevant public debates. Additionally, available thematic dossiers have been used for the same purposes. The articles used are related to the period 2000–2012 with an emphasis of the period 2004-2006 due to an increased media interest (especially in Norway) triggered by the Norwegian government's decision to abandon the scheme. This situation did not get much attention in Swedish media so the media coverage is naturally biased towards Norwegian sources. The interviews with Swedish actors covered this bias but this only confirmed the different attention to the issue in the two countries.

The material used has given insight into the positions of relevant political and industrial actors. It has additionally served as a way of identifying relevant informants as well as preparing questions for some of the interviews. It is worth noting that journalists often seek to highlight conflict dimensions of an issue which may be a useful correction to official documents, but one must also be aware of journalists' general tendency of exaggeration, implying an inherent threat to validity. Again, attempts were made to remediate this deficiency through some of the interviews.

Secondary Literature

Previous studies have analyzed different aspects of the policy process under study. These have been useful as means of identifying relevant sources of data as well as verifying and substantiate findings. Previous research has also been useful in terms of filling information gaps which this research project would not otherwise have been able to capture due to limited time and resources. By using secondary literature there is, however, a certain danger of misinterpretation of the facts and the analysis presented – implying an additional threat to

validity (George and Bennett 2005, 90). This risk is mitigated somewhat through contact with some of the authors and discussion with other researchers in the policy field.

Interviews

Semi-structured interviews have been conducted with government representatives in Norway and Sweden, as well as with one Swedish and one Norwegian politician working with related questions, in February and March 2013. The aim of these in-depth interviews has been to collect data that has not been possible to attain solely through examination of public records, documents and media articles. Documents describing the nature of the negotiations are not yet publically available and the negotiation process has been subject to secrecy restrictions from both negotiating parties. Interviews were expected to be especially relevant to constructing a general picture of the negotiation process between Sweden and Norway. The decision to anonyminize the interviewees was taken on the basis of an aspiration that the interviewees would feel more comfortable providing me with information that was already not official, but the interviewees were reluctant to say anything about the precise positions of the negotiatiors and changes in these.

Semi-structured interviews presented themselves as the preferred method of investigation, after analysis of the benefit of structured and unstructured methods (Bryman 2005, 320). Unstructured interviews have the advantage of a large degree of flexibility relative to more structured methods and are therefore more likely to reveal alternative perspectives of the issues discussed. However, the study makes use of a theoretical framework and certain elements that are more relevant than others must be covered. A total reliance on unstructured interviews could risk ignoring important perspectives introduced in the theory chapter. Semi-structured interviews, on the other hand, ensure that relevant topics are covered while at the same time being sufficiently flexible that the interviewees can guide the interviewer through the policy process on his or hers own terms when necessary. This flexibility is also favorable in the context of developing the chosen theories.

On these grounds an interview guide was developed. It included an account of the subjects to be discussed as well as scripted questions to be posed (cf. ibid., 321). The interview guide was adjusted according to the background of each interviewee, that is, in relation to each informant's formal role and in relation to the information that he or she was most likely to

possess. The guide is not presented in the appendix, however, because as the project evolved, the questions formulated at the outset became less relevant while others emerged and they were all along adjusted to the specific interviewee. This makes it difficult to present the questions posed in the annex. Interviewees were mainly identified by means of "purposive sampling", where the purpose of the study combined with the researcher's existing knowledge in the field guided the selection of informants. In order to provide information on both the Swedish and the Norwegian cases, representatives of both countries were interviewed. The intention has been to talk to an equal number of government representatives on each side. At the end of each interview, the informant was asked to recommend additional informants. This "snowball" method proved useful to identify the most relevant people involved in the process.

3.4 Evaluation of the Research Design

Validity and reliability are interlinked, as the former refers to whether we are "measuring what we think we are measuring" (King et al. 1994, 25) while the latter is concerned with the accuracy of the study and the degree of verifiability of the results (Grønmo 2004, 220-21). The research design demands a discussion of 'external validity', 'internal validity' and 'construct validity' in addition to a discussion of relevant challenges in relation to reliability.

A common criticism of case studies relative to cross-case studies is its weak *external validity*, which is concerned with the extent to which it possible to draw general conclusions on the basis of a small number of cases. An inherent ambition of theory testing studies is to either validate or falsify the hypotheses developed and thereby to contribute to a more general understanding of the explanatory power of theoretically defined mechanisms *beyond* the case studied. In this regard, it is useful to define the theoretical universe of cases of which generalizations can be made (Yin 2003, 33). The case under study is deliberately discussed within a EU policy context, as both Sweden and Norway are subject to EU legislation on the energy, environmental and climate policy fields, which is expected to influence the process of investigation. The case can thereby be claimed to represent EU Member States. However, it is a known fact that domestic policy outcomes are likely to be influenced by their unique context (among other things), which makes it problematic to make a generalization of the findings on the basis of a small number of cases. As a way of limiting such fallacy, the findings are contrasted with the results of previous studies on the convergence of renewable

energy policies in other European countries. If the findings of this study converge with the findings of previous studies, the external validity of the explanatory factors is strengthened.

A common strength of the case study method, on the other hand, is its strong *internal validity* relative to cross-case methods. Internal validity is concerned with the causal interference from explanatory factors to the outcome of interest. Yet, case studies are also subject to uncertainty in this regard as it is difficult to detect the direct relationship between an empirical observation and the outcome. As noted earlier, process tracing is a way of limiting the causal uncertainty through a broader investigation which makes it possible to detect false inferences and identify possible intervening factors not included in the analytical framework. Another validity-maximizing technique made use of in this study is triangulation, i.e. using more than one source. Mechanisms of policy learning are especially troublesome in relation to internal validity as it is challenging to specify the extent to which learning was influential for the final policy outcome and this has remained a challenge throughout the project period.

Construct validity is concerned with whether the theoretical concept is operationalized to measurable empirical indicators (Lund 2002, 104). The operationalization of indicators presented in Chapter 2 mainly reflects the operationalization from other uses, and is operationalized in a way that meaningfully captures the concept it is intended to measure**.**

Reliability refers to the extent to which it is possible to carry out the same study and thereby attain the same results (Yin 2005, 45). For the study to be as reliable as possible, the method is carefully described. Interviews, of course, are difficult to reconstruct due to the anonymity of informants and the lack of an interview guide in the appendix (with implications for transparency), but their organizational affiliation is acknowledged in the list of informants (see Appendix 1). Another challenge the reader should be aware of relates to the potential of loss of information in the presentation of quotes which are translated from Swedish and Norwgian to English. The original quotes are presented in footnotes on the respective pages.

4 Historical Background

The purpose of this chapter is to describe the pathways towards renewable energy policy regulation in a European context. It starts out with a general overview of the process concerning the ongoing transformation of the European energy sector from state steering to market steering. It will subsequently look into similar developments in the Nordic region. Next, a review of parallel developments of renewable energy policies at the EU level will be presented. The intention of these two sections is to show how the policy areas have become interrelated parts of the same story over the course of the last two decades. Finally, this chapter will attempt to understand the individual national policies in this field within the European context.

4.1.1 EU Energy Policy Trends : Market Integration meets National Constraints

Despite the fact that energy issues have long traditions within the European project, energy related issues have traditionally been regarded as more of a national concern. European integration was initiated by the creation of a common market for coal and steel in 1952, also known as the European Coal and Steel Community. The ECSC was complemented by the creation of European Atomic Energy Community (Euratom) towards the end of the same decade. During the following decades, however, these institutions lost relevance as the dominant role of coal (and steel) was replaced by oil, and the expected surge of atomic power failed to eventuate. Therefore, as the EU evolved, the European institutions did not acquire any significant competencies in the field of energy. This was not necessarily a result of the Commissions' intention; it was rather due to a lack of will on the part of the Member States. As member states were unwilling to delegate the necessary power to the European level, energy has generally been regarded as an issue of national salience (Birchfield and Duffield 2011, 2).

Nevertheless, in the course of the last decade this situation has changed considerably. Through proposals, regulations and directives, the EU has gained important competencies in the energy field and is now working towards an integrated European energy market, based on principles of free trade and competition. The idea is that market liberalization leads to lower and more similar prices for consumers across the community; increased competitiveness for energy-using industries; economic growth; and increased welfare. However, different market

structures and competitive conditions are still important obstacles to European energy market integration - a situation which the European Commission intends to change (Eikeland 2011, 15). For this to happen there is a need to harmonize what are currently highly diversified national practices within the European energy sector.

With liberalization being a primary goal, the EU is dependent on both ownership unbundling and harmonization of practices in the European energy sector. Until now, however, the sector has been characterized by the opposite. There are a diversity of practices, with a general tendency towards vertically integrated public entities enjoying national monopolies for the entire value chain, including production, imports, and supply, as well as energy transmission networks. Some countries have allowed for private ownership, with governmental control retained in exchange for monopoly rights (ibid. 2011, 14). Under this regime, the price of electricity has remained in the hands of national governments, and customers have been restricted in their choice of electricity provider.

In recent years, however, an increasingly large number of EU Member States have recognized the value of principles of trade liberalization and competition in the energy sector, although to different degrees. In 1981 the United Kingdom (UK) was the first country to carry out a "full transformation of the electricity and gas industries – abolishing legal monopoly rights and splitting up and privatizing the gas and electricity industries to reduce market concentration" (ibid., 15). The UK was soon followed by the Scandinavian countries (Norway in 1991, Sweden in 1994, Finland in 1996, Denmark in 1997). Others, such as France and Germany together with many of the new EU Member States in Eastern Europe, have still not implemented *complete* ownership unbundling, although the transition is underway. Nevertheless, despite progress in the field, the diversified practices render the Commission's market integration project a difficult one.

The Nordic Case: Early Movers towards Market Liberalization

The Nordic countries have been at the forefront in terms of market exposure of the electricity sector and are today among the most liberalized countries in the world (Midttun et al 2001, 92). Following the UK, Norway deregulated its power sector and liberalized its electricity markets in 1991. The objective was to make the power system more efficient and the market mechanism was regarded as the most effective instrument to increase efficiency of the power system (NMEP 1990). In line with other European countries, the price of power had, until then, been set by the government, and the state owned company, Statkraft, was in charge of

the entire value chain. With deregulation, the responsibilities of distribution and production were separated into two independent companies: Statnett, the transmission system operator (TSO), was made responsible for electricity distribution, while Statkraft assumed control over production activities. With the liberalization of markets, the price was no longer set by the government but varied according to supply and demand.

Since then, Norwegian authorities have expressed their support for liberalization in neighboring countries as well as the international integration of markets. The rationale behind such support is grounded in the economic benefits of market integration in combination with the ideological neo-liberal paradigm underpinning the Norwegian transition towards market deregulation. In the following years, both Sweden and Finland positively assessed the possibilities for transforming their electricity sectors. Denmark, by contrast, approached these trends with much more skepticism. The Norwegian example was an important source of inspiration for Sweden. The Swedish political debate on this issue soon led to an uncontroversial decision in the Swedish parliament, Riksdagen, to proceed with a full transformation of the electricity sector (Skjold og Thue 2007, 584), with free trade and competition as the main governing principle in the field of energy.

Instead of creating a unilateral electricity market, the Swedish looked to the Norwegian market and took the initiative on international market integration, as this would be much more cost-efficient and would at the same time create more stable prices in both countries than would two distinct markets. In 1996, the Swedish and Norwegian electricity markets were fully integrated in the world's first international power exchange, labeled Nord Pool. Inspired by this move, and motivated by the prospect of being integrated into Nord Pool, Finland liberalized its own power sector in 1998. Denmark was more reluctant but eventually joined in 2000 (ibid.). With the establishment of the Nordic market, it became a common Nordic ambition to extend market principles further – that is to strengthen the liberalization process in the rest of Europe (ibid., 613).

4.1.2 The Integration of Climate and Energy Policies

At about the same time as principles of trade and competition became fashionable in Brussels, the notion of climate change entered the discourse and was warmly embraced by European officials. With the enactment of the Maastricht Treaty and the creation of the EU, the

European project had just entered a new phase. European leaders saw in the issue of climate change a chance to establish the EU as a leading actor on the international political stage (Lorntzen 2007). Accordingly, the EU has over the last two decades enacted what have been recognized as the world's most ambitious policies to combat climate change. Furthermore, certain Member States have in a parallel manner formulated individual ambitious policies that could possibly set the standard for future policies of the Union. A striking example of this is Germany's *Energiwende*, the aim of which is to phase out all nuclear power within 2035. *Energiwende* has become a symbol of the transformation ahead for the European energy system, and the Germans are nowadays investing large amounts of money on the promotion of alternative sources of electricity generation as a way of reaching this very ambitious political objective. In recent years, it has become a core objective of European energy policy to supply and replace conventional energy sources with renewables in order to fulfill the ambitious goals.

EU renewable energy policy was initiated in 1997, with the release of a Commission white paper outlining plans for the first Renewables Directive. The most controversial part of the development of the subsequent 2001 Renewable Electricity Directive was the determination of what kind of policy tools the member states should be allowed to use and whether these tools should be harmonized and merged into a common system. The negotiations were mainly a contest between those countries promoting feed-ins and those countries promoting green certificates. The Commission positioned itself clearly in favor of a harmonized European policy approach, and emphasized that such a system should be based on quotas (i.e. a green certificate scheme) as such an approach would be better aligned with the overall process of market deregulation and integration. European officials were thus opposed to national feed-in tariff schemes which were the most wide-spread in Europe at the time (Nilsson 2011, 115).

The negotiations also revolved around questions regarding country targets for renewables and how renewable energy sources should be defined. The Member States managed to agree on the definition of renewables but were not willing to adopt binding individual targets for renewable energy. Moreover, the Commission did not manage to get acceptance for a joint scheme. Instead, the Directive introduced indicative targets of 12 percent renewables share by 2010 for the EU as a whole combined with indicative individual targets for the Member States, established a guarantee of origin regime, and addressed barriers to market entry faced

by renewable electricity. Green certificates were mentioned in the directive but Member States rejected both harmonization of national support systems and as well as a joint scheme.

The negotiations on the first Renewables Directive were influenced by a court ruling of the European Court of Justice (ECJ). In 1999, the German company PressuenElectra (now E.oN) referred the German feed-in law to the ECJ. Feed-in tariffs, it was argued, were incompatible with EU state aid rules[5]. The ECJ, however, ruled in favor of feed-in tariffs, accepting that such support was not prohibited by EU state aid rules because the extra costs are financed by the consumers through a surcharge on the electricity bill and not through the state budget. The Commission was therefore no longer able to make explicit reference to the state aid argument, which it had until then used to discredit feed-in tariff proposals and portray green certificates in a more favorable light. Consequently, as harmonization and common systems were rejected and feed-in tariffs were no longer questioned, the Member States continued to develop their various approaches to governing renewables. Around the beginning of the millennium, variants of tradable green certificates were introduced in the UK, Sweden, Italy and Belgium, while nineteen Member States introduced various forms of feed-ins (REN21 2012, 70-71).

As the Member States continued down their own respective paths, discussions continued in Brussels but without the previous momentum. The discussions did not regain strength until 2006 when the Russians decided to stop energy exports to Europe due to a bilateral dispute with Belarus. This situation resulted in concerns for European energy security. In order to become less dependent on external actors (today 50 percent of European energy supply is imported), the EU reemphasized the need to reduce its import dependency through increased self-supply (Gullberg 2006). Renewable energy issues that had never before reached the area of high politics in Europe were on the agenda of EU summits for the first time in 2006. European top officials suddenly began to show profound interest in renewables.

In the following year, a comprehensive Climate and Energy Package was adopted. The package aimed to enhance the EU's energy security, meet the commitments formulated in the Kyoto Protocol, create green jobs, and to make the EU an international leader in research and

[5] "The Community Guidelines on environmental state aid specify the conditions under which renewable energy support may be provided. Investment support is not to exceed 40 per cent, although up to 100 per cent of eligible costs may be granted. Eligible costs are calculated by an extra-cost approach, which implies support corresponding o the additional costs of renewable energy plant compared to conventional plant. Due to the high costs of biopower development, EU exempted support to all kinds of energy production from biomass from the regulations" (Boasson 2012, 141).

development in renewables. The Climate Package established three main objectives for the energy sector to realize by 2020: to achieve an average of twenty per cent of energy consumed domestically from renewable energy sources in the EU Member States, to cut GHG-emissions by twenty per cent, and to reduce energy consumption by twenty per cent compared to a 'business as usual' scenario. These targets are popularly referred to as the 'EU 20/20/20 targets'. With this, renewable energy issues surfaced as one of the core strategic priorities of the EU (European Commission 2013).

Even though renewables largely remained a matter of national control, the Member States' strategies were closely evaluated by European officials. EU evaluation reports revealed progress regarding the share of renewable electricity generation in EU Member States, especially in countries using feed-in tariffs, such as Germany and Spain (CEC 2008a) (Nilsson 2011, 127). Due to the relative success of feed-ins, the clear position of the Commission on this issue started to weaken, but not enough for the Commission to abandon its ambitions of a pan-European green certificate scheme. It was still argued that a common support scheme needed to be adapted to a competitive internal electricity market, and that green certificates were best suited for this.

In 2009, the Climate Package was revised. The new package contained a range of measures for achieving the EU 20/20/20 targets. The world's first international Emissions Trading System (ETS) was established and became the cornerstone of EU climate policy. Another important part of the package was the 2009 Renewables Directive – a follow up to the Renewable Electricity and Transport Fuel Directive of 2001 and the Biofuels Directive of 2003. Renewable energy policy incentives were again at the top of the negotiation agenda and, again, the Commission failed to convince the Member States. Nevertheless, some progress was made; this time Member States agreed to introduce *binding* individual targets for renewable energy production and use. Instead of a mandatory pan-European support scheme, the Directive invited the Member States to cooperate according to three voluntary flexibility mechanisms: statistical transfer between Member States, collaboration on joint projects between Member States, and joint projects between Member States and third countries.

Binding targets were regarded as important because the Member States failed to achieve the targets of the former Directive (Ydersbond 2010, 3). Targets were now calculated on the basis of wealth measured as GDP per capita and the current level of renewable energy production. This was done in order to make the targets as fair and attainable as possible as the Member States' resource endowments vary widely within the Union. To control the Member States' involvement, the Directive required states to submit National Action Plans (NAPs) that describe the main strategies planned to enhance production of renewable energy and decrease national energy consumption.

As renewable energy sources gained increased attention in the course of the second half of the 20th century, and even more in the new millennium, a wide range of different policy tools aiming to stimulate the production and use of renewable energy sources have been developed and put into force. Energy policy has traditionally been reserved for national governments, and policy measures in the renewables field have accordingly been created and designed in line with national preferences and needs. Nevertheless, recent studies demonstrate an increasingly stronger tendency of policy convergence across European borders in this field (Kitzing et al. 2012, Bush and Jörgens 2005, Jacobs 2012). In the last two decades, two specific tools have gained a foothold in Europe, namely *feed-in tariffs* and quota-based *green certificates.* For the purpose of this study, renewable energy policy tools are grouped under these two categories – a categorization of which is drawn from these European trends[6].

A Brief Overview of the Main Positions on Renewable Energy Policy Tools

The most controversial issue in the development of the renewable energy directives adopted in the EU has been related to whether to choose feed-ins (which is mainly nationally based) or a green certificate scheme as the core approach to meet the targets for renewables shares set by the Member States. The controversy arises because the design of these schemes varies between countries in terms of their specificity, which has the side-effect of creating policy 'winners' and 'losers.'

[6] Other instruments for promoting renewables are tenders, (energy) tax exceptions, rebates, tax incentives and tendering systems. In most cases countries decide for one of these instruments but there are also examples of countries using a combination (REN 2012, 70-71).

Despite the fact that the actual characteristics of feed-ins and green certificates differ, they are constructed on the basis of the same ambition: to stimulate a wider deployment of renewable energy sources (Haas et al. 2004, 834). The most apparent difference is that within the former approach the authorities *set the price* while the quantity is set by the market, whereas within the latter authorities *set the quantity* while the price is set by the market (Haas et. al. 2004, 834). With regards to feed-in tariffs, designs may vary but the level of support is most often calculated according to the cost of the respective technologies. 'Green electricity' is guaranteed grid access as national and regional transmission system operators (TSOs) are obliged to feed in electricity generated from renewable energy sources. The associated extra costs of the TSO are typically passed on to the end-user (Ringel 2006, 6).

Both feed-in and green certificate schemes have distinct advantages and disadvantages. First of all, one feature of feed-in tariffs is that they are more prone to differentiate the support between different technologies. This way, support may be provided to specific technologies most in need - typically immature technologies as costs are usually higher compared to the more mature ones. Green certificate schemes, on the contrary, are designed so as to benefit the most cost-efficient technologies, as support is provided according to supply and demand. In addition, most green certificate schemes are designed to be technology neutral, meaning that no technologies are preferred over others.

Hence, green certificates mainly benefit established actors and mature technologies, whereas feed-ins might, to a larger extent, contribute to the development of new technologies. Secondly, feed-ins are perceived to be a somewhat more predictable alternative to new investors because they guarantee a minimum price for the generator (according to the tariff level set by the authorities for each specific project), whereas the price in a certificate scheme fluctuates according to supply and demand (e.g. EURELECTRIC 2008, 10, Held et. al. 2006, 4). Again, the predictability is to the benefit for investors in new technologies as the investment costs are generally higher. Under a certificate scheme, the risk of losing money is continuously present. Experience shows, however, that due to the lack of market adjustment according to supply and demand, feed-in systems are blind to overinvestments in new renewables capacity. In sum, there is a general perception that the different systems are suitable for different conditions. If the objective is to meet *predefined quantity* of renewable energy generation green certificates is the most logic choice. If the objective is to stimulate

specific renewable technologies, on the other hand, feed-in tariffs present as the most suitable model.

4.2 Historical Perspectives on Renewables Policy in Sweden & Norway

Renewable energy issues have historically gained more attention in the Swedish political discourse than the Norwegian. Just like in many other European countries, Swedish attention on renewable energy sources was present long before the EU started to roll out proposals for integrated markets and renewable energy support, while the Norwegian political discourse on this issue was nearly absent until the beginning of the millennium. Even if this research project is mainly concerned with regulatory choice, an understanding of history in relation to renewable energy issues in general seems necessary as a way of gaining a more holistic understanding of the actual choice of policy instrument in Norway and Sweden.

Swedish renewable energy policy was first initiated as a response to civil protests and political controversies on the role of nuclear energy in the Swedish energy system. Throughout the first part of the 20th century, Sweden's hydropower resource base was widely exploited, but the exploitation was later halted by natural as well as politically defined limits (Vedung and Brandel 2001, 240). In order to cope with the steadily increasing energy demands coming with the industrialization and modernization of Swedish society, the energy industry then turned to nuclear power. As a result, an extensive nuclear power build-up took place throughout the 1960s and 1970s. Supply concerns persisted, however, now accompanied by the political and environmental controversy associated with nuclear power. These concerns were only enhanced by the oil crisis in the 1970s, and later the Three Mile Island accident in the Unites States in 1979 (Neij 2003, 72). Increasingly robust protests within civil society and the political elite led to a referendum on the role of nuclear energy, which resulted in a decision to phase out nuclear energy as much as possible while still being consistent with respect to electricity needs. In this regard, renewables were considered as an important alternative to nuclear energy, and the government put in place financial support systems for the renewables industry.

Norwegian energy developments throughout the 20th century are substantially different to those of the Swedish. This is mainly due to the different resource base, and thereby a looser attachment to environmental and supply concerns. Hydroelectricity, due to elevated high lakes and heavy rain and snowfall, has been the dominant source of electricity production

ever since the Norwegians started to produce electricity. Today hydroelectric production accounts for 99 per cent of total electricity production, and Norway has traditionally been a net exporter of electricity. In addition to being rich with hydrological resources, the Norwegian continental shelf is abundant with oil and gas reserves, which have made Norway the third-largest exporter of crude oil in the world and the second largest supplier of natural gas to Europe. The Norwegian exploitation of natural resources has not been without controversy, and has led to protests within the civil society. The most prominent example is the attempt by civil protesters to block the construction of a hydropower dam in the Altavassdraget drainage basin in the northernmost part of the country in the 1970s. Despite such protests, though, exploitation of hydrological resources continued throughout the 1980s and the 1990s, which contributed to the maintenance of a stable electricity balance and a general situation of electricity surplus. Given this situation, Norway has traditionally not been as concerned with the same energy supply issues that have been a driving force of renewables policy in Sweden.

4.3 Summing up

The historical review shows that the energy policy field is currently undergoing a phase of transition from being primarily a matter of national concern to becoming a core matter of European integration and harmonization. This transformation implies a transition from national monopolies for electricity production and distribution towards deregulation and integration of European energy markets. This process is, however, slowed down by a number of reluctant Member States, which have not yet completed a full transformation of their national electricity sectors. Others, with the UK and Nordic countries at the forefront, succeeded in a profound and comprehensive deregulation process at an early point in time which resulted in the world's first international market for electricity trade - the Nordic market exchange, NordPool.

In a parallel process, renewable energy policies have been developing both individually in the Member States and through coordinated efforts at the EU level. However, due to the Commission's failure to get acceptance for a common mandatory strategy for renewable energy stimulation , specifically a pan-European green certificates scheme, Member States have continued to develop strategies according to their unique national contexts. In a similar way, the Swedish and Norwegian approach to renewables issues has differed on the basis of

distinct resource conditions for electricity production, and their strategic approaches have diverged accordingly.

Nevertheless, despite the unilateral policy approaches taken by member states, a certain pattern of policy convergence has emerged within the EU. The use of feed-in tariffs has spread throughout Europe over the last two decades and is currently the most widely used policy tool. Feed-in tariffs are also being increasingly recognized as the most successful tool due to their ability to promote large volumes of new electricity from renewables as well as stimulate the renewable energy industry.

5 Empirical Inquiry

The empirical inquiry presents the evolution of renewable energy policy in Sweden and Norway in the 1990s and 2000s with particular focus on the choice of regulatory measures. The historical review showed how renewable energy issues have attracted relatively more political attention in Sweden than in Norway. Renewable energy policies have therefore taken different tracks and have developed with a different pace in the two countries. Firstly, the Chapter examines these developments with a view to understanding why these different tracks eventually led to the same conclusion: the use of a mandatory green certificate scheme for the promotion and use of renewable energy. Secondly, the Chapter investigates relevant issues regarding the bilateral negotiation process that was finally concluded with the establishment of the joint Swedish-Norwegian green certificate scheme.

5.1.1 Sweden 1990 – 2003: Creating Long-Term Strategies for Energy Transition

This section investigates renewable energy policy development in Sweden. It shows how a mixture of practical and political factors guided Swedish policy-makers towards regulatory change, and that the decision to introduce green certificates was relatively uncontested.

Cost-Efficiency Manifests as Main Governing Principle for Future Policy-Making

In the beginning of the 1990s, Sweden enacted a new set of guidelines for future policy-making in the energy area, emphasizing a sustainable transmission of the energy system through cost-efficient measures (SMEEC 1991). The emphasis on cost-efficiency was based on concerns for the international competitiveness of the large Swedish heavy industrial sector. These industries are important consumers of electricity and are dependent on stable and low electricity prices in order to maintain their international competitiveness. The requirement to keep prices as low as possible has therefore become a core guideline for future Swedish policy-making in the energy field (SMEEC 1997).

These principles were reconfirmed in the guidelines in the 1997 'Energy Act' resulting from a block-crossing multi-party agreement representing the governing Social Democratic Party, the Left Party and the Center Party. The Energy Act formed the basis for the "Energy Policy Program" from 1998, introducing a long-term strategy for future policy-making in the energy area. A central part of the program was a renewed ambition to phase-out nuclear power, this time by closing down two nuclear reactors in 1998 and 2001 respectively. The last of

Sweden's reactors was to be closed by 2010 (SMEEC 1997). In order to successfully progress this transition, increased generation through renewable energy sources was needed. Hence, the Energy Program introduced a 1.5 TWh target for renewables by 2002. To this end, three major sub-programs providing incentives over a period of five years were introduced: investment subsidies, an energy efficiency program, and funding for technology research and development. Accordingly, the government established tax incentives, purchase obligations on local utilities, energy tax exemptions and investment support for wind, bio fuel, small hydro and solar power (SMEEC 2000, 10). Hence, direct incentives provided within a limited time period were the preferred method of Swedish policy-makers at that time.

Searching for New Strategies to Cope With Increasingly Ambitious Targets

A couple of years later the government again called for new strategies in the renewables area, recognizing that existing policy tools contained flaws which made them unsustainable in the long term. First, existing policy measures were due to expire in 2002 and were unable to meet the increasing supply needs in relation to the plans for nuclear phase-out. Second, existing measures were incompatible with market deregulation. It was argued that targeted support to certain technologies could lead to market distortion and hinder technological development. Third, market liberalization had resulted in declining electricity prices, which made investment in new capacity less profitable. Higher support levels were therefore needed (SMEEC1999, 95). A fourth and important intervening factor was the pressure for change from the European Commission, which claimed that some of the subsidies and the environmental bonuses were in conflict with EU state aid rules. Swedish policy-makers interpreted the Commission's message as a further reason to look for new policy solutions to stimulate renewable energy production (Åstrand 2005, 113).

Against this background, the government established an inter-ministerial working group in December 1999, assigned to develop a proposal for a long-term strategy to stimulate electricity production from renewable energy sources (SMEEC 2000, 20). The group was composed of four representatives from the Ministry of Enterprise, Energy and Communications, three representatives from the Ministry of Finance, two representatives from the Ministry of Environment, one economist, and a number of experts from the Swedish Energy Agency. Notably, the composition of the group was largely state centered. In addition, a reference group was established consisting of actors in the power sector and the political parties representing the energy political alliance from the 1997 Energy Act (the Social

Democratic Party, the Left Party and the Center Party). The parties in the political opposition were not included in the process (Interview IX).

The Ministry of Industry[7] formulated a set of criteria on which the search for a new policy tool should be based. The new tool should stimulate technological development according to principles of cost-efficiency; create reasonable conditions for existing installations; avoid market distortion; enable internationalization, and create stable, long-term conditions through subsidy schemes independent from state funding (MEEC 2000, 185). The last point was (in addition to concerns for EU state aid legislation) based on a situation where 'the increasingly ambitious targets for renewables started to render the energy transmission process a costly one for the Swedish state' (Interview V).

The main strategy of the working group was to evaluate foreign support schemes on the basis of the set of criteria referred to above. Hence, the policy tools chosen for closer examination were found in countries that had already carried out (or were in the process of carrying out) a full transition of the electricity system. In addition, the working-group was cognizant of the work of the European Commission in the field and anticipated that the EU would attempt to establish a European-wide quota-based policy tool (i.e. green certificates scheme). This assumption was based on the EU white paper 'Energy for the future: Renewable sources of energy' which signaled the Commission's intention to do so in the near future. Such development was strongly supported by Swedish authorities and enhanced their interest in green certificates (Interview VII). The policy-makers therefore paid strong attention to countries that had put in place different versions of quota-based trading. In addition, policy-tools in countries participating in the Nordic power exchange were considered.

Accordingly, the working group examined policy tools in Denmark, the Netherlands, Great Britain, Germany, the US, Norway and Finland. Germany did not directly fulfill the criteria referred to above but could show to the most efficient policy tool in Europe and was therefore worthy of consideration: (Interview XI). Of the policy tools examined, the Dutch voluntary green certificates and the Danish schemes were most closely examined. Denmark had for several years used feed-in tariffs, mainly to promote wind power generation, but the newly

[7] Today labeled Ministry of Energy, Enterprise and Communication (MEEC).

elected Socio-Democratic government planned to replace it with a green certificate scheme (Midttun et. al. 2003, 10).[8]

Interestingly, Midttun et. al. (2003, 23) found that the initial version of the Swedish certificate scheme put into force in 2003 was very similar to the proposed Danish scheme.

> Similar to the Danish model each green certificate should represent a production of 1 MWh of RES-E. The model guaranties a minimum price of SEK 60 the first year reduced in steps to 0 after 6 years. The penalty charge is 150 % of the average certificate price during the year but with a maximum of SEK 175 for certificates that should be reported during 2004, and SEK 240 for certificates for 2005. Like in the Danish model, the demand for certificates is created, by imposing a quota on electricity consumption. The electricity suppliers manage the quota obligations for all its customers, and the cost of the electricity certificates is passed on to consumers, through their electricity bills.

The head of the working group confirmed that the Danish scheme was indeed an important source of inspiration for the Swedish policy-makers (Interview VII).

The report, presented in March 2000, recommended a mandatory green certificate scheme and was subsequently scheduled for a public hearing. The result of the hearing gives evidence of a relatively uncontested policy process. The majority of the stakeholders were positively inclined towards the government's proposal (SMEEC 2001). Actors likely to be obliged to purchase certificates (*Svenska kraftnät, Sveriges Elleverantörer, Industriförbundet*) emphasized that it was important that a new scheme was compatible with market mechanisms. Such arguments were also put forward by the industry organization for power producing companies, *Kraftverksföreningen.* Another common line of reasoning considered that Swedish renewable energy policy should be developed according to relevant developments in the EU, and supported the working group's belief that the European Commission was going to put efforts into establishing a European-wide scheme in the future. Interestingly, the largest power utility, Vattenfall, was not included in the hearing. According to one of the interviewees in the Ministry, Vattenfall remained passive throughout the whole process: 'I believe Vattenfall supported the proposal because they would clearly benefit from it, but we did not hear much from them. I believe they realized that the proposal was going to

[8] The Danish government proposed in 2000 to establish an obligatory green certificates scheme in Denmark. But the proposal was postponed, and later abandoned. Instead, Denmark continued to use feed-in tariffs.

be adopted anyway and did not see the need to put much effort into the process' (Interview IV).

Block-Crossing Alliance Ensures Adoption of Proposal in Riksdagen

In November 2001, the Swedish government introduced to Riksdagen a proposal to establish a green certificate scheme starting from 2003 (SMEEC 2001, 77). As noted above, none of the parties in the opposition (except the parties participating in the block-crossing alliance) had been included in the evaluation process. Hence, when the report was addressed to Riksdagen, the parliamentarians were confronted with a situation where they had to choose between a *yes* or a *no* vote, rather than discussing what kind of instrument should be chosen (Interview IX). The proposal was not immediately approved due to ambiguities regarding the actual functioning of the scheme, however, the government remained confident that it was going to be accepted by Riksdagen as the block-crossing majority party alliance would ensure its adoption (Sydsvenskan 2002).

Despite the relatively calm political discourse regarding regulatory change in the renewables field, some actors were opposed to the idea of green certificates. The most prominent opponent was the Swedish Wind Power Association. According to interviewees, the association approached parliamentarians, the Ministry and the national regulator, Energimyndigheten, arguing that the scheme would result in a price that would be too low for investments in new wind power plants to be economically profitable, and that wind power was therefore going to fall out of the Swedish electricity mix within the next decade. The Wind Power Association clearly preferred feed-in tariffs to green certificates. Likewise, small-scale producers argued that the certificate scheme would primarily benefit large power producers and criticized the lack of technology specific support (Fredrikson 2001, Dagens Industri 2001, Interview I, II, III). The Conferderation of Swedish Enterprise, Svenskt Näringsliv, argued, to the contrary, that the scheme would result in higher prices that would reduce the international competitiveness of Swedish industries, and claimed that industrial actors should be exempted from the scheme (Tidninganas Telegrambyrå 2002).

Following the Riksdagen's initial rejection of the proposal, it was revised and presented in a new energy bill proposition in March 2002, and introduced to Riksdagen in June 2002 (SMEEC 2001). In response to the concerns of the Swedish Wind Power Association, the bill proposed the inclusion of an interim arrangement for the wind industry in the form of individual investment support over a period of seven years. Further, the Swedish heavy-

industrial sector was now excluded as a certificate liable actor. Finally, the bill included a proposition to increase renewable energy production an additional 10TWh by 2002 – 2010.

The Government was able to keep the party alliance from 1997 together and ensured passage of the energy bill. The Green Party accepted part of the proposition (including the green certificate scheme), while The Moderate Party, the Liberals People's Party and the Christian Democratic Party voted no to the whole bill (Sydsvenskan 2003). These parties' skepticism was based on a consumer's perspective in that they referred to increased costs for consumers and too much bureaucracy (NU 2001, 69). According to one of the interviewees, the Green Party was skeptical at first because the bill was not ambitious enough, but eventually supported the proposition (Interview IX, NU 2001, 70). With the adoption of the bill the green certificate scheme was now ready to be brought into operation from 1 May 2003.

An Uncontroversial Decision

When the scheme was introduced in 2003, it did not attract much attention. In the following years, however, the scheme was criticized for not providing enough support to wind power and undermining immature renewable energy sources. According to a representative of the umbrella organization for wind power associations and small scale producers, Sero, 'The scheme is excessively difficult and is moreover expensive. A system with fixed support levels calculated according to each technology would have been better' (Eriksson 2004).[9] The largest environmental organization, Natruskyddsforeningen, criticized the fact that heavy industry was exempted from the scheme, which meant that one third of Swedish consumers were exempted from any obligation to pay for a greener future (Svante 2002). Taken as a whole, however, the Swedish green certificate scheme was realized with minimal controversy or opposition (Interview V, VI, VII, VIII, IX, X).

5.1.2 Norway: 1990 – 2004: Changing Conditions in a Changing Environment

While the Swedish policy tool selection process was largely state centered, straight foreward and uncontroversial, the Norwegian story is quite the opposite. This difference explains why the Norwegian story is relatively longer than the Swedish.

Supply Concerns Put Renewable Energy Issues on the Political Agenda

[9] Translated from Norwegian: Det är ett onödigt krångligt och dessutom dyrt system. Ett fastprissystem, fast med olika garantipris beroende på typen av elproduktion, skulle vara bättre, säger Olof Karlsson, organisationens ordförande.'

In the beginning of the 1990s, renewable energy issues were not given much political attention in Norway, primarily due to a relatively generous supply situation as described in the previous chapter. Public financial support (mainly taxes and subsidies) was provided on an ad-hoc basis to a limited set of renewable energy sources (Midttun et. al. 2003, 14). Yet, as was the case in Sweden some decades earlier, it was an increased concern for the general supply situation that made renewable energy an issue subject to political discussion.

After a year of record low precipitation levels, 1996 marked a statistical turning point that evidenced a shift from a general situation of electricity net export to net imports (NMEP 2012). This change was partly a result of a drop in investment in new capacity due to the falling prices following market liberalization, in combination with consumption rise resulting from higher levels of welfare and industrial activity (Buan et. al. 2010, 2). In addition, the Swedish plans for nuclear phase-out and the Danish plans to reduce the use of coal were expected to have negative implications for the Nordic supply situation (NMEP 1998). The vulnerability of the Norwegian electricity system, which was dependent on hydro power as the sole energy source, now became evident. It was within this context that renewable energy sources surfaced on the political agenda as possible supplements to hydro power electricity generation.

As the market was now regulating the price, the limited access to electricity caused a significant price augmentation. Given the historically low Norwegian electricity prices (relative to most other European countries), this large price fluctuations was very noticeable for Norwegian consumers and attracted a lot of public attention. As in Sweden, electricity consumption accounts for a large share of energy use (four times higher than the European average) partly due to a large heavy-industrial sector (NMEP 1998). The energy debate thus started to revolve around questions of how to resolve the situation, although the political discussion focused on the role of gas for inland electricity use rather than how to stimulate investments in renewable energy.

It was within this context that the Center-Left minority coalition government,[10] in March 1999, presented the first governmental energy report that raised the possibility of establishing a green certificates scheme in Norway (NMEP 1999). This government was reluctant to approve new gasworks without the announced new Carbon Capture and Storage-technology

[10] The government was composed by the Christian Democratic Party, the Center Party and the Left Party.

promised by a large Norwegian technology company, Naturkraft, and preferred to emphasize consumption reduction and increased use of renewable energy sources to meet increasing demand. In the report, the government announced the need for a transition of the Norwegian electricity system in order to cope with the challenges in the energy field.

The report emphasized consumption reduction and renewable energy promotion through a three-fold target: 1) limit energy consumption relative to a non-interventionist situation, 2) 4 TWh increase of water-based heat from renewable energy sources, heating pumps and waste heat by 2010, and 3) to build wind power plants with a 3TWh annual production by 2010 (NMEP 1999). The emphasis on wind should be seen in light of the fact that, although Norway has very favorable conditions for wind power due to windy coasts and large ocean areas, wind power generation is relatively expensive because of the very demanding geography, extreme weather conditions, poorly developed infrastructure and high cost of labor (Norwea and Energi Norge 2013). For this reason, there have been proposals and lobbying for the development of new windmill technology more adapted to Norwegian conditions.

The report commented on a number of policy tools that could assist in reaching the three goals. The idea of creating a 'market for green electricity' was mentioned for the first time,[11] and reference was made to experiences with such a scheme in other European countries and to the fact that the EU was considering a similar solution. It was also noted that the Nordic governments were engaged in the Nordic Council in a coordinated effort to steer the Nordic electricity market in a more sustainable direction, and that this could be achieved through quota trading, common taxes or 'markets for green electricity' (cf. green certificate scheme). The close communication in the Nordic Council did not lead to anything specific at the time, however, as it was noted that such harmonization was dependent on relevant developments in the EU.[12] The report did not evaluate green certificates further.

[11] «Markeder for grønn energi og grønn el kan bli interessante virkemidler» (NMEP 1999)

[12] «Efforts have been made from the Nordic governments' side to contribute to further development of the Nordic electricity market in a sustainable direction. The Government will push to include the environmental costs of electricity production in the prices, for instance through quota trading, taxes or green electricity markets, cf chapter 4. This issue is being discussed in the Nordic Council of Ministers, among other things in relation to the Nordic Council. Harmonization of the Nordic electricity market will have to relate to the progress within the EU on this area. Another important challenge in terms of energy policy is that the perspective for cooperation has expanded to include the energy sector in all the countries surrounding the Baltic Sea" (NMEP 1999). *Translated from Norwegian.*

Instead, the main message of the report was that the government was considering the possibility of establishing a separate institution for the operation of the announced energy transition. This was based on a recommendation of a working-group put together by the previous government some years earlier, which argued that the administrative system for energy efficiency stimulation (ENØK) was fragmented and needed to be gathered within one institution. This announcement was later followed up with a proposal to establish a new institution assigned to administer the assets of the new Energy Fund, labeled Enova SF, which was to be financed through the state budget and supplemented by the imposition of a levy on each consumer's electricity bill (NMEP 2000a).

As in Sweden, concerns for cost-efficiency has served as the main guideline for policy-makers in the energy field since the 1980s, most clearly expressed through the early deregulation of the electricity sector in the beginning of the 1990s (see Chapter 4, section 4.1.1.). Nevertheless, reflecting the targets formulated in the governmental report on energy addressed to the Norwegian parliament, Stortinget, the previous year, the Enova scheme was designed to emphasize wind power development, consumption reduction and the use of heat. However, the three-folded target merged into one holistic target, set at 10 TWh, and the emphasis on the development of specific technologies was obscured. In 2002, moreover, the investment support to wind power was reduced even further from 25 to 10 percent (Statkraft 2007). Following concerns for cost-efficiency, the Ministry instructions emphasized that Enova should first and foremost provide support to the most cost-efficient projects: "In order to promote increased competition and through the right set of incentives in all segments, the Ministry wants to stimulate more cost-effective solutions" (NMEP 2000a).[13]

Green Certificates Unify Environmental Organizations and Power Producers

In a parallel process, actors in the societal sphere searched for new policy tools and got wind of quota based trading of green energy. The first actor to come up with the idea of a green certificates scheme was the environmental non-governmental organization, Bellona. As an environmental organization, Bellona was not only concerned about rising prices of electricity, but with the fact that increased imports of electricity also implied increased domestic use of 'dirty' conventional energy sources. Hence, the constrained supply situation was not only a problem for Norwegian consumers, it also led to increased GHG-emissions stemming from

[13] Translated from Norwegian: 'Ved å leggje til rette for auka konkurranse og ved å leggje vekt på riktige incentiv i alle ledd, ønskjer departementet å stimulere til meir kostnadseffektive løysingar.'

the Nordic energy sector. In addition, Bellona directed attention to the fact that existing measures were unpredictable (partly due to their dependence on state budgeting), more expensive than necessary, and generally perceived to be too weak. For these reasons, Bellona started to look for new and forceful policy tools to stimulate new renewable energy production in Norway (Bellona 2002).

The policy-searchers in Bellona did not evaluate all kinds of promotion measures, but were guided by six pre-defined criteria. The solution should: 1) be efficient and measurable, 2) provide long-term conditions in the most cost-efficient way possible, 3) be technically and socially feasible, 4) be possible to extend to other countries, 5) stimulate new technologies, and 6) be compatible with the current economic system (market economy) (Bellona 2002). In addition, Bellona was anticipating a European-wide green certificate scheme to be adopted sometime in the future, and it was therefore important to be ahead of the EU in order to gain first-mover-advantages (Sauar 2000). According these considerations, green certificates surfaced as the most promising solution.

Around the same period, central actors in the Norwegian power sector were for the first time introduced to this new kind of market measure for renewable energy promotion. Representatives of the power sector who are today part of the largest industry organization for power producers, Energi Norge[14], were introduced to green certificates in a seminar called Sustain 99 in the Netherlands. They brought the idea back to Norway and started the Renewable Energy Certificate System (RECs) Norway[15] (Hager forthcoming). Up until then, the use of green certificates as a policy measure was unknown to Norwegian actors.

This parallel learning process led to a rather original actor-coalition of environmental organizations and actors in the power sector. The interests of these actors usually diverge as the prior are primarily concerned with environmental protection and are thereby reluctant to increased exploration of natural resources, whereas the power sector is, at least in the aftermath of market deregulation, mainly concerned with possibilities for increased profits

[14] In 2001-2009, Energi Norge was labelled Energibedriftenes landsforening (EBL). The organization is a merger of the two former organizations Norges Energiverkforbund (NEVF) and Energiforsyningens Fellesorganisasjon (EnFO) (SNL, 2013a).

[15] RECS Norge is a national interest organization organized under RECS International, which works for establishing a standardized electricity certificate system in all EU member states (RECS, 2013).

and constantly in search for new areas of exploration. Since increasing electricity generated from renewable energy sources leads to reduced GHG-emissions from the energy sector and is at the same time an opportunity for the power sector to gain large profits, the field of renewable energy emerged as a policy area where these, normally contrasting, interests could meet. Hence, on the basis of these merging interests, Bellona initiated collaboration with central actors of the power sector leading to joint lobbying efforts for the introduction of a green certificate scheme in Norway.

From One Approach to Another – A Common Call for More Ambitious Targets

Reflecting the instability in Norwegian politics on the field of renewable energy, the Storting had, within the same month as the adaption of Enova SF, asked the government to consider the possibility of establishing a green certificate scheme adapted to Norwegian and Nordic conditions (NMEP 2000b). Again, developments in the EU were used as main reference – arguing for an equal policy tool in Norway:

> The majority refers to the ongoing work on a mandatory green certificate market, which is being developed in the EU, including requirements on the part of the end-user to purchase a certain share of renewables. The majority asks the Government to assess a similar system with green certificates adapted to Norwegian and Nordic conditions (EM 2000).[16]

In addition to the initial lobbying efforts of Bellona, the Storting's request was largely a result of lobbying from Statkraft (Boasson 2012, 138, Mathismoen 2003, Interview IV).

In March 2000, the Center-Left minority coalition Government resigned after a vote of no confidence on the gas-power issue. The Labor party formed a caretaker government, but was replaced by a Centre-Right government in the election later the same year. It was now the new government's task to respond to the Storting's request. This time, the 'gas-friendly' Conservative party was part of the government and the emphasis on renewables could be expected to lose some ground. The fact that the government's response to the Storting's

[16] Translted from Norwegian: «Flertallet vil i denne sammenheng vise til arbeidet med et pliktig grønt sertifikatmarked som er under utvikling i EU, der det settes krav til leveranse av en viss andel fornybar energi til sluttbruker. Flertallet vil be Regjeringen utrede et tilsvarende system med grønne sertifikater tilpasset norske og nordiske forhold.»

request was included in a report labeled "Domestic Use of Gas" [17] could be interpreted as such. As the title of the report indicates, the report was mainly concerned with the gas question that remained one of the core issues of the Norwegian climate and energy political debate – largely overshadowing renewable energy issues. However, the Government´s response was that regulatory change on this field was premature as the Storting had just decided on the establishment of Enova SF. Moreover, the Government pointed to the debates in the EU on whether or not a European-wide certificate scheme was going to be established. In addition, Norway had not yet negotiated with the EU on the relevance of the 2001 Directive (NMEP 2002).

At the time when the government positioned itself with a wait-and-see attitude, the before mentioned actor-coalition of environmental organizations and actors from the power sector was formalized and now made a common call for a Norwegian green certificate scheme.[18] The winter of 2002 again saw an electricity price rise, which attracted a lot of attention in the Norwegian media and reactivated the debate on renewable energy. In February 2002, these actors passed on a common note to the Storting with the main message that existing measures were not forceful enough to meet the ambitious 10 TWh target for renewable energy and energy efficiency. In addition, the document pointed to the fact that Sweden was about to introduce a Swedish market, which would open up the bilateral trade of certificates, and that a Danish proposal was also on the table. With the common Nordic electricity market, the prospects for a joint scheme were as positive for the Nordic market as a whole. In the note from the alliance, for instance, it was asserted that the most efficient way to push forward an international market would be to establish a Swedish-Norwegian, or a Nordic market to begin with and that such a market should be designed so that it could easily be connected with other countries (Bellona 2003). Due to the original composition of the actor-coalition, the document attracted attention in the Storting. In addition to the note, the group invited politicians to seminars in order to spread the idea of green certificates (Kolbeinstveit 2009, 22).

17 Translated from Norwegian: 'Om innenlands bruk av naturgass'.

18 The coalition was composed of the following actors: Agder Energi, Bellona, El & IT - Forbundet, Energibedriftenes Landsforening (EBL), Enviro Energi, KS Bedrift, Norsk Bioenergiforening (NoBio), Norsk Hydro, Statkraft og Østfold Energi.

By this stage, a number of Norwegian power producers were participating in the Renewable Energy Certificate scheme (RECs). This system was initiated by a group of power producing companies and organizations within a framework of a non-binding cooperation on a system for international trade of certificates for electricity generated from renewable energy sources. Statkraft was the first Norwegian actor to sell certificates within this system (Netfonds 2002). New companies emerged on the basis of an ambition to profit through this system. One of these was Enviro Energi – a merger of a set of already established power companies.[19] The main task of this new company was to sell green certificates and stimulate the development of alternative energy sources, other than hydro power (Sellæg 2002). By participating in this scheme the actors gained experience on the functioning of a green certificates scheme for renewables promotion.

'Power crisis' puts pressure on the government

The winter of 2003 became especially troublesome. Electricity prices increased dramatically due to dry weather – a situation which resulted in vivid protests throughout the whole country. The winter of 2003 put further pressure on the government's wait-and-see approach. Electricity prices increased dramatically due to dry weather, which resulted in robust protests throughout the whole country. Opinion polls showed declining support for the governmental parties and the energy minister received more than 2000 letters from exasperated electricity consumers (Olufsen 2003, NTB 2003). The Norwegian media referred to the situation as a historic power crisis without precedent (e.g. Sellægg 2003). The Storting responded to the crisis by reviving the arguments for more ambitious targets for renewable energy production and the Storting again asked the government to further assess the possibility to introduce green certificates in Norway:

> The Storting asks the Government to take initiative to - preferably – a common Norwegian/Swedish mandatory green certificate market, which could possibly be coordinated with an international certificate market, with the objective to present a concrete proposition to the Storting as soon as possible, and no later than spring 2004 (NMEP 2003).[20]

19 The companies were: TrønderEnergi, Nord-Trøndelag Elektrisitertsverk (NTE), Troms Kraft, Helgelands-Kraft, Oppland Energi and Eurel

[20] Translated from Norwegian: «Stortinget ber regjeringen ta initiativ til – fortrinnsvis – et felles norsk/svensk pliktig grønt sertifikatmarked som eventuelt kan samordnes med et internasjonalt sertifikatmarked, men sikte på å legge frem et konkret forslag for Stortinget så snart som mulig, og senest våren 2004.»

In the report it was argued that, to ensure an efficient realization of political objectives set for the energy sector at the time, a new scheme should aim to effectively increase the capacity of energy produced from renewables and at the same time ensure stable and long-term conditions for investors, avoid market distortion and ensure equal treatment for all kinds of renewable energy sources. To this end, green certificates were regarded as the most suitable measure (ibid.). The Storting also emphasized, as that the Norwegian power market was part of the open, Nordic power market, any new measures should make it economically viable to invest in renewable energy production and avoid unintended consequences and competition distortion.

The Ministry of Energy and Petroleum gave the Norwegian Energy Agency (NVE) the mission to report on a joint green certificate market with Sweden. NVE established an interdisciplinary working group consisting of experts with engineering, economic, scientific and legal competencies. The group considered written material evaluating support systems for renewable energy in different countries with a main emphasis on various types of green certificate scheme and communicated with actors in the power sector through seminars and meetings. It concluded that a mandatory green certificate market would serve as a forceful policy tool on three conditions: 1) a sufficiently high ambition level, 2) technology neutrality and 3) integration with Sweden.

5.1.3 The Negotiation Process between Norway and Sweden

In the summer of 2004, following the Storting's request, the Norwegian government initiated discussions with Sweden on a common certificate scheme. The negotiations went through two negotiation rounds, the first of which ended in deadlock in 2006, and the second in agreement in 2009 (although not signed until in 2012). Again, the information base is slightly biased towards the Norwegian case for the same (natural) reasons referred to above.

1st Negotiation Round (2004 – 2006): The Parties Fail to Agree

Sweden welcomed the Norwegian proposal to create a common certificate market for renewables stimulation (Interview I, Interview II). When Sweden introduced its unilateral scheme, it was noted that further internationalization was desirable due to more favorable

economies of scale leading to increased cost-efficiency and more financial flexibility in the market (SMEEC 2001). This was reconfirmed in the assessment report on the consequences of market integration with Norway:

> (…) through international trade the advantages of a green certificate market will be fully exploited. The cost-efficient advantage of the market increases with its size as the same target can be obtained to a lower cost relative to a unilateral scheme. Through market expansion, improved premises for a more well functioning market is created, with reduced price fluctuations, reduced risk for market monopoly and potentially reduced political risk (Energimyndigheten 2005, 11).[21]

However, market integration with another country presupposed that the other trading country fulfilled a set of predefined criteria (SMEEC 2001). These criteria demanded a reciprocal opening of electricity markets, no parallel subsidies apart from certificates, and specific demands on the quota level in the participating countries.

In September 2005, a coalition government comprised of the Norwegian Labor Party, the Socialist Left and Center Party was elected in Norway. In the intergovernmental negotiations on a joint political platform for the governmental period, renewable energy was not given much attention and green certificates were only briefly referred to in the declaration (Norwegian government 2005). Nevertheless, the issue was the subject of difficult debates between the parties in the coalition government. The discussion was not so much focused on whether or not green certificates were needed but rather on questions regarding the role of small scale hydro power in the scheme[22]. The Socialist Left and Labor Party argued that hydro power was already a well established industry in Norway and that old small scale hydro power plants were not needed for additional subvention through green certificates. The Center Party, which traditionally defends and promotes trade and industry in regional areas, was opposed to such reasoning and wanted all types of hydro power plants to be eligible for support.

[21] Translated from Swedish: (…) [det er] vid en internationell handel [at] fördelarna med elcertifikat-systemet kommer i full utsträckning. Med en större marknad kommer kostnads-effektiviteten i systemet att öka i och med att samma mål kan uppnås till en lägre total kostnad än om länderna själv gör samma ansträngning. Om marknaden utvidgas skapas också förutsättningar för en mer välfungerande marknad med lägre prissvängningar, mindre risk för marknadsmakt och potentiellt mindre politisk risk. (Energimyndigheten 2005, 11).

[22] Hydro power plants are usually classified according to their size: large scale (> 10MH installed capacity) and small scale (<10MW installed capacity).

The Socialist Left and the Labor Parties ultimately prevailed against the Center Party (Jacobsen 2005, Barstad 2013)[23] and, going into the negotiations with Sweden, the Norwegian position was to exclude small and large scale hydro power from the scheme. The Swedes, on the other hand, were prepared to maintain their already established definition of certificate eligible renewable energy sources, which included small scale hydro power plants. Another difficult issue was the distribution of payment obligations. Sweden insisted on an equal distribution of payment obligations set at 12 TWh each (Stortinget 2006). The Swedish authorities feared that a relatively lower Norwegian target would result in the realization of projects in Norway at the expense of Swedish projects, as the least costly projects were situated in Norway (Interview VIII, Energimyndigheten 2005). The Norwegian government, on the other hand, wanted a lower Norwegian target relative to Sweden's on the grounds that the Norwegian population was half that of Sweden. If Norwegians were to pay as much as Swedish consumers, it would be more expensive for Norwegian consumers in absolute costs. According to interviewees, the Norwegian negotiators approached the Swedish position during the negotiations, but the Swedish delegation stood firm in its demands and were not prepared to compromise (Interview I, V). The Norwegian delegation were not in a position to accede to Swedish demands for equal payment obligations and the negotiations failed (Interview I).

At this stage, the negotiators were not subject to any significant lobbying from domestic actors on either side. One of the interviewees in the Swedish Ministry noted that the Norwegian environmental organization Zero was very much interested in the progress of the negotiations, but assessed this was more out of curiosity than an attempt to influence the negotiation outcome (Interview VI). Most actors expected the negotiations to be a formality and assumed that a certificate scheme would be ready for implementation in the near future. In these circumstance, they did not therefore not see any need to put pressure on the negotiators (Boasson 2012, 145).

[23] The decision to exclude old hydro power plants from the scheme was met with harsh protests from small scale power producers (Jacobsen 2005). In December 2003, the former Minister of Petroleum and Energy had promised via a press release that small scale hydro power with housing start after 1 January 2004 was going to be included in the scheme, also if such a scheme was to be introduced at a later stage (NMEP 2003). Small scale producers had invested according to this promise at the time and they now felt backstabbed.

On 16 January 2006, the Norwegian Minister of Petroleum announced the indefinite deferral of a common green certificate market in Sweden and Norway, and cited the unfair Swedish requirement for an equal distribution of payment obligations as a core reason:

> The discussions with Sweden have been related to how much new electricity production the countries should finance in the period 2007-2016. Sweden was prepared to increase its payment obligation to 12TWh during this period. Swedish authorities required an equal payment obligation for Norway. Norway's population is half of that of the Swedish. With an equal payment obligation for Norway and Sweden, the Norwegian consumers would have to buy twice as many certificates relative to Swedish consumers. This would have resulted in higher costs for Norwegians than for the Swedish (Stortinget 2006a).[24]

The Swedish Minister of Energy at the time, Mona Sahlin, along with other Swedish representatives in the negotiations, alleged that Norway had not geniunely wanted a green certificate scheme, and that the Norwegian delegation had not been negotiating in good faith. Caroline Hellberg in the Swedish Energy Agency told the Norwegian newspaper, Dagbladet: 'The Norwegian Government had already decided that it was not interested in a green certificate market with Sweden. Neither the ambition level nor the size of power plants was decisive for the negotiation stalemate' (Hegevik 2006). Following the Norwegian Minister's announcement, discussions in the Storting revolved around the reasons for the negotiation failure, with several representatives questioning the math skills of the Prime Minister by referring to their own calculations that challenged the assertion that Norwegian consumers would be worse off. They suspected that the Swedish Minister's allegations had certain elements of truth (Stortinget 2006b). The Norwegian Minister of Energy and Petroleum, however, claimed that the article was based on misreported information: 'Mona Salin contacted me after the publication in Dagbladet and rejected what was written. Nobody is to blame for the negotiation deadlock, was what Mona Salin – according to the conversation we had - claims to have said to Dagladet' (Stortinget 2006b).[25] In any case, the official Norwegian explanation for negotiation deadlock has remained unchanged: equal distribution

[24] Translated from Norwegian: «Drøftingene med Sverige har vært knyttet til hvor mye ny elproduksjon landene skulle finansiere i perioden 2007-2016. Sverige la opp til å påta seg en økt betalingsforpliktelse på 12 TWh i denne perioden. Svenske myndigheter stilte krav om at Norge skulle ta en tilsvarende betalingsforpliktelse. Norge har halvparten så mange mennesker som Sverige. Ved lik betalingsforpliktelse for Norge og Sverige må den norske forbruker kjøpe dobbelt så mange elsertifikat som den svenske forbruker. Dette ville igjen gitt langt høyere kostnader for nordmenn enn for svensker»

[25] Translated from Norwegian: 'Mona Salin kontaktet meg etter oppslaget i Dagbladet og tilbakeviste det som stod der. Ingen har skyld i at ikke vi klarte å komme fram til et resultat, var det Mona Salin – i følge den kontakten hun tok med meg etter oppslaget i Dagbladet – hevdet at hun hadde sagt til Dagbladet'

of payment obligations in Norway and Sweden would be unfair and too expensive for Norwegian electricity consumers.

2 *nd* Round of Negotiations (2007 – 2012): The Parties Agree

The negative negotiation outcome was met with surprise in Norway. As noted above, the utilities and environmental organizations that had lobbied for green certificates in 2002-2004 had not been overly concerned with the negotiations. When it became clear that the Government had withdrawn from the negotiations, Norwegian actors were clearly disappointed (Boasson 2012, 145). Media articles from this time reveal an exodus of the Norwegian renewable energy industry (see e.g. Lund and Olsen 2009, Kongsnes 2009). According to Bellona, nine out of ten wind power projects had been abandoned due to the low level of support in Norway, and tidal and wave power projects were being moved to Great Britain where the framework conditions were perceived to be more beneficial (Nilsen 2007a). Even Statkraft decided to move its wind power projects to Sweden. The vice president of Statkraft explained the move: 'We now invest in Sweden where the politicians have decided to realize their ambitions for the renewable energy sector. The Norwegian politicians have not done that' (Nilsen 2007b).[26] The opposition parties confronted the Government over these negative trends and put pressure on the Government to return to the negotiation table with Sweden (Stortinget 2007b). The newly appointed Norwegian Minister of Energy and Petroleum, Åslaug Haga representing the Center Party, invited the environmental organizations to her first meeting as Minister, at which they emphasized that the renewables industry was leaving the country. To this, the minister responded: 'We realize that many important projects leave the country, we cannot let that happen' (Nilsen 2007b).[27]

In response to this opposition and environmental organization pressure, the Norwegian Government announced that it would present an alternative to green certificates proposal shortly (Helgesen 2006). When the politicians called on the Ministry to develop a new proposal, they were met with reluctance. The Ministry referred to the difficult process with the Europeean Free Trade Associaction Surveillance Authority (ESA)[28] in relation to the creation of the Enova scheme and suggested that EU state aid rules would limit their alternatives. After a long period of deliberation, the Ministry finally presented to ESA a new

[26] Translated from Norwegian: '- Vi satser i Sverige, hvor det politiske systemet har omsatt sine ønsker om å satse på fornybar energi i system. Det har ikke norske politikere gjort.'
[27] Translated from Norwegian: 'Vi ser at mange viktige prosjekter fyker ut av landet, det kan vi ikke la skje.'
[28] "The EFTA Surveillance Authority ensures that the participating EFTA States Iceland, Liechtenstein and Norway, respect their obligations under the EEA Agreement" (ESA 2013).

proposal, which had evident similarities with feed-in tariffs, although it would not be financed through the consumer's electricity bill but rather through the state budget (NMEP 2006). After considering the proposal, ESA referred to some recent legislative changes and challenged the compatibility of the proposal with the amended EU state aid legislation (ESA 2007, Boasson 2012, 147). The new proposal was moreover met with substantial criticism by the opposition parties and environmental organizations, as well as within the power sector, because it was a lot less efficient than green certificates (Interview IV). The Ministry realized that it would take a long time to develop another proposal that complied with the amended EU state aid legislation and decided, at the highest political levels, to return to the negotiation table with Sweden (Boasson 2012, 147). The official explanation from the Government, however, was that the forthcoming EU Renewable Energy Directive reactivated its interest in a joint certificate scheme with Sweden. 'At the end of January, EU presents a new Renewable Energy Directive with higher ambitions for the renewable energy sector. This makes it interesting to consider reopening negotiations for both Swedish and Norwegian authorities' (NMEP 2007).[29]

By this stage, the Government was under considerable pressure. The Government's Climate Report, addressed to the Storting in June 2007, was met with extensive criticism and the political parties in the Storting were now negotiating on a compromise. In the Climate Compromise that followed it was noted that Norway was going to reopen negotiations with Sweden on a joint scheme (Norwegian Government 2007, 6). Subsequently, the newly appointed Minister of Energy and Petroleum, Åslaug Haga, used every occasion to discuss green certificates with her Swedish counterpart. During these conversations, the ministers agreed on the inclusion of both old and new small scale hydro power plants in the scheme. Likewise, the negotiating parties agreed on issues regarding the ambition level and distribution of payment obligations relatively quickly (Barstad 2013).

In September 2009, the negotiating parties announced that they had managed to agree on the principles for a common green certificate scheme. The Norwegian government announced that Sweden and Norway had agreed on a coherent target set at 26.4 TWh, of which each country was obliged to finance 50 per cent (NMEP 2009). According to one of the

[29] Translated from Norwegian: 'EU legger i slutten av januar frem et direktiv om fornybar energi hvor EU legger opp til en kraftig satsing på fornybar energi. Dette gjør det interessant å vurdere et samarbeid om elsertifikater på nytt både fra svensk og norsk side'

interviewees in the Swedish Ministry participating in the negotiations: 'Norway had to accept our requirements. We had already set an ambition level for our scheme which we did not intend to change. Also, small-scale hydro power producers were already included in the scheme. We could not just kick them out because Norway wanted us to' (Interview V). The following years were used to determine technical issues regarding the functioning of the scheme, and to clarify its compliance with EU rules (Boasson 2012, 148). In December 2010, the agreement was signed. With everything now settled, and in accordance with the time schedule set three years earlier, the green certificate scheme entered into force on 1 January 2012.

5.2 Summing up

The empirical inquiry examined developments in renewable energy policy with particular focus on the specific choice of policy tool for renewable energy stimulation. It shows how a mixture of domestic political and practical factors, mainly related to more ambitious targets set for renewable energy and market deregulation, and potential lack of compatibility for some existing renewable energy support policies with EU state aid rules necessitated regulatory change in Sweden. In the Swedish case, the choice of green certificates as preferred policy tool was primarily caused by concerns for cost-efficiency and compatibility with the deregulated market. Awareness of concurrent related developments in the EU played a role. Regulatory change ending with the choice of green certificates was mainly initiated from the state, and the Swedish power industry and other potentially affected actors remained passive throughout the whole political process.

By comparison, the political process in Norway had a different character. Stimulation of renewable energy emerged as issue on the political agenda at a much later stage and became subject to stronger political controversy. The idea of a green certificate scheme was first communicated from actors in the power sector and environmental organizations to a reluctant Government which preferred other solutions. These non-state domestic actors managed to pass the idea on to the political opposition parties in the Storting, resulting in a common call on the Government to replace existing regulation with a more forceful green certificate scheme.

The negotiation process between Sweden and Norway on a common scheme evolved as a lengthy process. Sweden welcomed the Norwegian proposition to join in the already existing

Swedish scheme but required of Norway an equal distribution of payment obligations, and the inclusion of all types of small-scale power plants, which the Norwegian Government opposed. The negotiations reached a deadlock when the Norwegian negotiators concluded they could not accommodate the Swedish position, arguing that an equal distribution of payment obligation would make the system relative more expensive for Norwegian than Swedish consumers. The Norwegian Government was caught by surprise when the decision to abandon the plans on a joint scheme with Sweden met an outcry by the Norwegian political opposition parties, the power sector and environmental organizations. This, in combination with strong criticism of the adopted Climate Report, made it pivotal for the government to speed up the process of establishing a national renewable energy support system. EU state aid legislation constrained the alternatives, and the government soon decided to return to the negotiation table with Sweden. The official government explanation for this U-turn was the new requirements on Norway related to the 2009 EU Renewable Energy Directive. Sweden again welcomed the renewed Norwegian initiative. The Swedish government maintained, however, its demand for an equal share of payment obligation and its already implemented definition of what renewable energy sources were eligible under the system. The Norwegian negotiators had no choice but to accept the Swedish requirements. The joint green certificate scheme entered into force on 1 January 2012.

6 Analysis

Based on the framework presented in Chapter 2, this chapter analyses the emergence of the Swedish-Norwegian green certificate scheme. The structure of the analysis reflects the two sub-questions formulated in the beginning (see table 1, Chapter 2). Hence, sections 6.1. *Policy Convergence*, 6.2. *Policy Learning*, and 6.3 *Domestic Political Factors* and *Path-Dependency* are concerned primarily with the specific choice of policy tool. The analysis is based on the method of congruence and will test the explanatory value of eight theoretical hypotheses in light of the findings presented in the empirical inquiry. The Swedish-Norwegian case is defined as a 'most-likely case' implying that the explanatory value of convergence theory is weakened if the hypotheses are not supported. Section 6.4. *International Negotiations*, analyses the nature of the negotiations between Sweden and Norway which led to the final agreement on a common framework for the joint scheme.

6.1 Policy Convergence

Analysis in this section is based on the three hypotheses derived from policy convergence theory.

6.1.1 Similar Policies Arising from Independent but Similar Policy Responses (H_0)

Section 2.1, 'independent but similar policy responses' outlined two sub-mechanisms: problem-driven and opportunity-driven policy convergence. *Problem-driven* policy convergence refers to a situation where parallel problem pressure leads to the adoption of similar policy solutions in different political settings, independent of transnational mechanisms. *Opportunity-driven* policy convergence refers to a situation where similar policy choice is motivated by similar perceptions of opportunities for technological advances, also here independent of transnational interactions. The main purpose of the hypothesis is to avoid making incorrect inferences that transnational mechanisms are at work to explain transnational policy similarities, and it is therefore defined as a null-hypothesis.

H_0: *Renewable energy policy measures in Norway and Sweden converged due to independent but similar policy responses driven by a) similar problem pressure, and b) perceptions of opportunity for technological advances.*

First, the empirical inquiry does not provide any particular support for the relationship between *parallel problem pressure* and renewable energy policy convergence in Norway and Sweden. Although the emergence of renewable energy policies *as such,* which made the adoption of a green certificate scheme a potential option, appeared related to parallel problem pressure[30], the exact choice of policy tool is difficult to explain within this perspective.

The choice of similar policy tool as a response to similar perceptions of *opportunities for technological advances* appears more relevant. As noted in section 4.1.2, feed-in tariffs are better aligned with political objectives related to developing the renewable energy industry, whereas green certificate schemes mainly stimulate the most cost-efficient projects. Hence, if a core objective of a country's policy in the renewable energy area is to develop new technologies, feed-in tariff schemes stand out as the most effective solution. If, on the contrary, the objective is to promote the most cost-efficient projects, then green certificates are most useful.

The empirical material shows that, in both Sweden and Norway, cost-efficiency concerns dominated and overshadowed the objective to develop a new renewable energy industry. Hence, the choice of policy-tool cannot be termed 'opportunity-driven'. Concerns for cost-efficiency are mainly related to two factors: 1) to ensure the international competitiveness of national industries, 2) to appease the general public, which is used to low electricity prices. This is not to say that technology development is not at all a political objective in these two countries – it is just not the most prevailing objective. This argument is illustrated by the development of the Norwegian Enova scheme in the beginning of the 2000s. Enova was created on the basis of three specific objectives for the transition of the energy sector, one of which was to promote the Norwegian wind industry. However, when the scheme was introduced, specific targets for wind, water-based heat generation and reduced energy consumption were merged, and the new institution was instructed to stimulate the most cost-efficient projects. Therefore, since the deregulation of electricity markets at the beginning of the 1990s, energy policy in both countries has consistently given preference to cost-efficient

[30] What is referred to here is the fact that emergence of renewable policies may in both countries be related to a similar *supply concerns.* Despite renewable energy policy issues being most often discussed within climate-related perspectives, Chapter 4 and 5 shows how both Swedish and Norwegian renewable energy policy was first and foremost driven by supply concerns. In the Swedish case, the politicians have been forced too look for alternative solutions due to the stop in hydro power expansions and later due to public concern for the environmental consequences of extensive nuclear power build outs. In Norway, the increasing dependency on electricity imports has made increased use of renewable energy sources more relevant than before. Another problem facing both countries was falling electricity prices in the aftermath of market deregulation which slowed down investments in new power production capacity in the 1990s.

policy solutions. It may on these grounds be concluded that the choice of policy tool is related to a more general goal for the renewable energy policy in each coutry: promote renewable energy sources the most cost-efficient way possible.

This is also the conclusion of Jacob (2012) in his study on the evolution of feed-in tariffs in Germany, Spain and France. He found that policy goals related to the development of new technology industries was an important criterion for the choice of policy tools in these three countries, and concludes that: "the implementation of certain design options in all three countries under analysis can clearly be related to the overall technological development of renewable energy sources and can therefore be termed 'opportunity-driven'" (Jacobs 2012, 226). In Germany, development of the renewable energy industry has been a core goal of the authorities.

This conclusion might also explain the divergent policy within the Nordic region of Denmark, which was dependent on new technology in order to generate new electricity and made the development of immature technologies the core policy goal. Further, Danish energy consumers are more adapted to higher electricity tariff levels and the Danish industry structure is less energy-intensive than in Norway and Sweden, and thus less sensitive to additional costs passed on to them from the support of renewables. Hence, Denmark use feed-in tariffs as means of developing a renewables technology industry, while the convergent policies in Norway and Sweden are based on a similar emphasis on cost-efficient solutions.

In sum, the empirical material does not support the H_0-hypothesis, as a similar choice of policy tool may not be attributed to 'similar problem pressure' or 'perceptions of opportunity'. The latter aspect nevertheless remains interesting as it embraces how general policy goals for renewable energy impacted on the preference for a specific policy instrument. Moreover, as will be shown in the further discussion, the assumption that these choices of policy instrument were made *independently of transnational mechanisms* is not supported, with the consequence that the full null-hypothesis may be rejected.

6.1.2 Similar Policies Arising from International Harmonization (H_1)

The first transnational mechanism expected to be relevant for this study was *international harmonization*, which points to the potential influence of international legislation on domestic

policy change in Norway and Sweden. It was expected that an *anticipated* European harmonization influenced the choice of renewable energy policy tool in Sweden and Norway.

H_1: *Renewable energy policy measures in Norway and Sweden have converged over time due to an anticipated legal harmonization of renewable support schemes at the EU level.*

The empirical data in Chapter 5 shows that the anticipation of a future pan-European green certificate scheme was indeed influential on the choice of regulation in the two countries. When the Swedish inter-ministerial working group evaluated different alternatives for policy tools at the end of the 1990s, it expected that a European-wide green certificate scheme would ultimately be implemented. In addition, it was judged that various feed-in-tariff schemes would not be compatible with EU state aid rules. Similar references to European developments were also made in the Norwegian case. When the Norwegian parliament first called on the government to evaluate possible instruments for renewable energy promotion at the beginning of the millennium, the representatives of the Storting's energy committee explicitly referred to the likelihood of the future adoption of a European-wide green certificate scheme and that Norway should closely follow such development. Likewise, the environmental organization, Bellona, who together with the power sector introduced the idea of green certificates to the Norwegian politicians, referred to the European development as an important reason to introduce green certificates in Norway. Yet, the fact that these actors continued to lobby for green certificates even after it became clear that the EU directives would not oblige harmonization of policy tools, or a joint green certificates scheme, might be an indication of EU policies being used more as an extra push on the government and that the rationale behind their preference for green certificates is mainly to be found elsewhere.

6.1.3 Similar Policies Arising from Regulatory Competition (H_2)

The second transnational mechanism assumed to be relevant for explaining policy convergence in Norway and Sweden was regulatory competition, divided into two sub-mechanisms: *economic* and *political* competition. The former presumes integrated markets and free trade and refers to a situation where policy change in one country may trigger change in another, whereas the latter refers to a situation where countries are competing to set an example for future international legislation, which in this case is most relevant in relation to European renewable energy legislation.

H_2: *Renewable energy policy measures in Norway and Sweden converged due to a) economic competitive pressures, and b) political competition to set an example for future EU legislation.*

The empirical material gives only moderate support to the relevance of *economic* competition. First, the study does not detect any explicit reference to such logic in the Swedish policy-preparation documents. In Norway, by contrast, the renewable energy industry began to leave the country when it became known that a green certificates scheme with Sweden was to be deferred indefinitely and referred to the good framework conditions in Great Britain and Sweden – both of which had implemented varieties of a green certificates scheme. Bellona invited the Norwegian Minister of Energy and Petroleum to discuss the problem, and the Minister admitted that something had to be done. It is of course difficult to determine whether this specific problem had any influence on the reactivated interest in green certificates, but it is relevant to note that, soon after, the very same Minister was in frequent contact with her Swedish counterpart in an attempt to agree on certain core principles of a joint scheme that could make a second round of negotiations viable.

In relation to *political competition*, the empirical material gives only moderate support. It was a core criterion in Sweden that a new scheme should be possible to internationalize. In this regard, feed-in-tariffs were perceived to be unsuitable while green certificates were the only policy scheme compatible with this objective. In addition, at the time when the Swedish unilateral scheme was introduced, Swedish authorities explicitly noted that further internationalization of the scheme was desirable as a larger market would increase its efficiency. Whether the drive for internationalization was based on a desire to set an example for EU legislation, however, is uncertain, although the fact that Swedish authorities have consistently supported a European-wide green certificate scheme and have lobbied at the EU level after having put in place its own scheme in 2003 is an indication of the relevance of this mechanism. In the Norwegian case, research shows how Bellona and the power sector made explicit reference to the first-mover-advantage of the early establishment of a green certificate scheme and how this could set the example for future EU policy-making. Such advantages were also pinpointed by the opposition in the Storting. This provides support for the relevance of *political competition* in Norway.

It is interesting to observe that Jacobs (2012, 219) did "not identify any influence of political competition on the design of national feed-in tariff mechanisms." He explains this lack of support by referring to the fact that feed-in-tariffs were unlikely to become relevant at EU level:

> "(…) the influence of member states on European legislation depends on the compatibility of national regulation with the overall objective and strategies of the European Commission As the European Commission's policy preference is for a quota obligation based on certificate trading, member states will find it difficult to convince the European legislator of specific feed-in tariff design options. The implementation of a harmonized European feed-in tariff scheme, which might have spurred political competition in the specific design, was not even anticipated by national legislators." (Jabocs 2011, 219).

This mechanism is therefore mostly relevant to countries sharing the same overall objectives as the European Commission.

6.1.4 Preliminary conclusion

The analysis so far has shown that convergence theory is indeed relevant for the case investigated in this study. The null-hypothesis is rejected on the basis of an observation that international mechanisms have been at work. The influence of international mechanisms comes to light within the perspective of the first hypotheses. It is confirmed that the anticipation of a green certificate scheme at the EU-level indeed made this scheme more relevant than other schemes, though it is of course difficult to determine the degree of influence. The empirical evidence is insufficient to draw firm conclusions about the role of regulatory competition (economic and political), but the Norwegian case in particular provides evidence of this mechanism being present.

6.2 Policy learning

The analysis has to this point supported the relevance of international convergence mechanisms to regulatory choice in the field of renewable energy in Sweden and Norway. The analysis now goes on to discuss the relevance of the hypotheses formulated in relation to policy learning.

6.2.1 Similar Policies Arising from Learning based on Perceptions of Success (H_3)

Policy-makers tend to learn from 'best-practices' and to follow those countries with a reputation for generating the best results. It was expected that policy makers would adopt solutions that are recognized as the most successful policy tools.

H_3: *Renewable energy policy measures in Norway and Sweden converged due to lessons learned from countries with successful policy tools.*

The empirical evidence does not give much support to the assumption that Norwegian and Swedish renewable energy policies have converged on the basis of lessons learned from countries which are recognized to have used the most efficient policy tools. When the Swedish inter-ministerial working group evaluated existing support schemes in other countries, knowledge about the effects of green certificate schemes was limited, while feed-ins were increasingly recognized as the most efficient policy tool in relation to both generating large volumes of renewable energy as well as developing the renewable energy industry (see section 4.1.2). Still, the Swedish policy-makers chose green certificates. Evidence of feed-in-tariffs being as the most effective tool was even stronger at the time when Norway decided to make use of a green certificate scheme. The Swedish scheme had, on the contrary, been subject to a lot of criticism in its first years of operation because it did not stimulate as much new electricity from renewable sources as expected. However, it appears that Norwegian policy-makers were unconcerned with such facts, and this mechanism thus does not provide much explanation as to why Sweden and Norway chose the same approach for renewable energy stimulation.

6.2.2 Similar Policies Arising from Learning based on Economic Conditions (H_3)

It was assumed that decision-makers mainly draw on lessons on the basis of experiences gained in countries with similar economic conditions. In the context of renewable energy policy, similarity in economic conditions is interpreted as a similar structure of the energy sector (i.e. degrees of deregulated versus state regulated energy sector).

H_4: *Renewable energy policy measures in Norway and Sweden have converged over time due to lessons learned on the basis of similarity in economic conditions.*

The empirical material supports the assumption that lessons are mainly drawn from countries with similar economic conditions. One of the six core criteria formulated by the Swedish Ministry, which served as guidance for the inter-ministerial working group assigned to

propose a new approach in Sweden, was that it had to be compatible with a deregulated electricity market. It has been found that the proposed Swedish scheme was very similar to that proposed (and later abandoned) by Denmark. As accounted for in section 4.1.1., Denmark deregulated its electricity market and joined the Nordic power exchange, NordPool, in 1997. It might therefore seem logical that the Danish scheme was regarded as a useful starting point, as it was designed so as to conform with the market that Sweden also belonged to. The report also examined the solutions put in place in Norway and Finland, other partners in the Nordic market, but rejected their approaches. This rejection was, however, based primarily on the assessment that these schemes were incompatible with other criteria, such as their dependency on state budgeting. Hence, the Danish scheme surfaced as a good example when Sweden initially proposed its national scheme in that it was seen as compatible with national Swedish market structure and also matched other criteria as formulated by the Swedish Ministry of Energy.

The Norwegian policy-makers, on the other hand, did not use a set of predefined criteria to design their scheme. Mostly, reference was made to the Swedish experience and emphasis was placed on ensuring the possibility of integration with other countries. When the Ministry of Energy and Petroleum and the Norwegian Energy Agency were later assigned to report on the possibility of establishing a new scheme in Norway according to the Storting's request, the subsequent reports generally evaluated the different designs of green certificate schemes and did not take other options into consideration (or at least not to the same extent). The Norwegian policy-makers presented the Swedish solution as a good example for how things should be done in Norway and the fact that it was already designed on the basis of the same market structure made the scheme very relevant for Norwegian conditions.

6.2.3 Similar Policies Arising from Learning based on Close Communication (H_4)

The third aspect of policy learning was close communication. It is expected that policy models spread more rapidly between countries that are subject to close bilateral relations. It was suggested that Scandinavian countries are likely to follow each others footsteps.

H_5: *Renewable energy policy measures in Norway and Sweden have converged over time due to lessons learned on the basis of close communication.*

The empirical inquiry gives moderate support to the assumption that renewable policies in Norway and Sweden have converged over time due to lessons learned on the basis of close communication. The investigation showed that close communication at the governmental level was not followed by convergent policies. For instance, the Nordic Ministers agreed in the Nordic Council in 1998 to develop joint strategies for relevant regulations touching the common electricity market, but the initiative was never followed up. Since then, renewable energy issues have not generally been discussed in such fora. What is found, however, is that private domestic actors in Norway invited Swedish policy makers to Norway to discuss their experiences of the Swedish green certificate scheme. These actors used the Swedish experience to argue for a similar system in Norway, and served as important communicators to promote the idea of green certificates to Norwegian politicians. These learning processes are therefore likely to have been important for Norwegian policy-makers.

6.2.4 Preliminary conclusion

The policy learning approach shows that Swedish and Norwegian policy-makers have been unconcerned with 'best-practices' in order to develop a new approach to renewable energy stimulation. The assumption that policy-makers draw on lessons from countries with similar economic conditions, on the other hand, is supported. The importance of close communication was supported by the fact that Norwegian private actors responsible for communicating the idea of green certificates in Norway drew on lessons from the Swedish case, enhancing their belief in the system.

6.3 Domestic Political Factors and Path-Dependency

Following the line of reasoning presented in Chapter 2, patterns of convergence are likely to reflect domestic political constrains. It was assumed that the choice of policy tool is conditioned by path-dependent policy formulation and preferences of central domestic actors in the power sector.

6.3.1 Path-Dependent Policy Formulation (H_6)

Path-dependent policy-formulation was expected to be relevant in relation to the structure of the energy sector in that market deregulation necessitates policy measures compatible with principles of trade and competition.

H_6: *Renewable energy policy measures in Norway and Sweden are conditioned by path-dependent policy tracks in relation to market deregulation.*

The empirical inquiry finds that the similar choice of policy tool in Norway and Sweden must be understood against the backdrop of early liberalization of Nordic electricity markets in the 1990s. Section 5.1.1 showed how the Swedish government explicitly referred to market liberalization as a main incentive for regulatory change. New measures were needed because the support schemes in place were incompatible with principles of trade and competition introduced to the Swedish electricity market in 1994. It was a general perception that feed-in-tariffs and related policy tools were incompatible with the functioning of the market and that green certificates was the most appropriate policy tool to use in a deregulated market. This gives evidence of a direct link between market reform, regulatory change and the choice of green certificates as main strategy to promote renewable energy sources in Sweden.

The relationship between market reform and the choice of green certificates is, at first glance, harder to understand in the Norwegian case. It took twenty-one years from the decision to undergo full transformation of the electricity sector to the decision to establish a green certificate scheme. This delay may be explained, however, by the fact that Norway had not yet developed its renewable energy policy in the 1990s. By the time that renewable energy issues eventually reached the energy-political agenda, the power sector together with environmental organizations had become eager proponents of green certificates. The power producers had, as a result of the deregulation, gone through a process of professionalization and growth and adopted new strategies aimed at gaining profits. Some companies started to trade green electricity in continental Europe, participating in the RECs system from an early point in time. By looking at the rationale behind the pressure from actors in the power sector for green certificates, the connection between market deregulation and the preference for green certificates becomes more obvious.

The relationship between deregulated markets and the choice of green certificates also seems to fit into the European pattern of convergent renewable energy policy tools in Europe. Together with the UK, the Nordic countries were pioneers in introducing free trade in electricity (see section 4.1.1.). In both Norway and Sweden free trade and competition were introduced in the electricity market without much controversy, and the belief in neo-liberal principles in the energy field has gained the support of most political parties. In other

European countries, on the contrary, market liberalization has been met with resistance and full transformation is still not complete. There seems to be an overlap between countries that were reluctant to undergo a full market transformation and countries preferring green certificates (although a thorough investigation of this relationship is beyond the scope of this study). For instance, the UK was the first country to liberalize its electricity market and was equally a pioneer in using green certificates to stimulate renewable energy production (Kristensen 2002, 42). Germany, France and Spain, on the other hand, have approached such transition with more caution. This pattern may also be observed within the Nordic region. While Norway and Sweden transformed their energy sector relatively quickly, Denmark, on the other hand, was very reluctant to complete such a transition (see section 4.1.2).

6.3.2 Preferences of Domestic Actors (H_7)

Governmental decision-makers do not usually evaluate policies without consulting the actors who are likely to be affected by a certain regulation. It was noted in the theory chapter that the state owned power producing companies, Vattenfall and Statkraft, have a close relationship with Swedish and Norwegian authorities respectively, and that their (and their allies) positions are likely to be reflected in the final policy outcome.

H_7: *Similar choice of policy tool is conditioned by the preferences of central domestic actors.*

The empirical inquiry shows that the choice of green certificates was indeed aligned with the preferences of central domestic actors within the power sector and their allies. The relationship is most obviously expressed in the Norwegian case, where the power utilities, with Statkraft and Bellona at the forefront, lobbied ardently for green certificates. Statkraft was already trading green certificates in the voluntary certificates system in the Netherlands (RECs) and understood the commercial benefits of such a system. When the Government presented alternatives to green certificates, Statkraft and its allies including environmental organizations, utilities in the power sector, and the opposition parties, protested widely and placed the Government in a difficult position. This is likely to be part of the explanation as to why the Government once again considered its options for a green certificate scheme.

In Sweden, on the other hand, the relationship between the preferences of central actors in the power sector and the choice of green certificates is less clearly expressed, as regulatory

change was to a large extent initiated by the state, while the power utilities remained quiet thoroughout the whole process. Interviewees confirmed, however, that these utilities were in favor of the introduction of the scheme and explained that they probably remained passive because they believed that it was inevitable that the scheme would be adopted, and there was therefore no need to expend any effort influencing the process. The story could have been different if these utilities had preferred another type of policy tool.

6.3.3 Preliminary Conclusion

The empirical inquiry supports the hypotheses that the choice of policy tool is conditioned by path-dependent policy formulation in relation to deregulated markets and free trade. It is moreover found that the choice of policy tool is likely to be conditioned by the preferences of central actors in the power sector. These two findings are likely to be related to each other, as the preference for green certificates by actors in the power sector is closely related to their professionalization and growth following market deregulation.

6.3.4 Summing up

The analytical framework presented in Chapter 2 set up nine hypotheses with regard to the first of the two sub-questions set up in section 1.1.: *Why did Norway and Sweden choose green certificates to promote renewable energy?* All of the hypotheses regarding mechanisms of policy convergence were confirmed. Hence, renewable energy policy convergence was not a product of 'independent but similar policy responses' independent of international mechanisms, but should rather be assigned to an anticipation of 'international harmonization' of policy tools at EU level, which in fact enhanced the argumentation in favor of adopting green certificate schemes in both countries. Moreover, regulatory competition proved to be relevant in the context of a situation where influential Norwegian actors both in the political and societal sphere pointed to the favorable conditions for the renewables industry in other countries, specifically in Sweden as well as other countries having put in place a green certificate scheme for renewables promotion (such as the UK). As regards policy learning, only one of the three hypotheses was confirmed: similarity in economic conditions. Likewise, only one of the hypotheses within the domestic perspective was supported by the empirical inquiry: path-dependent policy formulation. What these factors have in common, is their anchoring in economic rationales – giving evidence of the fact that energy policy is first and

foremost based on economic rationales and that other more 'soft' mechanisms are less relevant.

6.4 International Negotiations

The analysis has so far discussed the rationale behind the decision to introduce green certificates in Norway and Sweden. The next task of the chapter is to analyze the research project's second sub-question, which is concerned with the common process of establishing a joint scheme. As outlined in the theory chapter, the analysis approaches this question through the examination of three causal mechanisms expected to be relevant for the nature of the negotiation process eventually led to an agreement on the difficult issues that continued to delay the creation of a common scheme throughout the 2000s.

6.4.1 Process-Generated Stakes Linked to Domestic Actors (H_8)

Process-generated stakes are connected to the neogtiator's relationship with domestic political actors and to how the negotiator may face risks connected to loosing political support from domestic political and societal actors. It was expected that the same set of actors to be influencial in relation to the choice of policy tool is also influential in relation to the negotiation process.

H_8: *The agreement reached between Sweden and Norway was influenced by process-generated stakes linked to expectations and preferences of central domestic actors.*

The empirical inquiry supports the assumption that the expectation and preferences of central domestic actors in the power sector, and their allies, affected the nature of negotiations. It was shown that the Norwegian authorities were initially focused on pleasing the general public in that it was argued that the Swedish requirements on an equal ambition level for Norway were unfair to Norwegian consumers. This situation led to negotiation stalemate in the first round of negotiations (at least if the official explanation to negotiation deadlock is accurate). However, the empirical inquiry also shows that Norwegian authorities were misguided in relation to the mood in the domestic political sphere as they did not anticipate the impact on, and reaction of, the Norwegian power sector. This soured the relationship between these actors and the authorities. In addition, the Government was under a significant pressure from

the opposition in light of the negative response to the Government's Climate Report. Even if the data is insufficient as to establish any direct evidence for such reasoning, this situation can be interpreted as to be very 'costly' for the Norwegian authorities both with regard to their relationship with the Norwegian power and with regard to their reputation as a 'climate friendly' Government. It is therefore likely that the Norwegian government was more inclined to make concessions in the second round of negotiation where agreement was finally reached.

6.4.2 Impact of the European Political Environment (H_9)

Changes in international relations are likely to affect the nature of negotiations. For this reason it was expected that the adoption of the 2009 EU Renewable Energy Directive, which introduced binding targets, changed the premises for the negotiations.

H_9: *The agreement reached between Sweden and Norway was influenced by the adoption of the 2009 EU Renewable Energy Directive introducing binding national targets for the share of renewable energy in EU Member States.*

The empirical inquiry shows inconsistent results in relation to the impact of the introduction of binding targets for renewable energy on the nature of the negotiations. While the official explanation of the Norwegian Government on its intention to reopen negotiations with Sweden was explicitly related to the 2009 Renewable Energy Directive, the evidence shows that restrictions in relation to EU state aid legislation limited the alternatives of the Norwegian Government, which was under pressure from the political opposition and thus - making the Government impatient to come up with a solution. It is reasonable to believe that a mixture of these factors made reaching agreement more important to the Norwegian negotiators.

6.4.3 Asymmetric Issue-Specific Power (H_{10})

Issue-specific power is related to the power situation between the negotiating parties in the specific policy area. It was expected that the power relationship favored Sweden, placed Sweden in a position to put pressure on the Norwegian government to accept Swedish requirements on the common framework conditions for a joint scheme.

H_{10}: *The agreement reached between Sweden and Norway was influenced by the asymmetric issue-specific power balance that placed Sweden in a position to make Norway accept its requirements.*

The data gives evidence of a direct connection between the asymmetric issue power balance and the successful outcome of the negotiations. Swedish informants confirmed that they did not regard an agreement with Norway as all that important, as Sweden could very well continue on its own path (representing the Swedish BATNA). As regards Norway, it seems likely that Norway overestimated its BATNA in the first round of negotiation as it pointed to other alternatives that could be 'just as efficient as green certificates.' Within the same year, however, it became apparent that these alternatives were neither as efficient as green certificates nor in compliance with EU state aid rules. This, combined with the Government's impatience to come up with a solution, made the BATNA of the Norwegian delegation rather weak relative to the Swedish. When negotiations resumed, the position of the Swedish delegation remained the same, while the position of the Norwegian delegation was weakened as it did not have many alternatives to fall back on. In the Swedish scheme, small scale hydro power plants were already defined as eligible for certificates and the ambition level for the first period of the scheme's duration was already set. The Swedish first-mover-advantage seems to have enhanced its issue-specific power balance which favored Sweden. The Norwegian delegation was more or less faced with a 'take it or leave it' situation.

6.4.4 Preliminary conclusion

In order to discuss the second sub-question set up in section 1.1.: *Why did Norway and Sweden reach agreement on a framework for establishing a joint scheme?* Chapter 2 set up three hypotheses. All these found support in the empirical material, although with the conclusion of only moderate impact from the European political environment. The nature of the negotiation process leading to agreement between Sweden and Norway on a joint scheme was influenced by process-generated stakes linked to expectations and preferences of central actors in the power sector, and their allies. An increasingly embittered relationship with these actors made the Norwegian Government more inclined to secure a deal with Sweden (H_8). The Norwegian government moreover referred to the 2009 EU Renewable Energy Directive as a reason to go back to the negotiation table with Sweden, but the empirical data are

insufficient for concluding on a clear relationship between the final agreement and the requirements for adoption of the EU directive (H_9). Finally the asymmetric issue-specific power balance placed Sweden in a favorable position as to the specific design of the scheme (H_{10}). This made the Norwegian Government give in on the disputes concerning the distribution of payment obligations and the definition of renewable energy sources to be eligible for support, and the joint scheme could be realized.

6.5 Explanatory Power of the Theoretical Framework

The framework applied in this thesis is based on a domain-of-application approach making use of different theory fields to investigate the research questions outlined in Chapter 2. From these theories, ten hypotheses were derived in Chapter 2. The preceding analysis has tested the explanatory power of the hypotheses. Table 2 summarizes the findings of the analysis.

Table 2. *Summary of findings from the analysis.*

Why did Norway and Sweden choose green certificates to promote renewable energy?	
Policy convergence	
H_0: Similar Policies Arising from Independent but Similar Policy Responses	Rejected
H_1: Similar Policies Arising from International Harmonization	Supported
H_2: Similar Policies Arising from Regulatory Competition	Moderately supported
Policy Learning	
H_3: Similar Policies Arising from Learning based on Perceptions of Success	Rejected
H_4: Similar Policies Arising from Learning based on Economic Conditions	Supported
H_5: Similar Policies Arising from Learning based on Close Communication	Moderately supported
Domestic Political Factors	
H_6: The Influence of Path-Dependent Policy Formulation	Supported
H_7: The Influence of Preferences of Domestic Actors	Supported
Why did Norway and Sweden reach agreement on a framework for establishing a joint scheme?	
International Negotiations	
H_8: Process-Generated Stakes Linked to Domestic Actors	Supported
H_9: Impact of the European Political Environment	Moderately supported
H_{10}: Asymmetric Issue-Specific Power	Supported

The study rejects the null-hypothesis expecting the emergence of similar policies in Sweden and Norway to be a result of 'similar but independent responses' independent of transnational mechanisms. The null-hypothesis generated, however, an interesting finding that linked policy convergence to renewable energy policy goals *as such.* This finding may moreover illuminate the rejection of (H_3), that policy-makers search for the most successful policy tool and learn from these in order to design their own. The concerns for cost-efficiency made lessons from countries having put in place the most successful policy tool both in terms volume and ability to promote renewable technology, feed in tarrifs, less interesting.

An interesting (and related) finding is the role of path-dependent energy policy-tracks for the choice of green certificates (H_6). These path-dependent policy tracks relate to the decision to deregualte markets (driven by concerns for cost-efficiency), which made it important to find a policy solution that does not distort principles of trade and competition - making green certificates emerge as a suitable measure. This finding may moreover explain why policy-makers in Sweden and Norway seem to have been inspired by policy designs from countries with similar economic conditions (H_4). While Swedish policy-makers were clearly inspired by the Danish policy tool design, Norway imported the Swedish design.

Further, the analysis shows how anticipation of a harmonized EU green certificate scheme made the choice of green certificates relevant in both countries (H_1). It has, however, been difficult to detect any direct role played by regulatory competition (both economic and political) for the similar policy choices in Sweden and Norway, although such relationship is found to be relevant to a certain degree (H_2).

As to the influence of domestic actors (H_7), the study supports the hypothesis that policy choice was conditioned by the support of the most central domestic actors. In the Norwegian case a direct relationship is seen between pressure from the large utilities in the power sector and the choice of policy tool. This was also supported in the Swedish case, although in an opposite direction: the state took initiative and the utilities supported the Governments proposal (silence implies consent). Further, the impact of close communication was only moderately supported. Private actors in Norway invited Swedish political and private actors to seminars and meetings in order to learn about their experiences with the Swedish certificate scheme, showing the importance of close communication between neighbouring countries (H_5). Close communication between governmental actors had, on the contrary, no specific influence on the choice of policy tool.

As to the second perspective, aimed at understanding why the two countries came to agree on a joint scheme, table 2 shows that the hypotheses outlined in Chapter 2 are supported, although H_8 and H_9 only to a certain degree. The analysis shows how the Norwegian negotiators were unaware of the potential 'costs' with regard to their relationship with central actors in the power sector, and how this awareness made the Government impatient to come up with a new solution – making them more inclined to make consessions in the negotiations with Sweden (H_7). It seems, however, that the 2009 EU Renewable Energy Directive was (at most) only part of the explanation as to why Norway eventually made concessions in relation to the high ambition level (H_8). The issue-specific power balance in favor of Sweden explains why Norway eventually decided to agree on an equal ambition level and the inclusion of all types of small-scale hydro power plants in the common framework.

7 Concluding Remarks

This research project has studied the political process which led to the creation of the Swedish-Norwegian green certificate scheme. It has investigated the political prosesses in both countries leading to the choice of green certificates as preferred policy tool for stimulating renewable energy, followed by an investigation of the joint negotiation process leading to the agreement to create a joint scheme. The study has followed a domain-of-application approach, being informed by a compound theoretical framework. Convergence theory has been applied as means of examining the emergence of similar renewable energy policies in Sweden and Norway, complemented with perspectives of policy-learning and conditional factors rooted in the domestic political sphere. International negotiation theory has been included for the purpose of investigating the joint negotiation process which led to the creation of a joint scheme.

A main conclusion of the study is that the emergence of similar preferences for policy tool in Sweden and Norway was closely connected to the overall political goal set for renewable energy development *as such.* The search for cost-efficient solutions guided policy-makers in both countries to choose a green certificate scheme. The choice of policy tool was in both countries to a large extent also contingent on path-dependent policy tracks related to previous decisions that deregulated the electricity market and introduced principles of free trade and competition. This made technology-neutrality a core premise for the choice of policy measure, for which a green certificate scheme was deemed most suited. Further, the European political environment has been an additional factor guiding the policy-makers' choice. Here, policy makers anticipated the EU to establish a pan-European green certificates scheme in the future, strengthening the relevance of this solution in both countries. The study also shows that support from central domestic actors in the power sector was an important factor for the choice of policy tool, serving as a factor conditioning the policy convergence and policy learning perspectives.

As to how the two countries overcome difficult issues and reached agreement on the final establishment of a joint scheme, the analysis has shown that process-generated stakes linked to the expectations and preferences of domestic actors in the political and societal sphere pushed the negotiators towards agreement. It moreover shows that policy developments at the EU-level changed premises for the negotiations and made agreement with Sweden more

relevant for Norway. Finally, the asymmetric issue-specific power balance between Sweden and Norway placed Sweden in a position to make Norway accept its requirement for how the joint scheme should be designed.

In light of these findings, what can be said about the prospects for harmonization of renewable energy policy tools in the EU, and for the establishment of a pan-European green certificate scheme? The conclusion that similar choice of policy tool is conditioned by similar policy goals makes it reasonable to assume that the process of harmonizing policy tools across European borders will be difficult. While some countries are most concerned with developing a national renewable energy technology industry, other countries are more concerned with maintaining electricity prices as low as possible. Such differences remains a challenge for policy harmonization in the EU.

Moreover, the connection between market liberalization and preference for green certificates might be a second factor likely to constrain harmonization. As noted, some Member States are reluctant to introduce free trade and competition in the electricity sector, and the motivation to introduce market-based renewable energy support measures such as green certificates is therefore likely to be weaker for this group of countries. Additionally, the EU also faces a situation where feed-in tariffs are increasingly perceived as the most efficient solution, evolving as the widest-spread policy tool in Europe. This implies that a change towards green certificates will be politically very costly for the majority of the Member States. In the light of a situation where certain Member States are already reluctant towards market liberalization and integration, and the fact that it will be politically costly for the majority of Member States to change policy track, the road towards policy harmonization and integration for renewable energy stimulation is likely to be a long one.

Literature

Andersen, Svein S. (1997). *Case-studier og generalisering*. Bergen: Fagbokforlaget.

Barstad, Håkon (2013). 'Et år med elsertifikater.' *Energi*, 1. Oslo: Europower

Bellona (2002). 'Kommentar til arbeidet med pliktige grønne energisertifikat i Norge' Oslo: Bellona. Available at: http://www.bellona.no/norwegian_import_area/casefile/energi/fornybar/sertifikater/1138834638.57 (Accessed 22.05.2013)

Bellona (2003). 'Grønne sertifikater gir mer fornybar energi.' Oslo: Bellona. Available at: http://www.bellona.no/norwegian_import_area/casefile/energi/fornybar/sertifikater/1138834647.08 (Accessed 14.04.2013)

Birchfield, Vicki L., and John S. Duffield (2011). 'Introduction. The Recent Upheaval in EU Energy Policy' in *Toward a Common European Union Energy Policy*, edited by Vicki L. Birchfield and John S. Duffield. New York: Palgrave Macmillian.

Boasson, Elin Lerum (2011). *Multi-sphere climate policy: Conzeptualizing National Policy-making in Europe*. Vol. no. 307. Oslo: Unipub.

Bowen, Glenn A. (2009). 'Document Analysis as a Qualitative Research Method' in *Qualitative Research Journal*, 9(2), 27-40.

Buan, Inga Fritzen, Per Ove Eikeland and Tor Håkon Inderberg (2010) 'Rammebetingelser for utbygging av fornybar energi i Norge, Sverige og Skottland' *FNI-rapport 6/12.* Lysaker: Fridtjof Nansens Institutt

Burnham, Peter (2004). *Research methods in politics*. Houndmills, Basingstoke, Hampshire: Palgrave Macmillan.

Bryman, Allan (2004). *Social Research Methods*. Oxford: Oxford University Press.

Busch, Per-olof, and Helge Jörgens. (2005). 'The international sources of policy convergence: explaining the spread of environmental policy innovations.' *Journal of European Public Policy*, 12 (5):860-884.

Chen, Yong and Francis. X. Johnson (2008). 'Sweden: greening the power market in a context of liberalization and nuclear ambivalence.' *Promoting Sustainable Electricity in Europe : Challenging the Path Dependency of Dominant Energy Systems*, 219.

Dagens Industri (2001) 'Snålblåst for vindkraften' Stockholm: Dagens Industi Available at: http://web.retriever-info.com/services/archive.html?method=displayDocument&documentId=050856200112032122972&serviceId=2 (Accessed 16.04.2013)

Dolowitz, David P., and David Marsh (2000). 'Learning from Abroad: The Role of Policy

Transfer in Contemporary Policy-Making'. *Governance.* 13 (1).

Dolowitz, David, and David Marsh (1996). 'Who Learns What from Whom: a Review of the Policy Transfer Literature.' *Political Studies* no. 44 (2):343-357.

Eikeland, Per Ove (2011). 'EU Internal Energy Market Policy: Achievements and Hurdles' In *Toward a Common European Union Energy Policy*, edited by Vicki L. Birchfield and John S. Duffield. New York: Palgrave Macmillian.

Eriksson, Lars (2004) 'Elcertificat en katastrof' Stockholm: Ny Teknik. Available at: http://web.retriever-info.com/services/archive.html?method=displayDocument&documentId=050846200406039183909&serviceId=2 (Accessed 16.04.2013)

EM (Energi- og miljøkomiteen) (2000) 'Innstilling fra energi- og miljøkomiteen om bevilgninger på statsbudsjettet for 2001 vedkommende Olje-og energidepartementet og Miljøverndepartementet.' Oslo: Energi- og miljøkoiteen. Available at: http://www.stortinget.no/no/Saker-og-publikasjoner/Publikasjoner/Innstillinger/Budsjett/2000-2001/innb-200001-009/ (Accessed 05.04.2013)

Energimyndigheten (2005). 'Konsekvenserna av en utvigad elcertifikatmarknad.' Eskilstuna, Sweden: Energimyndigheten.

Enøk Norge (2013) 'Enøkguiden' Oslo: Enøk Norge. Available at: http://www.enok.no/enokguiden/01_2_1.html

EPA (United States Environmental Protection Agency) (2008) 'Global Green House Gas Emissions Data' Philadelphia: EPA. Available at: http://www.epa.gov/climatechange/ghgemissions/global.html (Accessed 04.06.2013).

ESA (2007) 'Operation Aid for Electricity Production from Renewable Energy Sources' Letter to the MPE. 14 November 2007. Case no. 62684. Brussels: ESA

ESA (2013) 'The EFTA Surveillance Authority at a glance' Brussels: ESA. Available at: http://www.eftasurv.int/about-the-authority/the-authority-at-a-glance-/ (Accessed 12.06.2013)

European Commission (2008). 'Commission Staff Working Document: The Suppoert of Electricity From Renewable Energy Sources.' Brussels: European Commission. Available at : http://iet.jrc.ec.europa.eu/remea/commission-staff-working-document-support-electricity-renewable-energy-sources (Accessed 07.05.2013)

European Commission (2007). 'Communication from the Commission to the European Council and the European Parliament. An Energy Policy for Europe.' Brussels: European Commission. Available at: http://ec.europa.eu/energy/energy_policy/doc/01_energy_policy_for_europe_en.pdf (Accessed 07.03.2013)

European Commission (2003) 'Directive 2003/54/EC of the European Parliament and of the

Council of 26 June 2003 concerning common rules for the internal market in electricity and repealing Directive 96/92/EC.' Brussels: European Commission. Available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32003L0054:EN:NOT (Accessed 15.05.2013)

European Commission (2001) 'Directive 2001/77/EC of the European Parliament and of the Council of 27 September 2001 on the promotion of electricity produced from renewable energy sources in the internal electricity market' Brussels: European Commission.
Available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32001L0077:EN:NOT (Accessed15.05.2013)

European Commission (2009). 'Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the Promotion of the use of Energy from Renewable Sources 2003/30/EC'. Brussels: European Comission. Available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32009L0028:EN:NOT (Accessed15.05.2013)

European Commission (2013) 'The EU Climate and Energy Package' Brussels: European Commission. Available at: http://ec.europa.eu/clima/policies/package/index_en.htm

Fredrikson, Gunnar (2001). 'En katastrof för vindkraften' Göteborg: Göteborgs-posten. Available at: http://web.retriever-info.com/services/archive.html?method=displayDocument&documentId=0508022001 10315064301&serviceId=2 (Accessed 19.04.2013)

Gerring, John. (2007). *Case study research. Principles and practices.* New York: Cambridge University press.

George, Alexander L., and Andrew Bennett (2005). *Case studies and theory development in the social sciences*. Cambridge, Mass.: MIT Press.

Gullberg, Anne Therese (2006). 'Energisikkerhet og klima i EU' Oslo: CICERO (Center for International Climate and Environmental Research – Oslo) Available at: http://www.cicero.uio.no/fulltext/index.aspx?id=4280 (Accessed 19.04.2013)

Habeeb, William Mark (1988) *Power and Tactics in International Negotiation. How Weak Nations Bargain With Strong Nations.* Baltimore: Johns Hopkins University Press.

Haas, R., Eichhammer, W., Huber, C., Langniss, O., Lorenzoni, A., Madlener, R., Menanteau, P., et al. (2004). 'How to promote renewable energy systems successfully and effectively.' *Energy Policy* vol. 32 (6): 833-839

Hager, Caroline Persson (forthcomming) 'Skiftende bris? En casestudie av de største endringene i norsk vindkraftpolitikk i perioden 1990 til 2012' Lysaker: Fridtjof Nansens Institutt.

Held, Anne., Ragwitz, Mario., and Haas, Reinhart. (2006). 'On the success of policy strategies for the promotion of electricity from renewable energy sources in the EU'. *Energy and Environment.* 17, 849-868.

Hanf, Kenneth. (1978). 'Introduction', *Interorganizational Policy Making.* London and Beverly Hills: Sage.

Helgesen, Ole Ketil. (2006). 'Lanserer tre alternativer til elsertifikater.' Oslo: Teknisk Ukeblad. Availbale at: https://vpn2.uio.no/+CSCO+00756767633A2F2F6A726F2E6572676576726972652D766173622E70627A++/services/archive.html?method=displayDocument&documentId=055015200605065220 3&serviceId=2 (Accessed 13.06.2013).

Hegvik, Kari Gunn (2006). 'Norge er en energibrems' Oslo: Dagbladet Available at: http://www.dagbladet.no/nyheter/2006/03/08/460023.html (Accessed 04.03.2013)

Holzinger, Katharina and Chrisoph Knill. (2005). 'Causes and conditions of cross-national convergence.' *Journal of European Public Policy* no. 12 (5):775 - 769.

Hopmann, P. Terrence (1996). *The negotiation process and the resolution of international conflicts*. Columbia, South Carolina: The University of South Carolina Press

Ikle, Fred Charles. (1982). *How Nations Negotiate.* New York: Harward University Press.

Jacobs, David. (2012). *Renewable energy policy convergence in the EU: the evolution of feed-in tariffs in Germany, Spain and France*. Farnham, Surrey: Ashgate.

Jacobsen, Hans E. H. (2005) 'De rødgrønne struper nye småkraftverk' Stavanger: Aftenbladet. Available at: http://www.aftenbladet.no/nyheter/okonomi/--De-rdgrnne-struper-nye-smkraftverk-2611396.html (Accessed 18.03.2013)

Jordan, Grant and Klaus Schubert (1992). 'A preliminary ordering of policy network labels.' *European Journal of Political Research.* 21: 7-27.

Lenschow, Andrea, Duncan Liefferink, and Sietske Veenman (2005). 'When the birds sing. A framework for analysing domestic factors behind policy convergence'. *Journal of European Public Policy.* 12 (5): 797-816.

Levi, Margaret (1997). 'A Model, a Method, and a Map: Rational Choice in Comparative and Historical Analysis.' in *Comparative Politics: Rationality, Culture, and Structure*, ed. Mark I. Lichbach and Alan S. New York: Cambridge University Press

Lijphart, Arend (1971). 'Comparative Politics and the Comparative Method.' *American Political Science Review* no. 65 (3):692-693.

Lund and Olsen (2009). 'Grønne selskaper flagger ut' Oslo: Teknisk Ukeblad. Available at: http://www.nytid.no/perspektiver/artikler/20090319/gronne-selskaper-flagger-ut/ (Acessed 03.05.2013)

Lodge, Martin (2003). 'Institutional Choice and Policy Transfer: Reforming British and German Railway Regulation' *Governance: An international journal of policy, administration and institutions.* No. 2 (16):159-178

Lortenzen, Kari (2007) 'Multilevel reinforcement: Explaining European Union Leadership in climate chance mitigation' *Global Environmental Politics.*7(4):19-46.

King, Gary, Robert O. Keohane & Sidney Verba (1994). 'Designing social inquiry : scientific inference in qualitative research.' Princeton, N.J.: Princeton University Press.

Kitzing, Lena, Catherine Mitchell, Poul Erik Morthorst (2012) 'Renewable energy policies in Europe: Converging or diverging?' *Energy Policy* 51:192-201.

Kolbeinstveit, Atle (2009). 'Grønne sertifikater. Et norsk perspektiv på saken om et pliktig elsertifikatmarked mellom Sverige og Norge.' *FNI rapport 4/2009.* Lysaker: Fristjof Nansen Institute

Kristiansen, Kjell O. (2002). 'Obligatoriske markeder for grønne sertifikater – Virkemiddelbruken i andre land. Rapport for Olje- og Energidepartementet.' Oslo: Joule AS

Knill, Christoph. (2005). 'Introduction: Cross-national policy convergence: concepts, approaches and explanatory factors.' *Journal of European Public Policy* no. 12 (5):764-774.

Kongsnes, Ellen (2009) 'Må Fred. Olsen flagge ut?' Stavanger: Aenergi. Available at: http://www.nytid.no/perspektiver/artikler/20090319/gronne-selskaper-flagger-ut/ (Accessed 05.05.2013)

Mathismoen, Ole (2003) 'Mot energi-revolisjon i Stortinget'. Oslo: Aftenposten. Available at: http://web.retriever-info.com/services/archive.html?method=displayDocument&documentId=020002200302210057&serviceId=2 (Accessed 15.05.2013).

Midttun, Atle., M. H. Gundersen, and A. L. Koefoed (2003). 'Greening of Nordic electricity industry: policy convergence and diversity'. *Energy & Environment.* 15: 633-656.

Midttun, Atle (2001). 'De-regulated Energy markets and the Environment: The Nordic Experience' *Environmental Politics*, vol 10. (2): 90-114.

Milner, Karen V. (1997). *Interests, Institutions, and Information: Domestic Politics and International Relations*. Princeton: Princeton University Press.

Nedergaard, Peter (2006) 'Which Countires Learn from Which? A Comparative Analysis of the Direction of Multual Learning Processes within the Open Method of Coordination Committees of the European Union and among the Nordic Countries.' *Cooperation and Conflict* 41 (4): 422-442.

Neij, Lena, Nilsson, Lars J, Johansson, Bengt, Åstrand, Kerstin, Ericsson, Karin, Svenningsson, Per, and Börjesson, Pål (2004). 'Seeing the wood for the trees: 25 years of renewable energy policy in Sweden.' IEI. Available at: http://lup.lub.lu.se/record/956398 (Accessed 15 March 2013).

Netfonds (2002). 'Statkraft – først med grønne sertifikater' Oslo: Netfonds. Available at: http://norma.netfonds.no/release.php?id=20020322.OBI.59 (Accessed 22.05.2013)

Nilsen, Jannicke (2007a). 'Latterlig satsning på fornybar' Oslo: Teknisk Ukeblad. Available at: http://www.tu.no/energi/2007/10/05/--latterlig-satsing-pa-fornybar-energi (Accessed 05.05.2013)

Nilsen, Jannicke (2007b) 'Energibransje uten motor' Oslo: Teknisk Ukeblad. Available at: http://www.tu.no/energi/2007/11/22/--energibransje-uten-motor (Accessed 12.05.2013)

Nilsson, Måns. 2011. 'EU Renewable Electricity Policy: Mixed Emotions toward Harmonization.' In *Toward a Common European Union Energy Policy*, edited by Vicki L. Birchfield and John S. Duffield. New York: Palgrave Macmillian.

Norwegian government (2005) 'Politisk plattform for en flertallsregjering utgått av Arbeiderpartiet, Sosialistisk Venstreparti og Senterpartiet 2005-2009.' Oslo: Statsministerens kontor. Available at: http://www.regjeringen.no/nb/dep/smk/dok/rapporter_planer/rapporter/2005/soria-moria-erklaringen.html?id=438515 (Accessed 03.03.2013).

NMEP (Norwegian Ministry of Energy and Petroleum) (2000b) 'Budsjett-innst. S. nr. 9. Innstilling fra energi- og miljøkomiteen om bevilgninger på statsbudsjettet for 2001 vedkommende Olje- og energidepartementet og Miljøverndepartementet.' Oslo: Ministry of Energy and Petroleum . Available at: http://www.stortinget.no/Global/pdf/Innstillinger/Budsjett/2000-2001/innb-200001-009.pdf (Accessed 10.04.2013)

NMEP (Norwegian Ministry of Energy and Petroleum) (1998) 'Energi- og kraftbalansen mot 2020' Oslo: Ministry of Energy and Petroleum. Available at: http://www.regjeringen.no/Rpub/NOU/19981998/011/PDFA/NOU199819980011000DDDPDFA.pdf (Accessed 22.05.2013)

NMEP (Norwegian Ministry of Energy and Petroleum) (2009). 'Enige om prinsippene for et felles elsertifikatmarked.' Oslo: Ministry of Energy and Petroleum. Available at: http://www.regjeringen.no/nb/dep/oed/pressesenter/pressemeldinger/2009/enige-om-prinsippene-for-felles-elsertif.html?id=575821 (Accessed 04.03.2013)

NMEP (Norwegian Ministry of Energy and Petroleum) (2012) 'Energiutredningen – verdiskapning, forsyningsikkerhet og miljø'. Oslo: Ministry of Energy and Petroleum Available at: http://www.regjeringen.no/nb/dep/oed/dok/NOU-er/2012/nou-2012-9/3.html?id=675430 (Accessed 05.05.2013)

NMEP. (Norwegian Ministry of Energy and Petroleum) (2006). 'Felles sertifikatordning lar seg ikke gjennomføre – for dyrt for norske forbrukere.' Oslo: Ministry of Energy and Petroleum. Available at: http://www.regjeringen.no/nb/dep/oed/pressesenter/pressemeldinger/2006/felles-sertifikatordning-lar-seg-ikke-gj.html?id=104227 (Accessed 04.03.2013)

NMEP (Norwegian Ministry of Energy and Petroleum) (2007a) 'Hørings-utkast til forskrift om støtteordning for produksjon av elektrisk energi fra fornybare energikilder.' Oslo: Ministry of Energy and Petroleum. Available at: www.regjeringen.no/nb/dep/oed/dok/hoeringer/hoeringsdok/2007 (Accessed 20.05.2013).

NMEP (Norwegian Ministry of Energy and Petroleum) (2003) 'Investeringer i fornybar elektrisitet' Oslo: Ministry of Energy and Petroleum. Available at: http://www.regjeringen.no/nb/dokumentarkiv/Regjeringen-Bondevik-II/oed/Nyheter-og-pressemeldinger/2003/investeringer_i_fornybar_elektrisitet-2.html?id=250531 (Accessed 18.03.2013)

NMEP (Norwegian Ministry of Energy and Petroleum) (2012) 'Lov om elsertifikater'. Oslo: Ministry of Energy and Petroleum. Available at: http://www.lovdata.no/all/hl-20110624-039.html#7 (Accessed 12.04.2012)

NMEP (Norwegian Ministry of Energy and Petroleum) (2007b). 'Nye samtaler med Sverige om grønne sertifikater til fornybar energi' Oslo: Ministry of Energy and Petroleum. Available at: http://www.regjeringen.no/nb/dep/oed/pressesenter/pressemeldinger/2007/Nye-samtaler-med-Sverige-om-gronne-serti.html?id=493551 (Accessed 13.05.2013)

NMEP (Norwegian Ministry of Energy and Petroleum) (2010). 'Om et felles svensk-norsk marked for elsertifikater.' Oslo: Ministry of Energy and Petroleum. Available at: http://www.regjeringen.no/upload/OED/pdf%20filer/Protokoll_fra_droftinger_h_2009_til_desember_2010.pdf http://www.regeringen.se/content/1/c4/20/65/972c3dcc.pdf (Accessed 05.03.2013)

NMEP (Norwegian Ministry of Energy and Petroleum) (2000a). 'Om lov om endringar i lov 29. juni 1990 nr. 50 om produksjon, omforming, overføring, omsetning og fordeling av energi m.m. (energilova).' Oslo: Ministry of Energy and Petroleum . Available at: http://www.regjeringen.no/nn/dep/oed/dokument/proposisjonar-og-meldingar/odelstingsproposisjonar/20002001/otprp-nr-35-2000-2001-.html?id=586113 (Accessed 23.04.2013)

NMEP (Norwegian Ministry of Energy and Petroleum) (2006). 'Om støtteordningen for elektrisitetsproduksjon fra fornybare energikilder *(fornybar elektrisitet)'* Oslo: Ministry of Energy and Petroleum. Available at:

http://www.regjeringen.no/nb/dep/oed/dok/regpubl/stmeld/2006-2007/Stmeld-nr-11-2006-2007-.html?id=440980 (Accessed 04.03.2013)

NMEP (Norwegian Ministry of Energy and Petroleum) (1990). 'Ot.prp. nr. 43 (1989-1990). Om lov om produksjon, omformning, overføring, omsetning of fordeling av energi mm. (Energiloven). Oslo: Ministry of Energy and Petroleum

NMEP (Norwegian Ministry of Energy and Petroleum) (2007c). 'St.meld. nr. 34 (2006-2007). Norsk klimapolitikk. Oslo: Ministry of Energy and Petroleum. Available at: http://www.regjeringen.no/nb/dep/md/dok/regpubl/stmeld/2006-2007/Stmeld-nr-34-2006-2007-.html?id=473411 (Accessed 04.03.2013)

NMEP (Norwegian Ministry of Energy and Petroleum) (1999). 'St. meld. nr. 29 (1998-1999) Om energipolitikken' Oslo: Ministry of Energy and Petroleum. Available at: http://www.regjeringen.no/nb/dep/oed/dok/regpubl/stmeld/19981999/Stmeld-nr-29-1998-99-.html?id=192287 (Accessed 05.04.2013)

NMEP (Norwegian Ministry of Energy and Petroleum) (2002). 'St.meld. nr. 9. (2002-2003). Om innenlands bruk av naturgass mv.' Oslo: Ministry of Energy and Petroleum. Available at: http://www.regjeringen.no/nb/dep/oed/dok/regpubl/stmeld/20022003/Stmeld-nr-9-2002-2003-.html?id=196515 (Accessed 05.05.2013)

NMEP (Norwegian Ministry of Energy and Petroleum) (2013). 'The right of reversion – The government secures public ownership of hydropower.' Oslo: Ministry of Energy and Petroleum Available at: http://www.regjeringen.no/en/dep/oed/press-center/press-releases/2007/The-right-of-reversion--The-Government-s.html?id=477332 (Accessed 20.05.2013)

NMF (Norwegian Ministry of Finance) (2013) 'Energifondet'. Oslo: Ministry of Finance. Available at: http://www.statsbudsjettet.no/Statsbudsjettet-2012/Statsbudsjettet-fra-A-til-A/Energifondet/

Nord Pool Spot (2013). 'History' Oslo: Nord Pool Spot. Available at: http://www.nordpoolspot.com/About-us/History/ (Accessed 04.02.2013)

Norwea and Energi Norge (2013). 'Kostnader og investering'. Available at: http://www.vindportalen.no/oekonomi/kostnader-og-investering.aspx (Accessed 11.05.2013)

Norwegian government (2007) 'Avtale om klimameldingen'. Oslo: Norwegian Government. Available at: http://www.regjeringen.no/Upload/MD/Vedlegg/Klima/avtale_klimameldingen.pdf (Accessed 19.04.2013).

NVE (Norges Vassdrags og Energidirektorat) (2013). 'Sentrale aktører.' Oslo: NVE Available at: http://www.nve.no/no/Kraftmarked/Elsertifikater/Hva-er-elsertifikater/Rollefordeling/ (Accessed 03.03.2013)

NTB (2003). 'Hatbrev strømmer til energiministeren' Oslo: NTB
Available at: http://web.retriever-info.com/services/archive.html?method=displayDocument&documentId=055013200302060013&serviceId=2

NTB (2007). 'Kutter to tredeler i Norge' Oslo: NTB. Available at: http://www.aftenbladet.no/nyheter/innenriks/article471494.ece#.UZIeeLWeOuI (Accessed 27.05.2013)

NU (Næringsutskottet) (2001). 'Näringsutskottets betänkande 2001/02:NU17' Stockholm: Elanders Gotab. Stockholm: Näringsutskottet.

Olsen, Claude R. (2003). 'Vil bli nummer en i Europa'. Oslo: Teknisk Ukeblad. Available at: http://www.tu.no/nyheter/energi/2003/01/06/vil-bli-nummer-en-i-europa (Accessed 04.05.2013)

Olufsen, Bernt (2003). 'Kraftkrise' Oslo: Verdens Gang.
Available at: http://web.retriever-info.com/services/archive.html?method=displayDocument&documentId=055016200302051622460&serviceId=2 (Accessed 05.05.2013)

Plümper , Thomas and Christina J. Schneider (2009) 'The analysis of policy convergence, or: how to chase a black cat in a dark room.' *Journal of European Public Policy* 16(7):990-1011

Putnam, Robert D. (1988). 'Diplomacy and Domestic Politics: The Logic of Two-Level Games.' *International Organization* 42 (3):427-460.

Ringel, Marc. (2006). 'Fostering the use of renewable energies in the European Union: the race between feed-in tariffs and green certificates.' *Renewable Energy* no. 31 (1):1-17. doi: 10.1016/j.renene.2005.03.015.

REN21 (2012) 'REN21's Renewables Global Status Report (GSR)' Paris: REN21 Secreteriat.

Rogers, Everett M. (1995). *Diffusion of innovations*. New York: Free Press

Rognmo, Gro (2007). 'Dette er bare svada' Oslo: Dagbladet. Available at: http://www.dagbladet.no/nyheter/2007/06/22/504261.html (Accessed 27.05.2013)

Roness, Paul G. (2009). 'Handling theoretical diversity on agency autonomy' in *Change and Continuity in Public Sector Organizations: Essays in Honour of Per Lægreid*, edited by Paul G. Roness and Harald Sætren. Bergen: Bokforlaget.

Rose, Richard. (1993). *Lesson-drawing in public policy*. Chatham, N.J.: Chatham House.

Sarasini, Steven. (2009). 'Constituting leadership via policy: Sweden as a pioneer of climate change mitigation.' *Mitigation and Adaption Strategies for Global Change* vol.14 (7):635-653

Sauar, Erik (2000). 'Stor seier for fornybar energi i Norge' Oslo: Bellona Available at: http://www.bellona.no/norwegian_import_area/energi/fornybar/sertifikater/18793 (Accessed 08.05.2013)

Sellægg, Arne (2003). 'Verste strømår noen gang' Trondheim: Addresseavisen. Available at: http://web.retriever-info.com/services/archive.html?method=displayDocument&documentId=020001200302050163&serviceId=2 (Accessed 05.05.2013)

Sellægg, Arne (2002). 'Vil selge norsk vind til Europa'. Trondheim: Addresseavisen. Available at: http://web.retriever-nfo.com/services/archive.html?method=displayDocument&documentId=020001200211250151&serviceId=2 (Accessed 29.04.2013)

Skjold, Dag Ove, and Lars Thue (2007). *Statens nett: systemutvikling i Norsk elforsyning 1890 - 2007*. Oslo: Universitetsforlaget

SMEEC (Swedish Ministry of Energy, Enterprise and Communication) (2000). 'Elproduktion från förnybara energikällor – ekonomiske forutsättningar och marknadsmekanismer'. Stockolm: Ministry of Energy, Enterprise and Communicaiton. Available at: http://www.regeringen.se/content/1/c4/18/87/e123c2bf.pdf (Accessed 06.03.2013)

SMEEC (Swedish Ministry of Energy, Enterprise and Communication) (2010). 'Norge och Sverige överens om en gemensam elcertifikatsmarknad.' Stockolm: Ministry of Energy, Enterprise and Communicaiton. Available at: http://www.regeringen.se/sb/d/7461/a/157380 (Accessed 05.03.2013)

SMEEC (Swedish Ministry of Energy, Enterprise and Communication) (1997) 'Regeringens proposition 1996/97:84. En uthållig energiforsörjning.' Stockolm: Ministry of Energy, Enterprise and Communication. Available at: http://www.riksdagen.se/sv/Dokument-Lagar/Forslag/Propositioner-och-skrivelser/En-uthallig-energiforsorjning_GK0384/?text=true (Accessed 07.04.2013)

SMEEC (Swedish Ministry of Energy, Enterprise and Communication) (1999). 'Prop. 1998/99:137. Införende av schablonberäkning på elmarknaden m.m' Stockolm: Ministry of Energy, Enterprise and Communicaiton. Available at: http://www.regeringen.se/sb/d/108/a/2219 (Accessed 19.04.2013)

SMEEC (Swedish Ministry of Energy, Enterprise and Communication) (1991). 'Regeringens proposition 1990/91:88. Om energipoltikken'. Stockolm: Ministry of Energy, Enterprise and Communication. Available at: http://www.riksdagen.se/sv/Dokument-Lagar/Forslag/Propositioner-och-skrivelser/prop-19909188-om-energipolit_GE0388/?html=true (Accessed 10.04.2013).

SMEEC (Swedish Ministry of Energy, Enterprise and Communication) (2001). 'Regeringens proposition 2001/02:143 Samverkan för en trygg, effektiv och miljövänlig energiförsörjning.' Stockholm: Ministry of Enterprise, Energy and Communication. Stockolm: Ministry of Energy, Enterprise and Communicaiton. Available at: http://www.regeringen.se/content/1/c4/20/65/972c3dcc.pdf (Accessed 05.03.2013)

Stang and Meyer (1993). 'Instiutional conditions for diffusion' *Theory and Society* 22(4): 487-511.

Statkraft (2007) 'Barrier i norsk vindkraft'. Power-point presentaition by Nils Dårflot, Gotland 07/08.07. Available at: http://www.nordvind.org/files/otherfiles/0000/0002/Barrierer_i_norsk_vindkraft_-_Nils_Daarflot.pdf (Accessed 13.06.2013).

Statnett (2013). 'Markedsområder for strøm' Oslo: Statnett Available at: http://www.statnett.no/no/Kraftsystemet/Produksjon-og-forbruk/Markedsomrader-for-strom/ (Accessed 21.05.2013).

Stortinget (2007) 'Skriftlig spørsmål fra Børge Brende (H) til olje- og energiministeren.' Oslo: Stortinget. Available at: http://www.stortinget.no/no/Saker-og-publikasjoner/Sporsmal/Skriftlige-sporsmal-og-svar/Skriftlig-sporsmal/?qid=36794 (Accessed 03.03.2013).

Stortinget (2006a) 'Skriftlig spørsmål fra Ketil Solvik-Olsen (FrP) til olje- og Energiministeren' Document no. 15:540 (2005-2006). Oslo: Stortinget. Available at: http://stortinget.no/Global/pdf/Dokumentserien/2005-2006/dok15-200506-I.pdf (Accessed 03.03.2013).

Stortinget (2006b) 'Stortinget - Møte onsdag den 15. mars 2006 kl. 10' Oslo: Stortinget. Availbale at: http://stortinget.no/no/Saker-og-publikasjoner/Publikasjoner/Referater/Stortinget/2005-2006/060315/muntligsporretime/#a12 (Accessed 16.04.2012).

Svante, Axelsson (2002). 'Slutblåst för möllan' Stockholm: Expressen. Available at: http://web.retriever-info.com/services/archive.html?method=displayDocument&documentId=050910200202012937341&serviceId=2 (Accessed 01.05.2013)

Sverdrup, U. (2004) 'Compliance and Conflict Management in the European Union: Nordic Exceptionalism', *Scandinavian Political Studies* 27: 23-43.

Sydsvenskan (2002). 'Förnybar energipolitik' Malmö: Sydsvenskan. Available at: http://web.retriever-info.com/services/archive.html?method=displayDocument&documentId=0508592002 0307416C5156A6FA6A9845B52E0AC0287A19&serviceId=2 (Accessed 16.04.2013)

Sydsvenskan (2003). 'Nytt system ska ge skjuts åt förnybar elproduction' Malmö: Sydsvenskan. Available at: http://web.retriever-info.com/services/archive.html?method=displayDocument&documentId=050859200304045C1431485DEA843139B57F7D1A126FA8&serviceId=2 (Accessed 06.04.2013)

Tallberg, Jonas (2010) 'Explaining the institutional foundations of European Union negotitaitions' *Journal of European Public Policy* 17(5):633-347.

Tidninganas Telegrambyrå (2002). 'Nej till handel med gröna certificat' Stockholm: Tidninganas Telegrambyrå . Available at: http://web.retriever-info.com/services/archive.html?method=displayDocument&documentId=050806200201095244408&serviceId=2 (Accessed 16.04.2013)

Tveit, Andras Kokkvoll (2011). 'Viktig energiavtale underskrevet – Endelig!' Oslo: Bellona. Available at: http://www.bellona.no/nyheter/nyheter_2011/signerte_avtale_gronnesertifikater (Accessed 16.04.2013)

Uba, Katrin (2010). 'Who formulates renewable-energy policy? A Swedish example.' *Energy Policy* no. 38 (11):6674-6683. doi: 10.1016/j.enpol.2010.06.037.

Underdal, Arild (1983) 'Causes of Negotiation Failure' *European Journal of Political Research* (11): 183-195.

Underdal, Arild (1992). 'Ch. 8 Designing Politically Feasible Solutions' in *Rationality and Insitutions. Essays in Honour of Knut Midgaard on the Occasion of his 60th Birthday, February 11, 1991: 221-254,*ed. Raino Malnes and Arild Underdal Oslo: Universitetsforlaget

Van Waarden, Frans (1995). 'Percistance of national policy styles: a study of their insitutional foundations.' in B. Unger and F. van Waarden (eds). *Convergence or Diversity: Internationalization and Economic Policy Response,* Aldershot: Avebury

Vattenfall (2013). 'Vattenfall's vision and strategic direction.' Stockholm: Vattenfall. Available at: http://www.vattenfall.com/en/our-company.htm (Accessed 20.05.2013).

Vedung, Evert and Magnus Brandel (2001) 'Vattenkraften, staten och de politiska partierna.' Stockholm: Bokgörlaget Nya Doxa

Ydersbond, Inga Margrete (2012). 'Multi-level lobbying in the EU: The case of the Renewables Directive and the German Energy Industry.' FNI Report 10/2012. Lysaker: The Fridtjof Nansen Institute. Available at: http://www.fni.no/doc&pdf/FNI-R1012.pdf (Accessed 20.05.2013).

Yin, Robert K. (1994). *Case Study Research. Deisign and Methods*. Second edition. Applied Social Research Methods Series, Volume 5. London: Sage Publications, Inc.

Yin, Robert K. (2003). *Case Study Research. Deisign and Methods*. Applied Social Research Methods Series, Volume 5. London: Sage Publications, Inc.

Zartman, I. William, and Mureen R. Berman (1982) *The Practical Negotiator.* New Haven: Yale University Press

Zartman, I. William, and Jeffrey Z. Rubin (2000a). 'Symmetry and asymmetry in negotiation'.*Power and Negotiation.* 271-293.

Zartman, I. William, and Jeffrey Z. Rubin. (2000b). 'The study of power and the practice of negotiation'. *Power and Negotiation.* 3-28.

Åstrand, Kerstin (2005). 'Examining Influences of EU Policy on Instrument Choice: The Selection of a Green Certificate Trading Scheme in Sweden.' *Policy and Society* no. 24 (2):100-128. doi: 10.1016/S1449-4035(05)70057-6.

Appendix 1: List of informants

Interview I	Current Employee of the Norwegian Ministry of Energy and Petroleum.
Interview II	Current Employee in the Norwegian Energy Agency (NVE)
Interview III	Current Employee in the Norwegian Energy Agency (NVE)
Interview IV	Representative of the Energy Committee of the Norwegian Parliament (2000-2005)
Interview V	Current Employee of the Swedish Ministry of Enterprise, Energy and Communication
Interview VI	Current Employee of the Swedish Ministry of Enterprise, Energy and Communication
Interview VII	Prior Employee of the Swedish Ministry of Enterprise, Energy and Communication
Interview VIII	Current Employee of the Swedish Energy Agency, Energimyndigheten
Interview VIII	Prior Employee of the Swedish Energy Agency, Energimyndigheten
Interview IX	Current politician representing the Swedish Left Party

Appendix 2: Tables