

**Norway's High North Strategy:  
Deconflicting Energy Security and Climate Change Mitigation**

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### **List of Acronyms**

ACIP	Arctic Climate Impact Assessment
APEREC	Asia Pacific Energy Research Centre
Bbl/d	Million barrels per day
CCM	Climate Change Mitigation
CCS	Carbon Capture and Storage/Sequestration
EIA	Energy Information Administration
FNI	Fridtjof Nansen Insitute
GHG	Greenhouse Gas
IEA	International Energy Agency
IPCC	International Panel for Climate Change
Kb/d	Thousand barrels per day
Klif	Norwegian Climate and Pollution Agency
MFA	Ministry of Foreign Affairs
MoE	Ministry of Environment
MPE	Ministry of Petroleum and Energy
NCS	Norwegian Continental Shelf
NOK	Norwegian Kroner
NORAD	Norwegian Agency for Development Cooperation
NPD	Norwegian Petroleum Directorate
OPM	Office of Prime Minister
REDD	Reducing Emissions for Deforestation and Forest Degradation
SSB	Statistics Norway
Tcf	Trillion cubic feet
UNFCCC	United Nations Framework Convention for Climate Change

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## **Abstract**

This paper examines the interlinked challenges of energy security and addressing climate change in the case of Norway. It critically assesses Norway's so-called High North strategy in particular as a combined approach to fulfilling energy supply/demand and climate change mitigation (CCM) commitments. Primary interviews with Norwegian government officials, affiliates, researchers and industrial agencies are used in addition to secondary data sources to build a more complete picture of how High North strategy evolved and what problems remain.

It is argued here that though there is a perceptible shift towards and awareness of the need for clearer environmental measures in developing High North energy production, an explicit strategy and policies combining energy security and CCM remains lacking. This is due to the continued dominance of thinking about energy security in terms of Norway *qua* resource supplier rather than as an agent of environmental change; CCM is factored into energy production, but not necessarily as a guiding principle. Further avenues of research, such as public perception studies on energy and the environment, integrating cost-benefits analyses of international versus domestic CCMs, and large-n studies of regional states are proposed, as these would clarify the dual challenge of addressing energy supply/demand and climate change more generally.

## **1. Introduction**

Norway's High North strategy seeks to provide coherence for national and local modes of governance of economic, industrial and security concerns. As both an energy supplier and relevant agency in climate change mitigation (CCM), Norway has a somewhat unique policymaking matrix worth deeper consideration. Despite having an explicit High North strategy, for instance, issue overlaps, conflicting policies and lag in climate and energy security discourses persist. It is argued too that it will become increasingly difficult for Norway to fulfil both energy supply commitments and CCMs, such as greenhouse gas (GHG) emissions reductions. While providing solutions to these problems is beyond the paper's scope, improved understanding of their policymaking significance and implications requires clarification of extant problems and near- to medium-term concerns.

### **1.1 Background**

Climate change is considered the greatest global challenge, impacting upon the world economy, communities and ecosystems (Annan, 2001: 6; Ki-Moon, 2009). Increasingly erratic temperatures, precipitation patterns and extreme events will likely develop, leaving a bleak outlook. Compounding this, world energy demand by 2030 is expected to increase by 50 percent, with the IEA (2007: 42) reporting current oil supply falling well short of demand, threatening global energy security. New sources and means of energy production are thus considered vital to sustainability.



In Norway, the High North<sup>1</sup> has gained increased attention for its resource abundance and vulnerability. While scientists have called for immediate emissions reductions in energy intensive activities such as petroleum and gas production, energy demands have continued to drive further exploration and drilling operations. Given that ‘tackling climate change and improving energy security are two of the twenty-first century's greatest challenges’ (Brown and Sovacool 2011), Norway faces a unique challenge as both a committed energy supplier and proponent of CCMs; hence the evolution of a High North strategy in recent years (Bradshaw, 2010).

Growing awareness and understanding of energy security and climate change has forced policymakers to rethink existing energy strategies and consider alternatives (Jean-Baptiste & Ducroux, 2003). As an ever-expanding global economy has driven annual resource consumption higher and higher, energy ‘demand’ in most countries has developed into energy ‘need’ (Offerdal 2009). So for many countries *qua* energy consumers, energy security entails security of supplies; but for the fewer energy supplier countries like Norway, energy security is also security of demand (Chevalier ed., 2009: 31). Concerning Norway specifically, the IEA recently concluded that,

‘As a major oil and gas producer as well as a strong global advocate of climate change mitigation, Norway holds a *unique* position in the global energy sector. Moreover, as the third largest exporter of energy in the world, Norway is a major contributor to the energy security of consuming countries’ (MPE 2011a).

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<sup>1</sup> See Appendix A1, The Barents Sea and Arctic borders on the NCS; cf. Skagestad 2010.

This thesis builds on the above by critically analysing Norway's energy security, climate change and High North policies. While a historical narrative would be excessive, a brief chronological view is still needed to understand how policymaking has evolved. The High North in particular has emerged as a crucial area for study due to two factors: potentially vast hydrocarbon deposits, yielding energy security in supply; and ecological vulnerability, making it sensitive to adverse environmental effects from carbon-intensive activities like petroleum production.

## 1.2 Research Question

Based on the above, this paper is guided by the following question:

*How does climate change mitigation interact with the imperatives of energy security in the Norwegian case?*

This research question draws attention to Norway's interests and capacity to overcome the dual challenge of, on the one hand, increasing petroleum and gas production and, on the other, mitigating climate change. A related, underlying issue is thus whether Norwegian policymakers favour energy security or climate change concerning the High North. Similarly, it becomes to examine Norwegian hydrocarbon production and the strategic influences this has had on policymaking. The research question above thus requires reconstructing Norway's High North strategy and its evolution over recent years.

### 1.3 Aims and Objectives

The aim of this study is to better understand Norway's approach to High North policymaking concerning energy and climate change. It must be noted that though the focus is on these policy areas, there is undoubtedly and necessarily a geopolitical aspect to the analysis too, since the High North is of strategic significance and, thusly, a foreign policy issue for Norway. However, given the focus on energy and climate policies, geopolitics is discussed only in passing; hence such issues as Norwegian-Russian cooperation, Norway's relationship with other littoral states and defense management are not detailed here.

To address the research question, the paper develops an overview of Norway's policy stances concerning energy, climate and the High North by means of literature review, data collection and analysis. Secondary data will establish background as to how High North strategy has evolved over time, while interviews with public officials, government affiliates, industrial agents and independent researchers provide the means for more additional critical and qualitative appraisals.

By examining the evolution of Norway's High North strategy in this way, this research contributes to understanding whether and how energy security and climate change mitigation are linked as policy processes. As will be shown, existing research on energy security and CCMs, in the Norwegian case at least, has largely treated these as separate policy domains. Only more recent efforts, such as the collaborative project *Geopolitics in the High North*, have

begun to consider linkages.<sup>2</sup> Given increasing global and national interests in such dynamics, this study not only adds to understanding but may yet enable more anticipatory approaches in Norway on these matters. For instance, since expert opinion is typically relevant to the policymaking cycle (and dissent remains a feature of energy and climate discourses), this paper can be considered a step towards greater coherence on Norwegian energy and CCMs.

#### 1.4 Structure

Preceding sections introduced the global contexts of climate change and energy security, established the somewhat unique dual role of Norway as energy supplier and CCM agency, as well as outlined the gaps in current understanding of Norway's High North strategy and how addressing this might inform a better understanding of a dynamic between energy and climate change policies more generally.

The following section reviews current understandings of energy security, climate change and High North strategy in Norway. Section 3 outlines the rationale behind selected research methods; i.e., interviews supplemented by secondary data. Section 4 begins analysing Norway's energy and climate policies in relation to the High North. On the basis of interview responses and available data, the link between energy security and CCM concerns in Norwegian High North policymaking is developed and it is argued that there are four main drivers to High North strategy overall. Section 5 concludes the study and issues several suggestions for further research.

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<sup>2</sup> Geopolitics in the High North project website: <http://www.geopoliticsnorth.org/>

## **2. Literature Review**

Energy and climate change discourses have grown considerably vast due to steadily increasing knowledge and voice concerning the relationship between the global ecosystem and human activity. Academic focus on energy security and climate change has, for instance, variously considered mitigation, adaptation measures, risk assessments, as well as the need for long-term, strategic choices for diversification. Other important bodies of research have focused on extreme weather and climate-related events as factors affecting global energy prices and supply. Of particular interest has been the vulnerability of particular energy and ecosystems, with the Arctic and High North often pointed to as the largest threat to global energy supply and sustainability.

Energy security and climate change literature varies in focus, approach and target audience. The review conducted here examines several major examples drawn mainly from Scandinavian research on the High North, energy security and CCMs: The Fridtjof Nansen Institute (FNI); the Center for International Climate and Environmental Research; and the High North Research Centre for Climate and the Environment (Fram Centre). Though this review is not limited to their works, it must be noted that these centres are generally recognised as being at the forefront of research into High North issues.

As mentioned previously, this paper argues that energy security and climate change can no longer be addressed separately. Suffice it to say, while a wide range of issue areas pertain to both, their linkages must, for reasons of

sustainability, be better understood and rationalised. Increasing energy production, for instance, often raises CO2 emissions, adding to and exacerbating climate change. Without neglecting the substantive need for either continued economic development or energy security, addressing the High North and its ecological vulnerability demands clear exposition.

## 2.1 Energy Security

While this study is not an exercise in definition-building, there exist features common across most definitions in the literature for energy security: availability; accessibility; affordability; and environmental acceptability (Brown et al 2011). Studies have also varied in scope, ranging from global and transnational to national and local levels of analysis, with findings at each significant enough to cause concern for policymakers everywhere (Bang 2010). The 1973 oil crisis, for instance, exemplified how localised events can have wide-ranging effects: The Arab-Israeli War saw energy used as a political weapon against supporters of Israel (Austvik, 2009: 86). More recent events, such as Russia withholding gas supplies to influence policymaking in Ukraine during 2006-7, also reflect the political or politicised nature of energy security (*ibid*).

Eng et al (2003: 4) and Bartis et al (2005) argue further that energy security goes beyond politics and policymaking to broader economic implications. Austvik, for instance, adds the distinction between securing energy supplies for import-dependent countries and outlets for export-oriented states heavily invested in fossil fuel extraction. Petroleum and gas are non-renewable

resources, so are linked to longer-term questions of supply: The more one extracts, the less is left for future production (2009: 85-6). Though an issue like peak oil is disputed, it is certain that newer energy sources must be developed to meet ever-increasing energy demands (*ibid*).<sup>3</sup> While this debate per se is indirectly related to the issue at hand, it serves to highlight the link between energy security and economic growth.

According to Kalicki and Goldwyn (2005: 51), geopolitical concerns underlie energy security, with policymaking for both energy-importing and exporting countries today primarily concerned with diversification and the robustness of the energy supply network; viz., limiting dependency on any single producer, supplier or region (Chevalier 2009: 33; Rogner et al 2007: 2). This harks back to the traditional concern of energy security with the security of supply (Yergin, 2006: 1) and while numerous definitions of energy security exist (cf. Kruyt et al 2009), they all undoubtedly build on this conception. APERC (2007) and others (cf. Badea et al 2011; Brown et al 2011: 4; Sovacool & Brown 2010; Sovacool 2010) differ little: Energy security is the ability to achieve secure, reliable and affordable supplies of energy.

For supplier countries like Norway then, which exports 97 percent of all its energy production, energy demand and market stability are additional factors concerning energy security. With domestic consumption a mere fraction of overall production and with that production centred on the High North, energy concerns for Norwegian policymakers are different from those in other

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<sup>3</sup> The peak oil debate discusses whether fossil fuel resources should be considered scarce or abundant in economic terms (Austvik, 2009: 86). For a full review, see Fischer 2008.

countries (NO-05). Rather, Norwegian energy security is based on sustainable demand for Norwegian petroleum and gas, increasing High North petroleum and gas production, ensuring its profitability and, finally, minimizing environmental risks.

## 2.2 Securitizing Climate Change

Much prior research leaves little doubt that increasing energy production intensifies global climate change (Hardy 2003). For the purpose of this paper, this relationship is assumed and will not be subject to contention. It is important, however, to briefly consider whether this linkage has been similarly investigated within Norwegian discourses on energy, environment and the High North.

In Europe, for instance, energy security concerns are normally integrated into environmental policies and vice versa (European Commission, 2008).

Norway, by contrast, as will be discussed subsequently, often deploys similar rhetoric to its European counterparts, but has typically also advanced national petroleum and gas exploration/exploitation policies, using two distinct voices in relation to energy and climate change (NO-05).

Moe's (2010) study on Norway's climate mitigation between 1990 and 2010 is instructive. Outlining the specific goals of CCMs as perceived by leading international organisations, such as the IEA and OECD, Moe analysed whether Norwegian policies over a 20 year period fulfilled these to extract comparative lessons for policymaking. He found that Norway does follow



recommendations regarding CCM, but suggested that policymakers could increase their efforts to ‘[insure] against the future risk of climate change’ (Moe T. 2010: 2). Tjernshaugen and Langhelle (2011: 101-2) argue somewhat similarly in that though Norway made early commitments to reduce human-induced climate changes and despite its status as a major fossil fuel exporter, ‘trying to combine the roles of climate policy leader and fossil fuel exporter created a policy dilemma’ (*ibid*). By 1991, for instance, it was clear that Norway would not be able to fulfil its national stabilisation targets for GHG emissions, despite introduction of a carbon tax the same year. High abatement costs for domestic emissions reductions led to Norway being ‘allowed a 1 per cent increase in emissions from 1990 levels’ and pressure to inject ‘flexible implementation rules into the UNFCCC and the Kyoto Protocol’ (*ibid*). Lindseth (2006c) argues that acting like this internationally allowed Norwegian politicians to write-off their domestic CCM responsibilities essentially by distraction.

Hovden and Lindseth (2004), by comparison, assess Norwegian climate policy by reconstructing national action and ‘thinking globally’. While not necessarily providing linkages between the two discourses, they concluded that, ‘[T]he key challenge in Norwegian climate politics has been how an expansive petroleum industry could be combined with an active and progressive climate policy’. Similarly, Lindseth (2006a: 7) contends that Norway does successfully contribute to carbon emissions reductions through ‘its relatively clean petroleum activities’, arguing that the portrayal of natural gas as environmentally-friendly at the national level in Norway has

complemented the discursive framing of climate change as a global issue (Lindseth, 2006b). So while ‘extraction and protection’ has dominated Norwegian geopolitics and energy discourses since the 1990s (Jensen & Hønneland, 2011: 16), as evident in substantial public/private investments (MPE, 2008), that overlap between economic growth and environmental protection has often witnessed some clever political manoeuvring. Concerning High North energy and climate discourses then, ‘the continuing relevance of the state in the governing of nature-society relations’ is a key aspect demanding investigation (Kristoffersen & Young, 2010: 577); and ‘not least because of the [potential] oil resources under the Barents Sea’ (Jensen & Hønneland, 2011: 16).

### 2.3. Norway’s High North and Energy/Climate Challenge

As mentioned above, certain aspects of High North strategy concerning energy and climate lie outside the scope of this paper. For example, Norway-Russia energy cooperation, European interests in the Arctic resources, the conceptualisation of energy security and institution-building, *inter alia*, are all relevant to Norway’s continuing presence in the High North. Despite heavily featuring in contemporary research and policymaking, however, the focus here is on climate change and the impact of intensifying energy activities per se in the High North.<sup>4</sup>

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<sup>4</sup> Cf. Raaen 2008, Jensen & Skedsmo 2010, and Moe A. 2010 on Norway-Russia cooperation; Offerdal 2010, Rudloff 2010 and Grindheim 2009 European Arctic interests; Claes & Harsem 2010 on energy security; and Stokke 2009, Stokke & Hønneland 2007 on international institution-building.

It is important to note then that much High North climate change research and ecological vulnerability focus ‘on identifying and characterizing the nature of changes observed, and modelling future impacts, with a strong biophysical focus’ (cf. Ford & Furgal 2009: 3; Ford & Smith 2004; Ford et al 2008).

Clearly, the High North as an ecosystem is particularly vulnerable to climate change effects and increasing Arctic temperatures are of global concern, as the Arctic Climate Impact Assessment (ACIP, 2005) confirms:

‘The Arctic is now experiencing some of the most rapid and severe climate change... Over the next 100 years, climate change is expected to accelerate, contributing to major physical, ecological, social, and economic changes, many of which have already begun. Changes in arctic climate will also affect the rest of the world through increased global warming and rising sea levels.’

Due to international interest in energy and the environment in the High North, regular research adds constantly to the discourse (Jensen, 2006; Jensen, 2007), as do frequent impact assessments, policy adaptations and CCMs (Quinn et al., 2008). Ongoing research in this regard typically must deal not only with environmental factors, but also the economics of energy production and its continued profitability (Lindholt and Glomsrød, 2006). As Lindholt explains,

‘[A]lthough the Arctic contains around 24 per cent of the volume of undiscovered petroleum resources... the *value* of these Arctic resources is around 16 percent of the total value of all undiscovered resources’<sup>5</sup> (2006: 29-30).

Rising oil prices globally (or rather market stability) is thus another significant factor in considering sustainability, energy security and production.

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<sup>5</sup> See Appendix A, Map A2 of undiscovered/untapped energy resources on the NCS.

Skagestad's (2010) comprehensive analysis, *The High North: An Elastic Concept in Norwegian Arctic Policy*, provides an excellent historical overview of High North policymaking. For Skagestad, it is the potential of energy resources that has primarily driven the energy debate in Norway, while the climate change discourse has focused on particular issues such as fish stocks, carbon levels and low adaptation problems (Hønneland, 2007). Similarly, Jensen (2007: 249) identifies *pro* and *anti* oil production discourses in Norway as two sides of the same coin. The former pose a 'reversed' environmental protection argument, urging 'help [for] the Russians improve their environmental performance' (Jensen, 2007: 249). The latter side argues that 'Norway should desist from extracting oil in the Barents Sea because the environment is too sensitive' and risks uncertain (op cit. 250).

Elsewhere, Jensen (2006) asks how the public have received increased High North development, considering also the growing dispute between politicians favouring either further exploration or environmentalism. More recently, Jensen and Hønneland (2011) discursively analysed High North debate between 2000 and 2006, showing how the concept of High North energy has become increasingly significant in public debate. Hønneland (et al. 2007: 8) similarly notes how the environmental question centres on energy development. Norway has, for instance, positively contributed to CCM by helping replace coal-fired power plants in Europe with more environmentally-friendly natural gas plants, for which developing High North resources have been essential (Hovden & Lindseth, 2004: 17).

## 2.4. Gaps in Extant Literature

The collaborative project *Geopolitics in the High North* (2008-2012) is currently working on eight research packages focusing on Arctic resources, actors and economic and geopolitical interests.<sup>6</sup> Early efforts as part of Work Package 8 (*Deep Seas, Dire Straits: Norwegian High North Interests Revisited*) suggest that

‘[T]here is a need for an updated analysis of how traditions meet with the new challenges arising from the growing importance of energy in the High North... Such a project will constitute a very valuable contribution to the existing research on Norwegian national interests in today’s world’.

The existing literature concerning interests has tended to overlook ways of assessing how energy security and CCM combine in policy-making; and this is an aspect that could improve our understanding of the drivers behind Norwegian development and the direction which future energy policy may take. Norway has for long treated energy and environmental policies almost as separate domains, and contemporary research has mainly dealt with relevant concepts separately too. This study thus contributes to research on energy security, climate change and increasing High North energy production by seeking to fill this gap: Developing our understanding of climate change and energy interests for Norway *qua* energy supplier and environmental activist by assessing the interaction of CCM and energy security policies in her High North strategy.

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<sup>6</sup> For a full overview, see: [http://fni.no/doc&pdf/Geonor\\_digital.pdf](http://fni.no/doc&pdf/Geonor_digital.pdf).

### **3. Methodology**

To address the research question ‘How do energy security concerns interact with the imperative of climate change in the Norwegian case?’ this study is limited by resource and expediency to case study, using secondary data and primary data collected by interview. While secondary data is objectively-verifiable, a problem with analysing such data alone is that contexts and bias might not be discernable. Interviews, by contrast, can often yield rich, contextual descriptions and personal opinions of events, adding a unique analytical potential to research using this method (Pole and Lampard, 2002: 127).

The intention behind interviewing public officials, government affiliates, etc. for this study is to gain this advantage over analysing pure data to reach a more considered view of High North strategy, policy interactions and interests. Indeed, applied research as here typically seeks to identify improvements in policymaking and provide ‘knowledge that can be used in solving practical problems’ (Swanborn, 2010: 35-40). Eleven interviews with Norwegian politicians, academics and industrial figures working closely on issues of energy and CCM were thus conducted.<sup>7</sup> The following outlines the research design considerations made prior to data collection.

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<sup>7</sup> See Appendix D for a complete list of participants and the interview questions.

### 3.1. Case Study

Case study method is used for both quantitative and qualitative research, though ‘exponents of case study design often favour qualitative research’ (Bryman, 2008: 53). Widely used in the social sciences, it can be applied in various ways (Moses and Knutsen, 2007: 132). Gerring defines case study as ‘An intensive study of a single case (or a small set of cases) with an aim to generalize across a larger set of cases of the same general type’ (2007: 65).

This paper is closest to Swanborn’s understanding, which is ‘the study of a phenomenon or a process as it develops within one case’ (2010: 9). According to Ljiphart (1971: 691), an advantage of this ‘is that by focusing on a single case, that case can be intensely examined even when the research resources at the investigator’s disposal are relatively limited’; limited, indeed, as here. So as ‘social scientists are compelled to delimit and declare cases’, case study applies to this work in the attempt to ‘limit the uniqueness and specificity of the empirical world’ (Ragin, 1992: 217-218). In respect of feasibility and parsimony, delimitation of a research projects is essential as ‘the empirical world is limitless’ (*ibid*). The process of casing has thus led this paper to ‘delimit’ analysis to the interface between energy security and CCM in Norway’s High North policymaking so as to understand relevant motives, interests and ideologies and to identify drivers to those activities.

### 3.2. Interviews

To add value to the case study, expert interviews were sought to obtain new data on perceptions concerning energy security, CCMs and the High North policy agenda. As some have noted, ‘[o]ne of the most important sources of case study information is the interview’ for providing additional, unique information (Yin, 2009: 106). Some even claim the interview method as necessary in order ‘to assist the researcher in the research question’, as it can lead ‘to more valid, reliable and diverse construction of realit[y]’ (Golafshani, 2003: 604). Certainly, as Patton argues, ‘[its] fundamental principle... is to provide a framework within which respondents can express their own understanding in their own terms’ (1990: 290). Indeed, during earlier stages of the research process, intended participants might also perform a guiding function and suggest other sources of evidence as well as other persons to interview (Op. cit., 107); a benefit that also accrued for this work.

To obtain a broad range of perspectives on High North strategy and policies, the interviewees ranged from current and former government officials, to academic researchers, to industrial figures. Whilst acknowledging imperfect data, extenuating circumstances also adversely affected data collection and interviewing processes: The tragic bombing and shootings of 22 July 2011 in Norway affected all government offices, delaying and in some cases preventing access to intended interviewees.

Most interviews were conducted over telephone and some were by electronic mail, though the same questions were asked in both settings. Prior written



correspondence with potential interviewees confirmed responses were to be anonymous and some denied use of direct quotation subsequently; others required pre-interview briefings with respective offices and previewing of interview questions. Several interviewees stressed that their responses were personal views and not necessarily that of their ministry, office or organisation. Consequently, the interviews were largely informal and most useful as off-the-record supplementation of secondary data analysis.

As mentioned, interviewees were asked standardized questions to give rigour to data collection and subsequent analysis (See Appendix D; also Corbetta, 2003: 269). A structured mix of open-ended and multiple-choice questions ensured both freedom of response for interviewees and a framework for comparing responses (cf. Yin, 2009: 107). Informal but extended interview sessions allowed interviewees to recover facts and elaborate on personal opinions, allowing for extra material indirectly related to subjects or issues raised. Consistency enabled reliability and flexibility in data analysis and, while the sample size is too limited to construct one here, gives the basis for a larger coding exercise that would yield a quantitised data-matrix of essentially qualitative information (cf. Corbetta, 2003: 269, Whiston, 2009: 124).

### 3.3. Secondary Data

Von Rankean ideals of source criticism, in which ‘a hierarchy of sources, ranked according to their reliability’ is established (*quellenkritik*, cf. Moses & Knutsen 2007: 120; Ranke 1956: 54) were considered during research

conceptualisation. Von Ranke distinguished between primary sources, ‘direct outcomes of historical events or experiences’, and secondary sources, ‘those removed from original events’ (Moses and Knutsen 2007: 120-1). Being at a remove from actual historical events can make secondary sources less reliable; primary sources typically have better value as information thereby is not subject to selection or process bias. As such, official or publicly/objectively-verified documents, reports and speech might be considered primary, whereas newspaper articles and much prior research are typically secondary sources that might draw from primary sources.

Secondary data for this paper have been collected from several sources.

Postmodern cynicism apart, official and government materials can be considered an important category of data source in the social sciences (Scott 1990: 1). Given the stated research question, official policy documents, speeches and interviews were of particular importance to this study, as were a number of scientific papers and expert reports, most of which were objectively-verified and/or peer reviewed.

Understanding how energy security and climate change policies interact in the case of Norwegian High North strategy is thus addressed and enriched by combining secondary sources and primary data from interview responses (though of course limited by the scale of the paper and available resources).

What follows is a discussion of how these two policymaking strands interact in accordance with the data collected from expert interviews and secondary sources.

#### **4. Analysis**

The previous sections highlighted how Norwegian energy security and CCM are related, but that extant discourses and literature do not address the concern of how these two policymaking areas interact. The analytical portion of this paper begins addressing this gap in three sub-sections:

4.1. Norway's High North, Energy and Climate Change Policies

4.2. Drivers of High North Strategy

4.3. Energy Security and CCM in Norwegian Policymaking

The second and third sub-sections use data and interview responses to build the case that there are several main drivers concerning High North policymaking and to assess the degree to which energy security and CCM are integrated in Norway. This cannot proceed, however, without first establishing current High North strategy by way of an historical overview. While inevitably descriptive, this first sub-section is necessary to outline changes in attitudes and political stances pertaining to Norwegian energy security and climate change policymaking.

4.1. Norway's High North, Energy and Climate Change Policies

Compared to other European states, Norway has always had two separate voices when it comes to energy and climate policies. It is arguable that this has changed with the newly-discovered energy potential of the High North and increasing awareness about its vulnerability to climate change. If so, the question is in what ways?<sup>8</sup>

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<sup>8</sup> For a more complete picture of policy evolution, see Appendix B, Table B1.

#### *4.1.1 Early Petroleum and Gas Policy*

Since the opening of Ekofisk in 1971, the petroleum sector has driven Norway's economy and helped finance an extensive welfare state (MPE 2010). Production during the first two decades was heavily regulated to ensure national sovereignty and control over petroleum development. Energy politics has since the 1990s been dominated by a consensus that 'sooner or later, everything will be pumped up'. Intriguingly, despite the Kyoto Protocol dominating international climate discourse in that period, the MPE Energy Report No. 46 (1997-1998) to Norway's *Storting* had no mention of Kyoto or reference to carbon emissions reductions. Report No. 38 (2003-4) was similarly 'climate neutral', with little discussion of any relationship between emissions reduction targets and long-term energy development plans. As late as 2008, the 'climate compromise' concerning mitigation activities did not include the petroleum industry, despite its being the second greatest emitter of GHGs by volume (Klif, 2010). Even within the past couple of years, energy and climate issues are still addressed separately, obfuscating the process of emissions reduction by the year 2020 of 15-17 million tonnes as has been committed to (*ibid*).

#### *4.1.2 Climate Policy Emerges*

Norway began to show some concern over climate change and GHG emissions from the late 1980s (Kristoffersen and Young 2010: 579) with the implementation of 'green taxes' (re carbon, waste disposal, fossil fuel use) indicating some initiative for CCM action (IEA 2010). White papers in the late 1990s later raised basic commitments to international Climate Conventions,

the Kyoto Protocol and the ‘significant understanding of the greenhouse effect set out in reports from the International Panel on Climate Change (IPCC)’ (MoE 2002: 7).

MPE Report No. 54 (2000-1) and the Supplementary Report No. 15 (2001-2) helped frame the *Storting*’s first Kyoto-based climate policy considerations and, importantly, a discursive shift from oil to renewable energy production and use. Norway’s first coherent ‘climate policy’ emanating from the *Storting* thus came about in 2007 as a list of substantive GHG emissions reduction measures (Report No. 34 (2006–7)). Several initiatives were intrinsic to this strategy, including commitments to become ‘carbon neutral’ by 2050 and promises of consumption cuts and reductions assistance in other countries to reduce, by 2020, global GHG emissions by 30 percent of 1990-levels. In 2008, a cross-ministerial group named ‘Climate Cure’ was established to ‘assess the need for new, modified instruments in Norwegian climate policy’ (LG Action 2010). However, while their guiding principles reflect some of the toughest GHG reductions measures, it must be noted that Norway still lacks a binding climate action plan incorporating energy security concerns and CCM action (NO-11).

#### *4.1.3. High North Policy Development*

High North politics gained coherence during the Cold War period, but the region as defined has long been of strategic importance for Norway (Rowe and Hønneland, 2010). Spurred by regional security developments (Raaen, 2008: 1) in the 1990s and ‘potentially huge oil and gas resources in the region’

(Offerdal, 2009: 30), Norwegian academia, the media and public officials alike were drawn into new geopolitical and socioeconomic debates and discourses (Skagestad 2010: 4). Enthusiasm for High North energy development in particular grew during the 2000s, spiking in 2007 when rapidly-increasing petroleum prices threatened security of demand (Hilde 2010).

Despite the increasingly bleak climate projections in energy and environment discourses, High North politics saw several positive developments occur through the 2000s. Early in the decade, the Bondevik Administration presented the first 'High North' White Paper (Report No. 30, 2004-5) to the *Storting*, marking the return of the concept explicitly to foreign policy (Jensen & Hønneland, 2011: 15). The Stoltenberg Administration built on this subsequently in rationalising *High North Strategy* (MFA 2006) and *New Building Blocks in the North* (Government 2009), highlighting opportunities and challenges in the High North and situating those explicitly on both domestic and international agendas. In the past ten years then, High North strategy has acquired the goal of '[creating] sustainable growth and development in the High North' based on three overarching principles, 'presence, activity and knowledge' (Offerdal 2011). This interest is not only rhetorical: Since becoming Norway's most important strategic priority area (OPM, 2005: 7), High North policies have seen increased funding by more than NOK 1.5 billion during Stoltenberg's two terms in office (Nilsen, 2009).

In terms of whether Norwegian energy and climate policies have changed or, indeed, merged, this appears to be the case only somewhat. Energy and

climate have long been separate policy areas, but factors such as energy potential and ecological vulnerability are beginning to affect considerations. Even so, the divide remains clear and a sea-change in the near-future is unlikely (NO-05). Norway's policymakers, regardless of external information or changes in government, still appear reluctant to 'hybridise' energy security and CCM discourse or policymaking.

However, more significant changes to High North politics in recent years particularly (and, indeed, months) have arguably been due to the recent change in government. After Stoltenberg took office in 2005, Norwegian energy and High North policy development intensified, with greater focus given to energy production especially. Indeed, in June 2011, the government abandoned a special emissions regime applying to Norway's north, creating additional legislation and operational guidelines applicable to the whole of the NCS too (NO-01). In so doing, the government opened up more activities on the continental shelf than was previously considered acceptable (NO-01).<sup>9</sup> Such moves suggest that policymakers are more concerned with economic profitability and energy security (regarding Norway *qua* producer) rather than mitigating climate change. Yet this obscures the picture somewhat concerning the various CCM activities which Norway does engage in and, in some instances, leads.

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<sup>9</sup> See Appendix A1 for an overview of the NCS area status.

#### 4.2. Drivers of High North Strategy

The question then is what motivates the various components in Norway's approach to the High North. Its government, in enunciating a coherent strategy, engaging in regional cooperation and increasing financial backing for domestic oil and gas production, clearly has an interest in energy development (NO-09; NO-10). As such, it is argued here that there are four interrelated drivers behind Norway's High North strategy: geopolitics; energy security; economy; and socio-industrial interests.

From a geopolitical perspective, the High North has gone from being a barren area in both environment and political interest to one of considerable strategic importance due to hydrocarbon discoveries and climate change research (Claes and Østerud 2010: 1-5). After the Cold War ended, increased presence in the High North became a national priority (NO-11), necessitating improved relations with Russia and moves to 'promote peace, expand infrastructure, and... encourage economic growth in commerce, business and trade' (Jensen & Hønneland 2011: 5). This is not to say the region did not factor into Norwegian geopolitics previously, but a considerably different approach evolved in the past two decades.

Underlying this strategic shift is the increased salience of energy security in concept and practise, whereby '[h]aving a continuous presence in the north is important for... security of production and, therefore, security of supplies' (NO-04). Geopolitical and energy security concerns thus link, with the one guiding the other and vice versa. Norway-EU energy talks in the early post-



Cold War period, for instance, focused on energy security and the ‘mutual benefits’ of High North resource extractions (NO-11). Indeed, exploitable High North hydrocarbon resources are projected to meet the energy needs of not just Europe, but beyond as well (NO-2; Jervell 2010). In this context, Norwegian energy politics ‘centres on a responsibility to contribute towards global energy security, sustainability and particularly Europe’ in the long-term; it is not only (NO-6; NO-02).

So while Norway has known about Barents Sea resources since the mid-1980s, newer discoveries and declining North Sea production have simply increased interest in the High North and considerations of energy security, sustainability, export and, thusly, external relations (NO-05). With Europe, for example, these concern, on the one hand, supply diversification to limit dependency on Russian sourcing and, on the other, implementing energy alternatives, as with Germany’s decision to phase-out nuclear power by 2020 (NO-6). This makes ‘exploration and opening-up new areas important for future sustainability of supply’ essential, as well as partly justifying acceptance of the negative environmental effects of exploration and extraction activities (NO-3, NO-07). The bonus, however, is that while environmental concerns exist, Norway’s safety record in High North exploration and extractions gives confidence both domestically and abroad in its role as an energy supplier (NO-05).

Other experts, however, argue that ‘petroleum and gas are purely economic interests’ (NO-04). Apart from the north’s well-established fisheries and the extended effects of the petroleum industry, such as communitised onshore facilities supporting extraction work, there is ‘not much else to do in the High

North' besides fossil fuel production (NO-04). In the so-called New Barents Sea (the Barents Sea's southern reaches), for example, oceanic claims and intense seismic surveys began this summer (NO-06; NO-11). Economic profitability is certainly a more obvious driver for Norwegian energy productivity (NO-03; NO-08): In the last 40 years, the petroleum industry has seen profits exceeding NOK 9,000 billion; a fifth of GDP last year came from that sector alone; and crude oil, natural gas and pipeline services comprised nearly half the value of Norway's exports (NPD 2011). Norwegian energy production not only meets domestic consumption, but foreign demand also, fuelling the national economy and extensive welfare state (NO-05). The energy industry itself then, in employing an estimated 206,000 persons in a country of roughly 5 million (2009), thus carries a wider 'social responsibility' too (NO-07) through employment, production, export and value creation, and might thereby be considered another driver of High North strategy (NO-06).

#### 4.3. *Energy Security and CCM in Norwegian Policymaking*

Interestingly, how interviewees generally conceived of any relationship between energy security and CCM reflected the pro- and anti-production debates presented in Jensen's *Petroleum Discourse in the European Arctic* (2007). Interviewees generally agreed on two points: First, although energy security features prominently in policymaking, CCM has not gained similar attention; and second, that policymakers cannot fail to understand the linkage between energy security and climate change, so should act accordingly.

#### *4.3.1. Primacy of Energy Security*

Petroleum and gas production has been a key economic growth factor since the 1960s (NO-02). After four decades of development, petroleum production in 2010 was at 2.13 million barrels per day (bbl/d), with 23 new oil-producing fields opened that year; production peaked in the past at 3.4 million bbl/d (MPE, 2010; EIA, 2011).<sup>10</sup> Though petroleum production is declining, total energy production has increased due to gas production, which saw an increase of 108 percent between 2000 and 2010 to 3.76 trillion cubic feet (EIA, 2011). Decline in petroleum demand domestically (213,000 barrels per day in 2010 against 229,000 in 2008) is largely due to green alternatives: 43 percent of total energy consumed and 96 percent of electricity for domestic consumption is generated by hydropower (IEA 2011: 4-6). Clearly, national energy security of supply is not a concern (NO-03, NO-05; cf. Jaffe & Wilson).

In some circles, energy security is considered far more pressing for society at large than climate change, hence politicians find it easier to gain acceptance for energy security policies than CCM (NO-07). So energy security becomes easier to ‘do’ with regards to the High North policymaking. Without an official definition, energy security for Norway means ‘hav[ing] energy available when we need it’ (NO-06; NO-09; NO-10). Moreover, as a supplier country, prices, customers and transmission are the more important concerns (NO-09); and the environment does not feature greatly in this picture (NO-06). The main interest of the MPE, for instance, is securing markets for Norway to sell petroleum and gas under the right conditions, which contrasts,

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<sup>10</sup> See Appendix C, Figure C1 for an overview of yearly petroleum- and gas production, 1995-2011.

interestingly, with an explicit environmental concern when it comes to promoting energy resources internationally (NO-11).

Arguably, Norwegian energy politics is simply based on the understanding that Norwegian petroleum and gas production meets an international energy demand; and so long as that demand exists, Norway will keep producing. Though policymakers increasingly consider climate change effects with regards to extraction methods, environmental politics has largely been in stasis since the failure of the Copenhagen climate negotiations of 2009 (NO-04). This is a worrying trend, given that domestic GHG emissions have since increased by 4.8 percent<sup>11</sup> and government spending for climate and energy research decreased, though energy production continues apace (SSB 2011b; Evensen 2010; NO-05). Concerning High North energy policymaking, clearly ‘energy security best applies’ (NO-07).

It is obviously in Norway’s interest to help solve climate change, albeit elsewhere, as abatement costs and the stakes are higher in Norway than in the rest of the world (NO-07). As such, Norway’s ‘energy considerations and economic objectives control High North politics’, despite policymakers preferring to believe, perhaps, that CCM and climate change concerns underlie Norwegian politics generally (NO-04). However, this contrasts against substantially increased investments in petroleum and gas extraction and exploration on the NCS in recent years, which reached a record high of NOK144.4 billion in 2011 alone (SSB, 2011a).<sup>12</sup>

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<sup>11</sup> See Appendix B, Table B2 for an overview of GHG emissions by sector and percentage change.

<sup>12</sup> Appendix C, Figure C2 for accrued and estimated investments costs in crude oil and gas extraction.

While energy security concerning Norway's role as European supplier is important, however, it is not the only driver behind High North policy (NO-05). Policymakers have also concerned themselves with three other issue areas with regard to oil and gas production (NO-10). First, there is the money-making prospect of continued development (NO-10). Increased petroleum and gas operations<sup>13</sup> between 2008 and 2009, for example, saw a 56 percent increase in the gross value of production from NOK 59 billion to NOK 92 billion (SSB, 2011c). Second, the government is concerned with providing yet more employment opportunities through the petroleum industry (NO-10). Again between 2008 and 2009, direct employment therein rose from 37,800 to 47,000 (SSB, 2011c)<sup>14</sup>. Third, though perhaps not as pressing an issue in the Norwegian case, is environmentalism (NO-10). Norway does not yet have a governmental white paper binding industries and municipalities to CCMs (NO-04) and climate politics is generally based on the largely outdated 2006-7 issuance of guiding concepts. As such, Norwegian climate policy 'is not strong enough to change or influence the country's energy politics' (NO-04).

#### *4.3.2 Linking Climate Change to Energy Security*

Another argument is that Norwegian policymakers are increasingly viewing climate change and energy as inextricably linked and will thereby acknowledge that 'energy security must be solved within what the climate allows' (NO-03). Oil and gas development, as with opening new extraction fields, has undoubtedly seen more climate-friendly solutions incorporated (NO-06). Today, extraction method and impact are more important than the

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<sup>13</sup> Although the petroleum production decreased by 5,6 percent in 2009, due to the increase of 4,3 percent in natural gas production, total production increased by 1 percent from 2008 figures.

<sup>14</sup> See Appendix B, Table B3 for employment statistics, 2006-2009.

pure ability to continue production and it would appear that Norway has gone through a ‘process of maturing concerning the [energy] security debate’ (NO-06; NO-03). While climate change at the societal level of discourse may have lost momentum after the failure of the Copenhagen negotiations of 2009, it certainly has done in policymaking circles concerning Norway’s international CCM efforts (NO-03).

Yet it is also argued that since climate change is a global problem, mitigation does not and should not have geographical constraints (NO-06). Norway does engage in numerous international environmental and climate programs. This year, for example, Norway invested NOK 3 billion, up from 2.1 billion in 2010, in the ‘Reducing Emissions for Deforestation and Forest Degradation’ (REDD) program, helping developing countries mitigate deforestation (NORAD 2011). Similarly, the ‘Clean Energy Initiative’ builds on the REDD experience and promotes renewable energy in developing countries. Funding has steadily increased from 2005, with the largest increase a doubling between 2010 and 2011 from NOK 800 million to NOK 1.6 billion (MFA, 2010).

Other, similar environmental initiatives show that, despite forcing the issue of energy production at home, Norway balances this with internationalised CCM measures. There is a growing and explicit awareness amongst policymakers, however, that being a key broker of international agreements is insufficient and greater domestic action is needed to maintain credibility, even though this may involve higher abatement costs (NO-05).

For example, Norway is particularly vulnerable to environmental conditions such as precipitation changes and lack of rainfall especially (NO-03). This can

disrupt electricity supply and might eventually force the relocation of hydroelectric dams if anticipated changes and decline in rainfall patterns eventuate, threatening Norway's domestic energy production (West and Hovelsrud 2008: 5). Climate change mitigation might thus be considered a longer-term component of energy security, which Norway must substantiate via renewable energy and infrastructure improvements (NO-03). Notably, positive moves in this direction have begun in the High North: Expenditure on domestic CCM has increased (NO-05); internationally-recognized climate research and modeling has expanded significantly in recent years; and Norway continues to '[play] a pivotal role in expanding the research frontier in climate research in the polar regions' (Ulstein 2011). A total of NOK 2.1 billion was spent on environmental investment in 2010, for instance, 80 percent of which targeted air quality and GHG emissions reductions (SSB 2010).

On that note, while GHG emissions have risen in correlation to energy production, general moves towards cleaner-burning natural gas over oil and/or coal for fuel use is considered a positive (NO-05) and is reflected in wider European energy security and climate change debates too (NO-02). Despite improved combustion technologies, for instance, coal burning is still the greatest source of GHG emissions, emitting twice the CO<sub>2</sub> of gas burn; and while remedies such as carbon capture and sequestration (CCS) are technologically feasible, only small-scale testing at high economic cost has occurred and these are not yet commercially viable (IEA, 2010b: 19). Given that switching to gas has calculated to have the same overall impact as CCS concerning emissions reductions, it easily becomes the best option in terms of cost and feasibility (NO-02). So while gas production per se has adverse

climate impacts, in Norwegian High North strategy it fits the bigger picture of affordably provisioning CCM while simultaneously ensuring sustainable energy supply for security and economic reasons (NO-05). Technological advances and good governance thus combine to substantively justify extending resource exploration into the High North, making Norway a good example of how a supplier nation can consider the environment, economic gain and energy security together (NO-01, NO-02).



## **5. Conclusions**

### 5.1 Project Shortcomings and Suggestions for Future Research

Given the extraordinary circumstances of July 2011 which affected all government ministries in Norway, the intended range and number of interviewees was reduced significantly. Interviews with persons in the Ministry of Petroleum and Energy, for instance, a key group for data collection applicable to this study, would have been of value in pure qualitative terms and for comparison. There may have thus been an over-reliance and bias according to experts interviewed from other fields.

The project was also limited by the dissertation format and time to assessing the evolution of High North strategy in a very condensed manner. With greater resources, a more in-depth analysis of successive phases in policymaking and a large-n comparative study of expert opinion and even public opinion might have been feasible. This would have helped build a more comprehensive picture, enabling additional questions to be asked on the subjects of High North policymaking, energy security and CCM, such as whether public perception significantly affects policymaking and whether policy drives discursive shifts on these issues or vice versa.

Nevertheless, the responses obtained still helped build an understanding of the drivers behind Norwegian High North strategy, energy security and CCM. It also provides an entry into several other potential areas of research: A cost-benefit analysis comparing Norway's international and domestic CCM efforts; comparative analysis of GHG emissions reductions abroad against production

and CCMs in Norway's High North; or even textual analyses of political speech in Norway to quantitatively discern the balance between energy security and climate change discourses.

## 5.2 Conclusions

While attempting to identify the drivers of High North strategy, it must be noted that, given the wide variety of subjects discussed herein, concrete conclusions are difficult to issue; and this study certainly does not go so far as to propose policy solutions to energy security and climate change issues.

Suffice it to say, it appears that there is a move towards more synergistic policymaking in Norway when it comes to these areas. Norway as a supplier country, for reasons of international reputation, development, energy needs, economic growth and domestic wellbeing, seeks to maintain its position as a responsible energy provider and promoter of feasible CCM efforts.

There have been several noteworthy developments in the fields of energy, climate and the High North, as was presented above. While the latter has re-emerged as an area of considerable strategic importance in the post-Cold War period, its significance has primarily derived from its considerable energy resources. While this has long influenced domestic politics and seemingly trumped environmental concerns, this was, interestingly, matched with a rather vigorous approach to alternative energy provision and climate change mitigation internationally on the part of the Norwegian government.

Increasingly, however, climate concerns (as well as societal issues, such as employment and socioeconomic development) have affected domestic politics

with regards to the energy policy, industry and related activities. So while Norway has promoted natural gas at home and abroad, for instance, over oil and coal, it has also explored, invested in and incorporated technological advancements, alternatives and governance processes that enhance climate change mitigation, such as CCS, renewable energy and environmental risk management.

This is reflected in a slight shift in the discourse from one dominated by energy security to one in which policymakers are at least more explicit about climate change demands and the need to develop solutions. There were signs of this earlier in such legislation as the Petroleum Act of 1996, which clearly outlined exploration, extraction, production and liabilities while emphasising environmental safety and impact.<sup>15</sup> Typically, however, climate change is a separate discussion and such concerns are often implicit in energy discourses, so there remains no explicit environmental strategy, policy or legislation binding state and businesses, aside from mitigating risks.

This continued lack of a High North environmental strategy is intriguing, considering that Norway arguably needs to integrate energy security and CCM to maintain its standing in terms of energy supply and responsible governance. As higher production levels inevitably lead to increasing GHG emissions, it seems contradictory to rely more on fossil fuel production, particularly when petroleum and gas extraction in ecologically vulnerable areas like the High North is thus required. It is impossible on the basis of this study to predict

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<sup>15</sup> Available via: [http://www.ptil.no/getfile.php/Regelverket/Petroleumsloven\\_e.pdf](http://www.ptil.no/getfile.php/Regelverket/Petroleumsloven_e.pdf) (accessed on 12.08.2011).

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where High North strategy will go, but nor should it do so. What can be said, however, is that Norwegian policymakers will not resolve this dilemma without explicitly recognizing it as such first.

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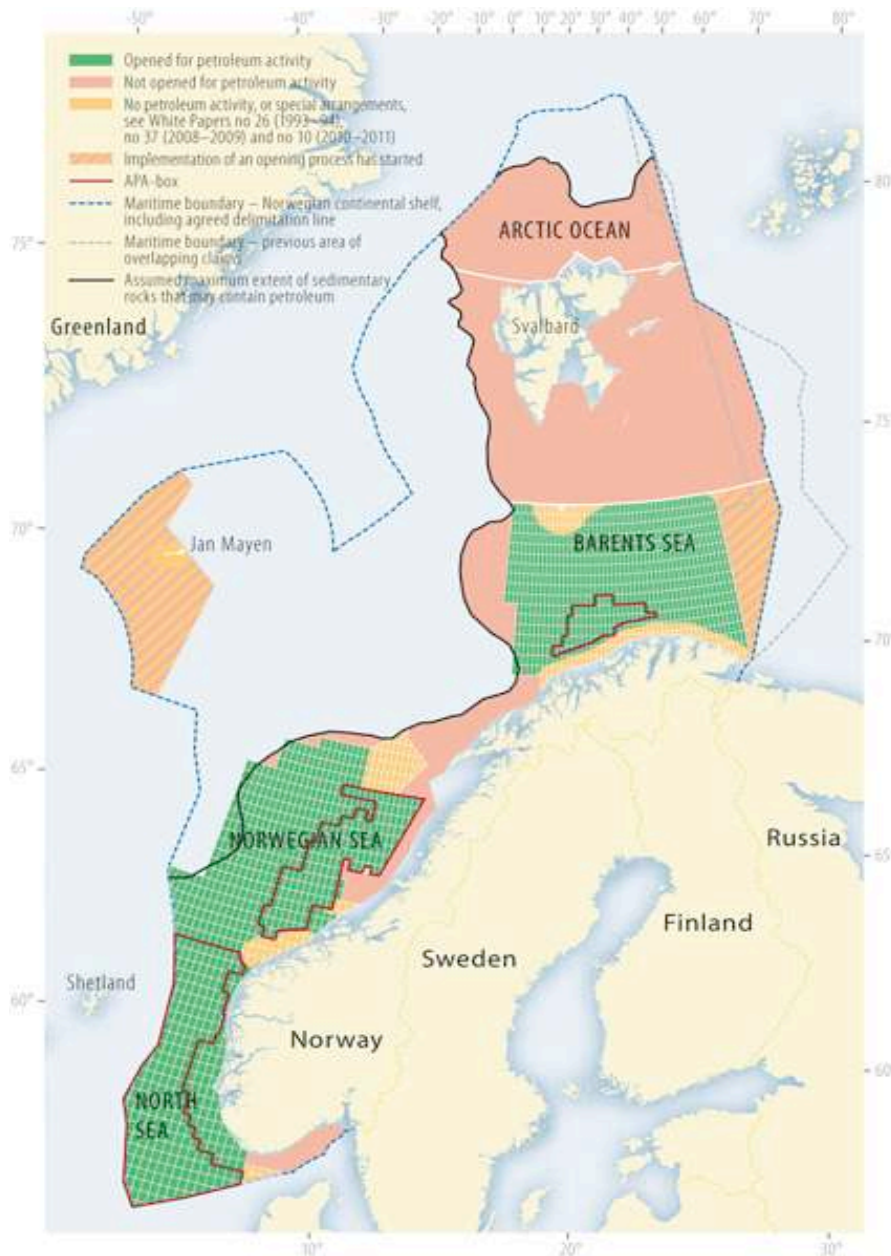
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## 7. APPENDICES

### A. Maps

#### A1. Area status on the Norwegian Continental Shelf (2011)



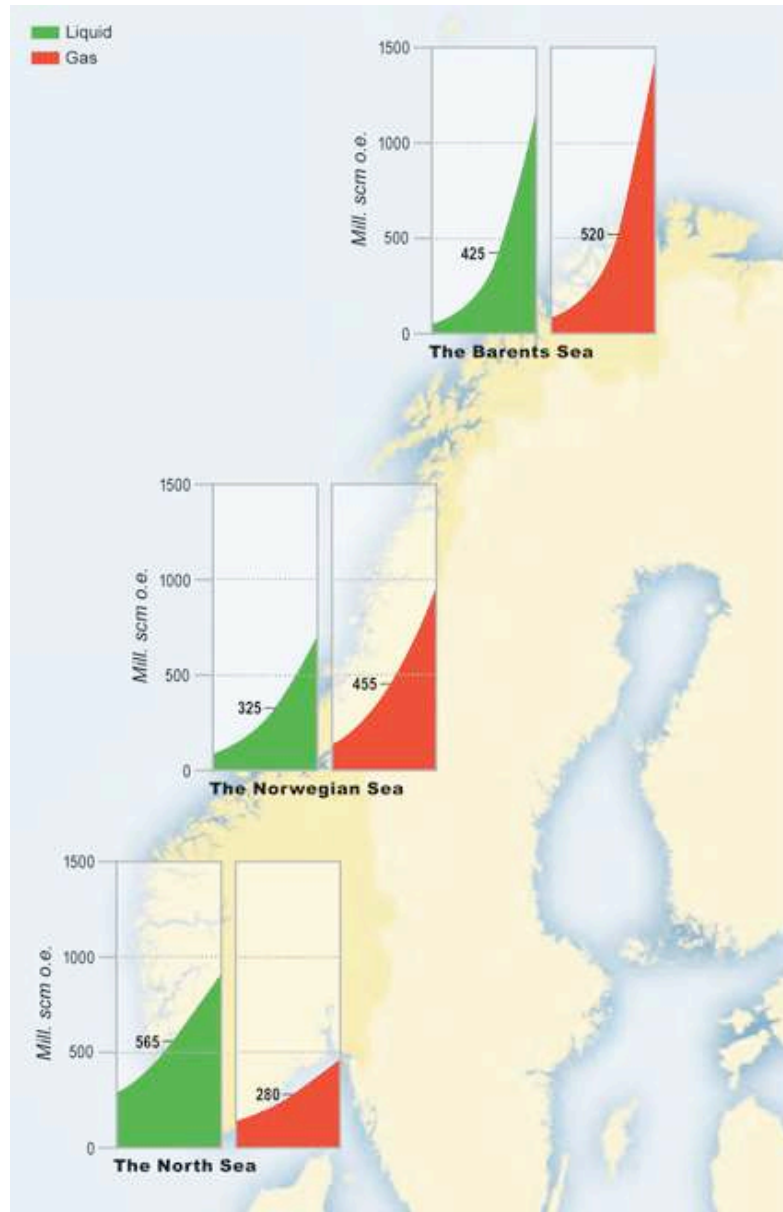
Source: Norwegian Petroleum Directorate (NPD), 2011,

<http://www.npd.no/en/Publications/Facts/Facts-2011/Chapter-5/>

Note A1: Norway's government recently granted the energy industry access to larger areas, ensuring time-critical resources be produced in a timely manner. Areas shown here were opened under the 'awards in predefined areas' (APA) scheme from 2003.



A2. Undiscovered/untapped resources distributed by area



Source: Norwegian Petroleum Directorate (NPD), 2011,  
<http://www.npd.no/en/Publications/Facts/Facts-2011/Chapter-5/>

Note A2: The number in each column indicates the expected recoverable volume of liquid petroleum and gas per area, with highs/lows depicted by the slanted line. The data indicates the largest untapped reserves overall are in the High North, for which exploitation and further exploration are highly likely.

## B. Tables

B1. Key points in the evolution of Norway's energy and climate policies and High North strategy.

<b>Year</b>	<b>Climate – <i>Ministry of the Environment</i></b>	<b>Energy – <i>Ministry of Petroleum &amp; Energy</i></b>	<b>High North – <i>Ministry of Foreign Affairs; Office of the Prime Minister</i></b>
1971- early 1990s	Emerging climate change concerns through late 1980s.	Early petroleum production and heavy regulation; Ekofisk (1971); Statoil and Petroleum Directorate established (1972).	Cold War legacy, securitization and militarized strategic interests
1991-2000	Carbon, waste disposal, and fossil fuel taxation Report No. 54 (1997-8), Government environmental politics: Report No. 8 (1999-2000)	Law of Petroleum (1996); principle of converting petroleum wealth to financial wealth; Petroleum Fund (1991).	End of Cold War; fear of marginalization; increased cooperation; several international and regional agreements are signed
2001-2003	Norwegian Climate Policy, updates and amendments: Report No. 54 (2000-01) Report No. 15 (2001-02)	Peak oil in the North Sea, long-term projections of production Report No. 38 (2001-2001) Report No. 38 (2003-2004)	Pressure to extend explorations north; opening of Snøhvit gas field (Barents Sea)
2004-2005	Environment White Paper Report No. 21 (2004-05)	Departmental Report 2004: <i>Environment 2004 – emissions, environmental impacts, measures to reduce emissions to the air from petroleum activities.</i>	<i>Opportunities and challenges in the North</i> Report No. 30 (2004-05)
2006-2007	First National Climate Policy White Paper. Report No. (2006-07)	Departmental Report 2007: <i>Storing CO2 under the North Sea Basin: A key solution to combating Climate Change.</i>	First 'High North' strategy made explicit (2006)
2008-2009	Integrated Management of the Marine Environment in the Norwegian Sea Report No. 37 (2008-09)	Departmental Report 2009: <i>Incentive scheme for attracting new electricity generation – investments into safeguarding security of electricity supplies in certain regions.</i>	Follow-up to the High North strategy: <i>New Building Blocks in the North</i>
2010-2011	Update of the Management plan, including the Barents Sea and Lofoten Report No. 10 (2010-11)	Petroleum white paper: <i>An industry for the future</i> Report No. 28 (2010-11)	<i>Towards a greener development – cf. sustainable development.</i> Report No. 14 (2010-11)

Source: Norwegian Government website, [www.regjeringen.no](http://www.regjeringen.no)

## B2. Greenhouse gas emissions by source 2010, percent change 1990-2000 and 2009-2010

Source	2010	% change, 1990-2010	% change, 2009-2010
Oil and gas extraction	13.8	77.7	0.8
Manufacturing and mining industries	11.9	-37.4	5.4
Energy supply	2.1	549.4	17.4
Road traffic	10.1	30.3	3.5
Other transport and motor equipment	7.3	29	9.8
Agriculture	4.2	-5.9	0
Other emission	4.4	-8.4	10.8
Total	53.7	8	4.8

Source: Statistics Norway, [http://www.ssb.no/klimagassn\\_en/](http://www.ssb.no/klimagassn_en/)

Note: A two-year decrease in Norway's greenhouse gas emissions (GHGs) compared to the average in the preceding twenty year period was followed by a new increase in 2010. Total Norwegian GHGs were 2.5 million tonnes higher in 2010 than in 2009. Commissioning of new gas, power and district heating plants has resulted in emissions from energy supply increasing six-fold from 1990 to 2010. While total GHGs have increased by 8 percent from 1990, emissions of CO<sub>2</sub> have grown by more than 30 percent. The strong growth in oil and gas production in the 1990s is the main cause of the emission increase. In 2010, the emissions of this gas grew by 2.6 million tonnes, amounting to 45.4 million tonnes. This is the highest emission figure in the period where emissions have been calculated, i.e. from 1973.

Table B3. Employment statistics petroleum- and gas sector, onshore-offshore, 2006-2009

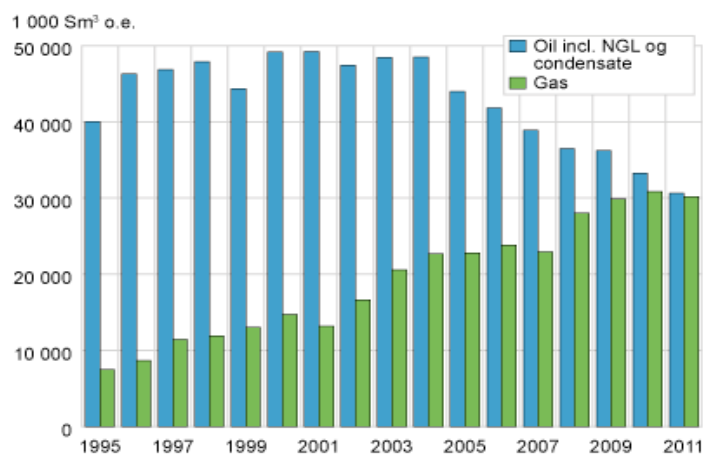
Employees	2006	2007	2008	2009
Onshore	12,209	12,427	13,543	15,053
Offshore	5,439	5,534	6,414	6,181
Total	17,648	17,961	19,957	21,234

Source: Statistics Norway, [http://www.ssb.no/oljev\\_en/tab-2011-02-14-01-en.html](http://www.ssb.no/oljev_en/tab-2011-02-14-01-en.html)

Note: Employment (above) and investments statistics (Figure C2 below) can serve briefly as indicators of policy direction concerning Norway and energy production. If the promises by the Prime Minister, Petroleum and Energy Minister and the Foreign Minister hold, Norway will continue and expand High North explorations in order to meet world demand for fossil fuels.

### C. Figures

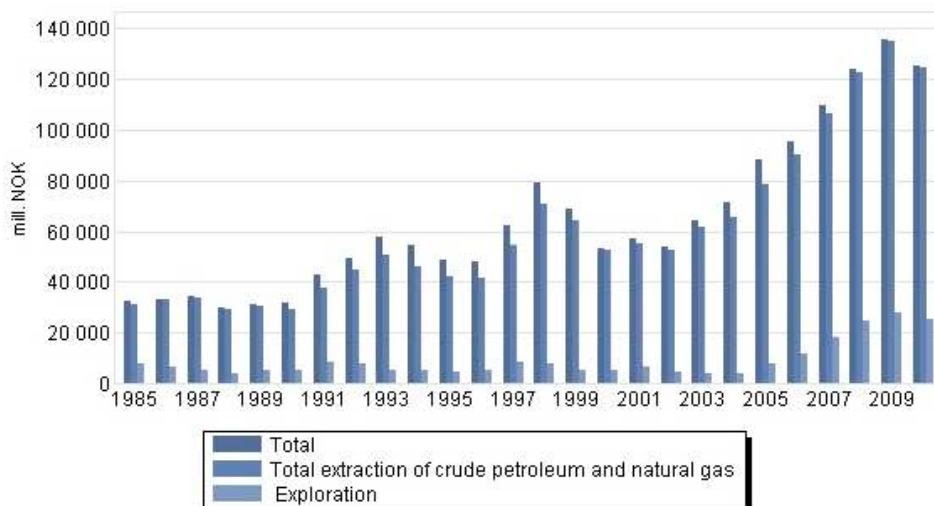
Figure C1 - Total oil and gas production, Jan-Mar 1995-2011 (in 1000 Sm<sup>3</sup> o.e.)



Source: Statistics Norway, [http://www.ssb.no/ogprodre\\_en/tab-01-en.html](http://www.ssb.no/ogprodre_en/tab-01-en.html)

Note: C1 shows a steady increase in Norway’s gas production, arguably reflecting not only greater energy demand, but also increasing use of cleaner energy sources, discussed in the last section of the thesis as part of climate change mitigation.

Figure C2 – Biennial accrued and estimated investments costs (NOK million) in crude petroleum and natural gas exploration, by investment type.



Source: Statistics Norway, [http://www.ssb.no/oljeinv\\_en/tab-2011-09-01-04-en.html](http://www.ssb.no/oljeinv_en/tab-2011-09-01-04-en.html)

Note: Though peak oil in the North Sea area was reached in 2001-2, exploration and production investments have continued to increase substantially. Estimates for 2011 are not depicted here, but sources suggest investment exceeds 2009 figures by a record high of NOK 144.4 billion.

## **D1. Interview Questions**

The following questions were asked to various interviewees (listed under Appendix D2) between June and August 2011.

1. What drives Norway's involvement in the North? Is it primarily energy security or economic profitability?
2. Which of the two concepts, energy security or climate change mitigation, best apply to the High North oil and gas exploration policy?
3. Does the energy security dimension in Norway incorporate climate change mitigation and vice versa, if so, how? If not, why not?
4. Do you think our policy-makers are more concerned with energy security or climate change mitigation?
5. In your opinion has industry in Norway been effective in meeting the challenges of energy security and climate change? If so, how? If not, what could have been done differently?

Some of participants were also asked the follow-up questions below:

6. How can energy security and CCM play out together in a supplier country?
7. Can Norway serve as a model for other supplier countries?

## **D2. List of Interviewees**

The following persons agreed to be interviewed on condition of personal anonymity, but accepted that their office, affiliation or status be made known.

NO-01: Officials from the Norwegian Oil Industry Association (OLF), 09.06.2011 and 14.06.2011, Frekhaug, Norway (telephone).

NO-02: Official from Statoil, 04.07.2011 and 21.07.2011, Frekhaug, Norway and Cochester, England (telephone).

Karina Garnes Reigstad, 288883

NO-03: Official from the Energy and Environment Committee – Stortinget (Norwegian Parliament), 25.07.2011, Colchester, England (telephone).

NO-04: Previous Petroleum- and Energy Minister, 22.07.2011, Colchester, England (telephone).

NO-05: Official from the Fridtjof Nansen Institute (FNI), 21.06.2011 and 27.07.2011, Frekhaug, Norway and Colchester, England (telephone).

NO-06: Professor at BI Norwegian Business School, 29.07.2011, Colchester, England (telephone).

NO-07: Scientist at Northern Research Institute Tromsø (NORUT), 04.08.2011, Tromsø, Norway (email).

NO-08: Official from the Norwegian Institute of International Affairs (NUPI), Energy Programme, 09.08.2011, Oslo, Norway (email).

NO-09: Officials from the Climate and Pollution Agency (Klif), 12.08.2011, Oslo, Norway (email).

NO-10: Official from the Norwegian Petroleum Directorate (NPD), 17.08.2011, Colchester, England (telephone).

NO-11: Senior Fellow of the Norwegian Institute for Defence Studies (IFS), 24.06.2011 and 19.08.2011, Frekhaug, Norway and Colchester, England (telephone).