

# Windmills or Deepwater Drills?: Normative Roles of Technology in Norwegian Resource Extraction Policy Debates

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After discovering oil in the North and Norwegian Seas in the late 1960s, Norway is now one of the largest oil exporters and wealthiest nations in the world. Norwegians are some of the healthiest and happiest people on the planet, enjoying cradle-to-grave welfare and a national savings fund well into the billions. Yet despite its transformational power in this society, oil is a complex and highly debated topic among Norwegian policy makers and everyday citizens. In the wake of a global fossil fuel crisis, countries worldwide are racing to stake their claim in the Arctic, a new frontier estimated to hold staggering amounts of the world's usable oil and gas reserves. For Norway, this means increased exploration and drilling efforts in the Barents Sea, but also the challenges of harsh weather, darkness, and ice. It also brings attention to an area steeped in cultural significance; the Lofoten, Vesterålen and Senja coastal regions are known for breathtaking beauty and a historic fishing industry, two staples of Norwegian heritage. Whether offshore in treacherous conditions, or close to the shorelines with thriving ecosystems, oil spills in the Barents Sea could be disastrous. On the other hand, losing competitive ground at this critical time could have longstanding implications for Norway's role in the global economy.

## Organizational Sensemaking

Although social science research on the past and future of Norwegian oil is plentiful, few studies have focused on the role of organizational sensemaking in constructing and implementing these policies. As a process of organizing, sensemaking involves the retrospective creation of identification and meaning. In other words, sensemaking is the social process by which "situations, organizations, and environments are talked into existence" (Weick, Sutcliffe, & Obstfeld, 2005, p. 409). The central focus is communication – events, organizations, and environment can actually be created by the stories people tell about them. Within the Norwegian policy making system, many different organizations function to build and enact public policies about resource extraction. These policies are calls to action based on research and rational decision-making. However, different organizations view what is rational differently. Although it would be overly simplistic to reduce this political environment to two sides, those for and against Arctic petroleum exploration and extraction, organizations disagree on one main issue: should Norway keep drilling?

## The Present Study

Some organizations, such as Statoil and the Foreign Ministry, claim that Norway has "the best" technology in the world to manage extreme environmental conditions and potential oil spill cleanups. Others like WWF Norway and the Socialist Left Party maintain that no technology can guarantee safety to the waters and people of Northern Norway. Instead, they argue, the Norwegians should invest in developing alternative energy technologies, such as windmills and hydropower. Therefore, this project examines the how organizations within the Norwegian policy system use sensemaking to understand and enact decisions about petroleum extraction. Specifically, the present study explores how organizational actors make sense of the role technology plays in their understanding, as well as the normative structures that are created and reified by this sensemaking. Using grounded theory methodology and data from one-on-one interviews with Norwegian policy makers, the following research questions are posed.

First, what does "technology" mean to different organizations within this system? Second, what do different organizations consider as positive or negative uses of technology in this system? Third, what can norms of technology tell us about power and agency within this policy-making system? In other words, how do different interpretations of technological norms translate to power or disadvantage within the structures of arguing about Norwegian oil and gas? Fourth, what are the temporal implications of technological norms on this organizational system? That is, do individuals think that the future of technology will bring a solution to the problems of continued extraction?

Overall, these questions focus on the key components of sensemaking as a process, according to Weick (1995): identity construction, retrospective, enactive, social, ongoing, relies on extractive cues, and driven by plausibility. This is a complex and fluid system of actors and information with high levels of uncertainty and risk, making it difficult for researchers to study in a meaningful context (Weick, 1990). Using a sensemaking framework, the present study builds a working model of how different organizations function within the Norwegian resource extraction policy environment. By examining the role of technology in creating and reproducing organizational sensemaking, this research sheds new light on the intersections of global energy policy and organizational theory.

## “WINDMILLS OR DEEPWATER DRILLS ? : NORMATIVE ROLES OF TECHNOLOGY IN NORWEGIAN RESOURCE EXTRACTION POLICY”

### ABSTRACT

Within the Norwegian resource management system, many different organizations function to build and enact policies. This is a complex and fluid system of actors and information with high levels of uncertainty and risk, making it difficult for researchers to study in a meaningful context. Using the interview responses of twenty four organizational actors in the Norwegian resource management system (e.g., elected officials, political party leaders, NGO presidents), the present study presents two sets of competing narrative discourse about Arctic petroleum development. By examining the role of technical knowledge as a narrative reference point in creating and reproducing organizational sensemaking in Norwegian resource management, this study offers future opportunities for understanding the complex decision making environments faced by a global community.

### “WINDMILLS OR DEEPWATER DRILLS? :

Normative Roles of Technology in Norwegian Resource Extraction Policy

After discovering oil in the North and Norwegian Seas in the late 1960s, Norway is now one of the largest oil exporters and wealthiest nations in the world. Norwegians are some of the healthiest and happiest people on the planet, enjoying cradle-to-grave welfare and a national savings fund well into the billions. This social experience is markedly different from the “resource curse” experienced by other petro-states (i.e., nations with state-managed petroleum industries and a high reliance on global petroleum exportation) such as Nigeria and Venezuela (Watts, 2005). These nations are usually characterized by pathologies such as corruption, violence, poor fiscal management, social inequality, political instability, and uncontrolled ambition (Watts, 2005). However, through a combination of foresight, regulation and social values, Norway appears to have avoided such negative effects of oil wealth.

But in the wake of a global fossil fuel crisis, countries worldwide are racing to stake their claim in the Arctic, a new frontier estimated to hold staggering amounts of the world’s usable oil and gas reserves. For Norway, this means increased exploration and drilling efforts in the High North region, a geopolitical term used to describe Northern coastlines above the Arctic Circle and maritime borders with Russia in the Barents Sea. The potentially huge payoffs from new exploration and extraction efforts in this region do not come without very real environmental, material, and cultural risks. Whether far offshore in treacherous conditions, or close to the shorelines with thriving ecosystems, oil spills or other accidents in these Arctic waters could be disastrous. On the other hand, losing competitive ground at this critical time could have longstanding implications for Norway’s role in the global economy. Although it would be overly simplistic to reduce this decision making environment to two sides, those for and against High North petroleum development, organizations involved in these policy debates disagree on one main issue: what is the future of Norwegian resource management?

Within the Norwegian resource management system, many different organizations function to build and enact policies. This is a complex and fluid system of actors and information with high levels of uncertainty and risk, making it difficult for researchers to study in a meaningful context. Although social science research on the past and future of Norwegian oil is plentiful, few studies have focused on the role of organizational sensemaking in constructing and implementing resource management plans. These policies are calls to action based on research and rational decision-making. However, different organizations view what is rational differently and must decide what information is most relevant and compelling for their contextual interpretations of petroleum development.

Furthermore, organizational actors functioning in this system are tasked with interpreting large amounts of technical knowledge and processes (e.g., seismic studies, carbon capture storage, deepwater drilling, etc.) to understand and communicate their positions. Therefore, my project explores the nature of organization and sensemaking within the Norwegian resource management system by articulating complex sets of narrative discourse created and reified by its actors. In doing so, this research sheds new light on the intersections of global energy policy and organizational theory.

## A NARRATIVE APPROACH TO ORGANIZATIONAL SENSEMAKING IN COMPLEX ENVIRONMENTS

The idea of building theory from a narrative perspective came after my very first interview when a participant described petroleum development as a “Norway’s fairytale.” This pointed to the deep cultural and temporal implications embedded within organizational stories about Norwegian resource management. If this is a fairy tale, there must be a beginning and an end, a cast of characters, and a tension to be resolved. Viewing organizational discourse as a complex narrative system, researchers can examine “how an organizational social actor exists as multiple discourses or networks of identities, in space and time” and “how discourses are part of an on-going dialogue with social and historical forces, constantly interpreting and reinterpreting sensemaking categories or schemas about organizational reality” (Luhman & Boje, 2001, p. 164). Policy decisions about issues such as resource extraction occur in equivocal decision-making environments that involve a deep and

wide array of contextual consequences, thus making them complex.

Navigating complex environments requires appropriately complex processing (Browning & Boudes, 2005). As a process of organizing, sensemaking involves the retrospective creation of identification and meaning. Czarniawska (1997) argues that organizations are constituted by a narrative structure of discourse, which provides coherent frameworks for understanding, functioning, and meaning. Following in steps of Greimas (1987) and Taylor and Van Every (2000), Golant and Sillince (2007) assert that through the recursive nature of narrative discourse, an organization can emerge “as an independent social actor, i.e. it is actively ‘narrativized’, through the plausible attribution of collective action with this set of modalities, or attitudes” (p. 1152). In asking for the story, the explanation, individuals have potentially created a reference point for meaning. The central focus is communication – events, organizations, and environments can actually be “talked into existence” by the stories people tell about them (Weick, Sutcliffe, & Obstfeld, 2005, p. 409).

Within environments of organizational decision making, this ongoing process of sensemaking can be understood by first asking, “How does something come to be an event for organizational members?” and second, “What does an event mean?” (Weick, et al., 2005, p. 410). In the context of argumentation, “sensemaking is an effort to tie beliefs and actions more closely together... the outcome of such a process is a unit of meaning, two connected elements” (Weick, 1995, p. 135). Meaning is essential for understanding the common events in organizational life when individual actors encounter something they don’t understand and ask “what’s the story here?” (Weick, et. al, 2005, p. 410). With meaning established, the next step towards resolution and future action within an environment is asking “now what should I do?” (Weick, et. al, 2005, p. 410).

When faced with decisions for action in complex environments, we must engage in a process of dually producing and enacting the context of our situation by deciding what information to use (or not use) and how to use it (Cheney et al., 2011). In other words, we must find ways to make sense of our environment by looking back on what we know from the past in order to move forward. Put differently, organizational actors use sensemaking to understand and enact their identities, shaping external responses to their organizations. In turn, they interpret these responses as either consistent with or problematic for their organizational identity, prompting further reflection on “what are we becoming and is that what we want to be?” To answer these questions, organizational actors engage in sensegiving (Gioia & Chittipeddi, 1991). In other words, they make decisions aimed at correcting what they perceive is wrong with now in the future. Storytelling articulates the “quest” of an organization, and future actions are evaluated and decided based on coherence with this journey (Czarniawska & Wolff, 1998). The key here is that such decisions are both ongoing and retrospective; to plan for the future, organizations must understand how the past led them to where they are now.

The present study examines takes a closer look into the Norwegian resource management system, asking how and why organizational actors within this complex environment understand, communicate, and enact decisions about petroleum development. Within these larger sets of discourse, emergent narratives indicate that different phenomena represent unifying or divergent points of reference for organizational actors functioning within this system. This manuscript focuses on different sets of narrative discourse surrounding technology as a point of reference for understanding, interpretation, and enactment. These actors are tasked with communicating in a language that is difficult to understand regardless of their levels of technical expertise, creating a learning curve and possible opportunities for misunderstanding in an already a complex environment. Therefore, what actors view as factual information for rational decision making, how technical knowledge can or cannot mitigate risk factors to reduce uncertainty, and the agency of technological innovation are all possible points of argumentation within larger narratives about resource management.

From here, the following research questions are posed:

RQ1: How do organizational actors describe “technology” and its role in this decision-making environment of Norwegian resource management?

RQ2: How do organizational actors rely on technology to interpret and enact rational decisions about Norwegian resource management policy?

## RESEARCH STRATEGY & DATA ANALYSIS

Overall, my methodology consists of a grounded approach to data collection and analysis (Glaser & Strauss, 1967). My primary goal was to map the complex system of Norwegian resource management in an effort to understand how they’ve gotten it right where so many others have failed. This is new territory for organizational communication studies and I was entering the field with an open mind towards inductive interpretation. My first step towards data collection was creating a semi-structured interview protocol that was flexible and could evolve with understanding (Charmaz, 2006; Kvale, 1996). Here I present two other aspects of the grounded approach that are particularly important for understanding my methodological choices: theoretical sampling and constant comparative method.

## THEORETICAL SAMPLING

Because it begins with a broad scope of potential experiences and narrows with greater understanding, theoretical sampling ensures representativeness and consistency of theory development (Corbin & Strauss, 1990). Within this approach, researchers must weigh the benefits of wide and narrow sampling (Cuncliffé, 2000). In line with Lincoln and Guba (1985), I approached my first round of interviews with the belief that wide sampling would offer more varied data in terms of experiences, situational factors, and resulting responses. Thus, I articulated my initial sample as organizational actors involved in High North resource

policy formation (elected representatives, bureaucratic officials, government researchers, and NGO leaders). Inclusion criteria for participants were twofold: 1) they played an active role as policymakers, researchers, or interest groups involved in the public debates surrounding High North petroleum extraction; and 2) they spoke fluent English (which all Norwegian public school students begin learning in third grade).

In addition to wide sampling, participants were selected for both similarity and difference, as advised by Glaser and Strauss (1967). My initial strategy was to interview anyone directly involved this decision making process with as much variety in their involvement as possible.<sup>45</sup> At the conclusion of each interview, I asked the participant if they could point me in the direction of other individuals who could offer important and varied perspectives to my research.<sup>46</sup> As time progressed, these sampling procedures led me from one interviewee to the next; by the end of summer I had developed my own extensive network of contacts and was meeting with national NGO and political party leaders. As I learned more about this system through constant comparative analysis (to be discussed below), my sampling strategy became more refined.<sup>47</sup> I also focused on looking for participants with complex organizational affiliations to ensure a rich data set.<sup>48</sup>

It is important to note that all participants were required to give oral consent for their responses to be audiorecorded; they were also given the option of anonymous, confidential, or open reporting of their responses. All participants except for one (who asked to remain anonymous) consented to recorded interviews and agreed to be named in this manuscript. These sampling and consent procedures were approved by both the University of Texas at Austin Institutional Review Board and the Norwegian National Committee for Research Ethics in the Social Sciences and the Humanities.

## CONSTANT COMPARATIVE METHOD

The constant comparative method of grounded theory involves concurrently gathering and coding data, letting emergent concepts guide directions for theoretical development (Glaser & Strauss, 1967). Within the grounded theory approach to qualitative methods, researchers must reflectively acknowledge and control for their biases through theoretical sensitivity (Charmaz, 2006). Much like the notion of sensitizing concepts (Blumer, 1954), theoretical sensitivity (Bowen, 2006) implies that grounded theorists must both glean what is useful from existing theory to their research topic and resist the urge to force emerging data into categories based on previous knowledge (Glaser & Strauss, 1967; Parry, 1998). However, Glaser (1978, 1992) argues that researchers should refrain from reviewing relevant literatures prior to beginning a study, believing this approach offers the greatest possibility for new theoretical development.

When this project began, I was a relative stranger to Norwegian culture and resource management in general. In this sense, I entered the field as close to *tabula rasa* as possible. However, during the stages of constant comparative data collection and analysis, I consistently went back to the organizational literature on sensemaking, complexity, and narrative to refine my coding and categorization. I continued with this strategy until coding reached theoretical saturation – when gathering new data no longer revealed new insights or properties of theoretical categories (Charmaz, 2006; Glaser & Strauss, 1967). Overall, these efforts resulted in 24 interviews (23 face-to-face and one telephone), totaling approximately 20 hours of recording. Each interview was transcribed as soon as possible in accordance with the constant comparative method, resulting in 296 single-spaced pages of data. (See Table 1 for a list version of my participants and their affiliations.) I also utilized field notes and theoretical memos, totaling more than 120 single spaced typed pages, throughout the research process.<sup>49</sup>

## RESULTS

My analysis took shape in the form of open codes describing the contexts, identities, and processes occurring in the stories of my participants; these codes were collapsed into subcategories of data, each describing the nature of relationships between codes. These subcategories were then organized to create core categories of theoretical development. Overall, core categories describe diverse sets of narrative discourse about High North petroleum development policies. Before examining how these research questions were explored with the data set, however, we must understand the larger narrative of Arctic petroleum development in Norway and context of current resource debates within this management system.

<sup>45</sup> Following initial criterion sampling guidelines, potential participants were first recruited through my contacts at Bodø Graduate School of Business, where I was on research fellowship from May-August 2010. As a prominent research and consulting institution in High North matters, the university faculty has an extensive network of individuals relevant to this project. After being introduced via these contacts to potential participants (through email, face-to-face or telephone introductions), I followed up with each person to set up a formal interview. I also searched online for various administrators within the Norwegian ministries pertinent to my topic and contacted them via telephone or email in hopes of scheduling an interview.

<sup>46</sup> For example, Frederic Hauge (President of Bellona Foundation) advised me to contact Gaute Wahl (President of People's Action Oil-free Lofoten, Vesterålen and Senja). Mr. Wahl invited me to Lofoten for a weekend festival and anti-drilling protest sponsored by his organization. During that weekend, I was able to interview the leaders of two national political parties who were participating in festival debate about High North oil drilling. One of these party leaders I cold-contacted via email from her party website; the other agreed to meet with me after an administrator at the High North Center for Business put in a call on my behalf.

<sup>47</sup> After returning home from my first research trip in August 2010, initial coding indicated I was lacking perspectives from: 1) younger policymakers, 2) Labour Party officials, and 3) research organizations. Thus, I refined my sampling efforts to these categories for the next rounds of interviews in March and June 2011.

<sup>48</sup> For example, members of Parliament are elected representatives of different municipalities (county regions), but also members of standing Parliamentary committees, global councils, and political parties. National political party leaders can also be non-political, bureaucratic leaders of national ministries. And NGO leaders can also be affiliated with international think tanks and committees.

<sup>49</sup> I began writing theoretical memos before my first interview was completed in Norway, after presenting this project proposal at a Norwegian qualitative methods seminar. I wrote about my cultural observations and experiences as an outsider, my recruitment strategies, my theoretical directions, and my thoughts before and after interviews.

## THE HIGH NORTH : GEOGRAPHIC AREAS OF DISPUTE

Norwegian society historically embraces the cultural and political values of a social democratic society – openness, representation, ecologism, political stability, and social equality. Eifert, Gelb, and Tallroth (2003) argue that “relative to other oil-exporting countries, Norway has been successful in using its highly consensus-oriented and parliamentary institutions, as well as the involvement of interest groups representing business and labor, to reconcile competing claims for oil revenues with long-term objectives and stabilization goals” (p. 6). Yet despite its transformational power in this society, petroleum is a complex and highly debated topic among Norwegian policy makers and everyday citizens. In the last decade, these debates have centered on development of the Arctic region known as the High North. Two main factors have accelerated this controversy: geopolitics and climate change.

After forty years of dispute, Norway and Russia agreed on a demarcation deal for an unexplored area of the Barents Sea and Arctic Ocean in April 2010. This newly delineated zone is approximately half the size of Germany and is thought to potentially hold ten billion barrels of oil (Moskwa & Fouche, 2010). The deal received both criticism for its focus on potential economic benefits of the two countries and praise for setting a precedent for international cooperation in Arctic negotiations (Gibbs, 2010). Also, global climate change and melting ice have made this once inaccessible area available for exploration and transportation. However, the challenges of harsh weather, darkness, and comprehensive infrastructure make this area something of a Wild West – unchartered and unpredictable.

The promise of potential petroleum has also turned attention North to an area steeped in cultural significance. The Lofoten, Vesterålen and Senja coastal regions are known for breathtaking beauty and a historic fishing industry, two staples of Norwegian heritage. Located above the Arctic Circle in the Norwegian Sea, the Lofoten Islands have been the center of drilling and exploration controversy for the past ten years. As spawning grounds for the world’s largest cod and herring populations, Lofoten is a popular tourist destination for Norwegians and world travelers alike. This region also represents a potential resource wealth. Originally thought to hold two million barrels of oil, a series of government-ordered seismic studies recently determined the estimate as closer to 1.3 million (Fouche & Frich, 2010). The Norwegian Petroleum Directorate, who sponsored the studies, estimated the potential net value of these future oil and gas resources at approximately 500 billion Norwegian kroner (Fouche & Frich, 2010). Despite these projected values, many local citizens, fishing unions, and Norwegian politicians have decried the idea of oil drilling here, arguing a spill would have disastrous effects on the local economy and environment. Because of the environmental constraints of this region, drilling would have to occur closer to the shore than previously permitted by Norwegian authorities. That means that an oil spill would have a better chance of reaching shorelines and causing long-term damage to Lofoten’s fish stocks.

In December 2003, after coming close to granting large international corporations such as Statoil exploration permits, the Norwegian government banned drilling in Lofoten for two years. Years of political gridlock and conflicting research ensued. Parliament was supposed to decide on Lofoten drilling once and for all by late 2010 but in the wake of the April 2010 Deepwater Horizon disaster in the Gulf of Mexico, Norwegian officials again placed this decision on hold, calling for more risk assessments, scientific research, and public hearings.

## AN ENERGY STORY WITH TWO DIFFERENT ENDINGS

Overall, these results illustrate several aspects of how organizational actors engage make sense of Norwegian resource management as articulated in two distinct narratives. Between these stories, we see many points of agreement about the beneficial effects to society oil and gas have had for Norway, the importance of making carefully planned and well-informed decisions from a long term perspective, and concern for the future of Norwegian society in a changing era of fossil fuel reliance. These actors also describe technology, knowledge, and innovation as key components of rational decision-making for future planning. However, where the stories split is on the future directions of resource management in Norway based on the realities of climate change and globalization. While some organizational actors argue that the risks of High North petroleum activity can be mitigated by a proven track record of technological innovation, others argue that these are new risks with new types of challenges. Moving forward with a resource management plan based on High North petroleum activity, these actors say, will have long term consequences for Norwegian culture and the natural environment.

*Based on the Past, We Can Safely Bet on the Future of High North Petroleum Activity*

Within my data set, actors from several organizations - the Progress Party, the Conservative Party, the Ministry of Petroleum and Energy - interpret technology and innovation as fundamental bases of rational decisions to move forward in the High North. In this set of narrative discourse, organizational actors acknowledge that there are very real risks associated with not just new Arctic petroleum extraction, but all oil and gas development. However, their story is grounded in a past history of Norwegian success in managing these risks with technical knowledge and innovation. In other words, Norway has a proven track record of successfully dealing with the challenges of oil and gas development. Lars Andreas Lunde, Parliamentary adviser to the Conservative Party, is tasked with speech writing, policy analysis, and issue briefings for Members of Parliament (MPs) in his party. Although he recognized the potential risks of petroleum activity, his views on moving forward with High North development were based on the past history of Norwegian technical expertise:

I think it’s important for us to be humble enough to admit – Yes, oil and gas industry can have potential damages and things can go wrong. You can’t say that this is something that cannot happen in the future because we know that in the future we will

have accidents...It is a risk concern both on human lives, on environment. So we just have to admit that risk and say that all kinds of energy production have some risks, but of course, we will do our best to minimize that risk in the future...But I think Norwegians should be even more proud of what we actually have achieved in the oil and gas sector. If you look on an oil rig, or if you look at oil technology, many people actually don't understand how technologically complicated it is. Sometimes in this debate, it sounds like you just put this straw...you have a soda just down in the sea and the oil comes up. I think the Norwegian people don't have the full understanding of actually how proud we should be of what we have achieved.

This history of achievement is based on several decades of ongoing activity without any major catastrophes – at least not the likes of Exxon Valdez or Deepwater Horizon. Helge Eriksen, Conservative Party mayor of the Northern city of Harstad, bases his support for High North petroleum development on such history:

Some are saying no, we should stop these activities. I think that's wrong. They say that it will be a catastrophe for fisheries, for the environment, if it happens in our area. My argument is that the chance for this to happen in Northern Norway is very slim. Because we do have stricter security, and since we have been an oil and gas producing country for 40 years, we had one blow-out. That was in 1977. It didn't reach the shore, so I think that says a lot, and we have improved our technology a lot since then.

Eriksen argues that the likelihood of disaster reaching the High North regions, even when exploration and extraction are closer to shore than in the past, is still small because of a long history of safety and containment. Technology has only improved, he deduces, so the risk level associated with High North activity does not automatically increase because of new challenges. Furthermore, he recognizes that regardless of the potential risks, the reality of resource management is that fossil fuels are part of society's fundamental infrastructure :

I'm a technology optimist. We always have to improve, use better technology. It's like on an aircraft going down. We investigate. We try to find out what happened, what went wrong, and we improve. Technology, regulations...It is a tragedy, and we should do everything to avoid another one, but we still fly. We don't stop flying because it is an important part of communication in the modern world.

The realities of a fossil fuel era. Just as important to this risk/reward scenario, however, is another important theme within this narrative – the reality that Norway is built on a fossil fuel economy. In addition to providing a wealth of resources for exporting, other major parts of Norway's economic development are historically based in petroleum. According to Siv Jensen, the national leader for the Progress Party and MP from Oslo:

A major part of today's industry, or businesses in Norway, is related to oil and gas. It has to do with technology development. It has to do with deepwater know-how. That is actually something that has made Norwegian businesses very competitive. They have the ability of going everywhere in the world with this technology and know-how, which is good for Norway. We know what has happened in Norway over the last 40 years. It's created more value, more wealth, a higher standard of living, everything has actually become better and better and better because of this...What would happen if you took away all that industry and all that business? If you should replace the energy production coming from oil and gas with windmills, for instance, we would have to build half a million windmills or something like that, which is just crazy. You cannot replace it overnight; it's impossible... Some of the environmental groups and some political parties claim that it's very dangerous to have any activity there. We actually think that that's just a lot of bullshit, because with today's and tomorrow's technology, you won't have the traditional platforms out there. Everything will be on the water. The oil and gas resources will gradually get smaller and smaller and smaller, which means that over time you need to develop other sources of energy.

Not only has petroleum built a solid foundation of wealth for Norwegian society, technical knowledge has become a profitable expertise for its people; but that hasn't happened overnight. For Jensen, the process of developing new energy technologies should be just as gradual to ensure the present standards of Norwegian living.

Our technology enables safer development for the rest of the world. Another aspect of limiting future activity is that Norwegian innovation has made a global impact on developing safer and more environmentally friendly extraction technologies. Ole Anders Lindseth is director general at the Ministry of Petroleum and Energy, a nonpartisan commission dealing with industry partnerships, international regulatory frameworks, and future development projects. In his almost twenty-year career, he attests to a successful management system because of a willingness to sit down with industry experts, filling in gaps between bureaucratic and technical knowledge: “No one else does it in a more [environmentally] friendly manner [than Norway], so let's at least try and do it in as acceptable manner as possible through science and technology...much of the technology for rough weather and deep water and production without the flaring of gas, for instance, has been developed in Norway.” With the past and present risks and rewards established, the story turns to the future.

Innovation requires learning through practice. In order to maintain the technical expertise that has built the solid foundation of resource wealth for Norway, it is important to spur new innovations by practice, research, and development in the High North. Siri Meling, a Conservative Party MP from Rogaland and first vice chair of the Parliamentary Committee on Energy and Environment asserts: “We learn by doing...that has to do with technology. It has to do with cooperation between companies and so on, and also a lot of research to get more [petroleum] from each field. We think it's good for the environment. It's good for the society...[but] it's not that easy...so we need to be there [in the Arctic].” Fellow party member and MP from Nordland, Ivar Kristiansen, who also serves on the Parliamentary Committee on Defense and Foreign Affairs, echoes this storyline:

All the Norwegian companies who are involved [in oil and gas] employ more than 200,000 people in this sector. They are

involved in not only at the Norwegian shelf but in many countries in the world. If you don't continue this activity, Norway will lose the know-how. They have the best education and technology know-how to try to develop technology for the future, to be able to build a bridge between the fossil society over to the renewable society.

Lars Andreas Lunde also worries that the international expertise Norway should be so proud of hangs in a tenuous balance without future Arctic development:

Norway has strong expertise on handling difficult cases in oil and gas. We have high levels of technological know-how, which is also one reason why we say it's important for us to continue as a major oil and gas producer. Because this knowledge, it's not something you can stop and interrupt sometime in the future. You need to continue the expertise through new challenges and tasks, whether it is oil in the Barents Sea or maybe further North. They need new challenges in order to develop the technology... In the field of computer technology, bio-medicine, we are not having enough innovation. But in oil and gas...it is one of the few sectors where we actually are a leading culture in the world. They should build on this leading knowledge in oil and gas sector. Maybe in the future we can use that knowledge also in other [forms of energy]. But we need to maintain the technology to maintain the knowledge for the future to take care of this industry, because it is one of the few where actually Norway is a leading nation in the world.

In this story, technical knowledge in oil and gas activity is a unique skill set acquired by the Norwegian people over forty years of challenging practice. This skill will continue to grow as it has in the past, benefiting both Norway and the global environment, as long as development initiatives go where the resources are – even if that means adapting to new and unknown risks. Without taking those risks now, technical knowledge and innovation, the foundation of modern Norwegian society and marker of global distinction, will become as depleted as the supply of fossil fuels in the future.

Overall, within the stories from organizational actors who see High North petroleum activity as the logical next step in Norway's energy management policies, we see interpretations of technology as a source of national pride, a character in Norwegian history. Based on a proven capacity to adapt to new energy management challenges over time, these stories present the High North as an opportunity to continue Norway's oil and gas fairytale.

*We Can't Risk the Present, Let Alone the Future, of High North Petroleum Activity*

The previous narrative told a story of how past, present, and future technological innovation mitigates the risks of Arctic petroleum development. However, a competing interpretation of narrative discourse also exists – one where human innovation has not yet caught up with a changing or unknown natural world. The actors who tell this story are from WWF Norway, the Bellona Foundation, the Socialist Left Party, the Red Party, and grassroots environmental NGOs. In their narrative, Norway should approach present and future petroleum development in the Arctic as unique set of challenges, limiting the capacity of technical knowledge to mitigate the risk of potential catastrophe.

The ticking clock has been accelerated by global warming. The central conflict of this story is that past ways of understanding the risks of petroleum development cannot be applied to an environment constantly in flux. Global warming is one example of such changing conditions, according to Frederic Hauge. As the founder and President of Bellona Foundation, an environmental NGO, Hauge also sits on several global committees focused on slowing climate change. As one of Time magazine's "Heroes of the Environment," Hauge prides himself on creating an organization committed to producing cutting-edge research. But he also admits to the complexity of studying Arctic environments:

We have been studying the rivers flowing out of the Arctic as a knowledge source. And then you add this together, and you have to see what kind of buffer capacity do the ecological systems in the Arctic have. And in this, there is a big issue when it comes to global warming, which is putting the ecologic systems under a lot of stress with unknown consequences. Even in a system so large...I mean it's an enormous amount of water...but it's starting to heat up. And when, for example, you are looking at most areas, they move. The cod is moving North and East because of temperatures changing, the birds are moving around quite faster than our scientists managed to write a report, and that is an important unknown factor that we have to take into consideration. So we see quite a scary situation, where all this comes together, combined with the unknown pressure. I mean, the climate has been changing before, but never so much in such a short period of time, which gives the organisms much shorter time to adjust for changes. You also have facts like, since it's cold all the time, all the organisms have high contents of fat, so all the chemicals spilled accumulate...it will be a big difference in for example, how the will the bacteria can be eat up the oil [of a potential spill] compared with the Mexican Gulf. It is an enormous difference.”

We don't fully understand the nature of these new challenges. Global warming has increased the changing speed of these ecosystems, but it also has provided the opportunity for petroleum development in these areas. According to this story, the fact that melting ice has provided Norway new access to Arctic areas doesn't mean that they are equipped to do so. Nina Jensen, a marine biologist and conservation policy director at WWF Norway, does not agree with her sister Siv Jensen that present technologies for reducing environmental and human safety risks will evolve with the new challenges of Arctic development:

Conditions are different, infrastructure is completely lacking. If you would have an oil and gas accident in these areas, there would be no chance in hell of them ever being able to clean it up, because in some of these areas, if you're lucky, people work for maybe five to ten minutes per hour and then you have to take breaks because it's so cold. So you have icy conditions, you have extreme weather conditions, you have parts of the area that are 24 hours of darkness. You have icing of equipment and, like I said, complete lack of infrastructure, meaning where would you put 40,000 people to clean up if you had a major blow-out

in this region? So basically, it doesn't matter if you have millions and millions of booms or lenses, it will not work...It's just too much of a risk to enter into these areas...So it's crystal clear. There is absolutely no doubt that these areas should be protected from oil and gas activities.

In this scenario, regardless of the technical knowledge of rig operators and disaster plans, human safety could never be guaranteed. Kristin Halvorsen, speaking as the national leader for the Socialist Left Party, recounts a story to place the harsh conditions of Arctic waters into perspective:

I was just traveling as a tourist from New York to Washington to Nashville to Memphis and then to New Orleans – so I spent a few days in New Orleans. But I think that the experience – because that was when they prepared for Tropical Storm Bonnie, which wasn't a tropical storm, it was a shower. And a storm like this, that is normal in this area [Lofoten] and it is also, most of the part of the winter, it is dark. It is not daylight. It is very cold. So this is a much more vulnerable part to protect if the accident happens.

Technology is fallible because of human error. This narrative stresses that Norway should not overestimate its abilities to plan for possible disasters, or even everyday activities, in such environments. In addition to disaster planning, however, is the idea that planning for tomorrow's challenges with today's technology is problematic when it comes to petroleum extraction. An anonymous researcher at a High North university argues that the past actually proves it is impossible to design extraction technologies for the future based on present knowledge:

Some of the oldest technology is running the most important platforms in Norway, like Ecofisk. It's impossible to plan for the next 100 years with technology. For example, Phillips [American energy company] said the Ecofisk would never sink but their planning and research development was done in Tennessee. So for 10 years nothing was done, but the platform has actually sunk 25 meters from where it started.

We have enough knowledge, so why are we still debating? Within this narrative set of discourse, actors question why in the face of such overwhelming risks, policies such as opening up Lofoten for drilling are still on the table. Gaute Wahl is president of People's Action Oil-free Lofoten, Vesterålen and Senja, a grassroots organization that started with local members protesting development in their hometowns but spread to be a national movement. For Wahl, the facts have been established:

That's where the struggle is standing now...The government keeps saying “we are waiting for new knowledge, then we will decide.” Everybody is waiting for them to decide. But what knowledge are you waiting for? The scientists say these areas are very vulnerable... So, what's going to be the answer? We need no more knowledge...Now it's a choice, a big choice between the fossil future, and the renewable future. It is inevitable is that the oil is going to last just a couple of decades. That's inevitable for the whole of the world, so we are moving into an age that will be, I think, extremely different. We will see a rise in price of energy, of food, and will have lack of it, and we will also have the climates, the world's climates will be changing, we will have to deal with that. So on in a larger scale, this is where we are heading. And we need to go in a more renewable direction.

A renewable future is inevitable. In this story, the technical knowledge about petroleum development shows that the decision is no longer about drilling in Lofoten; it's about deciding today to commit to a renewable society. Even if Norway wasn't ready to shift gears, global warming has sped up the decision making process for them. In order to maintain the wealth and stability petroleum has built, they need to start developing renewable technologies for the future, according to Nina Jensen:

I think everyone agrees that the oil industry has been good for this country and has generated a huge amount of welfare and benefits for the people...The point is that we're now at a stage where we need to find a new future for this country and for the world, for that matter, both in terms of the impacts that we're seeing from climate change...So we need to focus more on research development, new industries. Norway should be one of the prime candidates for development of renewable energies. It's also a huge potential for technology transfer and...developing industries that can deliver to development of renewable technologies in other countries. For instance, the off-shore wind industry in China could generate something like 70,000 workplaces in Norway, just from supplying carts to the industry. But we're not focusing on that, because we keep trying to open up new areas for oil and gas because that's the only thing that we see is our future. We need to have a higher focus on these things and get away from the fossil fuel age. So that would be our top goal – mind-shifts, if you like, or a complete shift in what the government is putting all its money into. 'Cause basically, at this point in time, they are spending about 120 times more on fossil fuels than they are in sort of renewables, which is ludicrous, if you ask me. I mean, we know the peak oil is over. We know that oil and gas resources are running out. It's only a matter of time. Estimates vary from 20 years to 50 years. So we need to come up with solutions for the future.

For Nina Jensen and the other actors who protest High North petroleum activity, Norway already has what it needs to know for rational decisions about future resource policies. In the face of increased urgency caused by climate change, the time is now to shift focus from fossil fuel to renewable energy management.

#### Discussion

Overall, these discourses tell the story of Norwegian organizations trying to merge traditions of the past, decisions of the present, and interests of the future. Norway now stands at a crossroads with a ticking clock. They have established enormous wealth through oil and gas, wealth that has been distributed amongst its people through social welfare. Now they face a defining moment about the future directions of that decision making. Future generations will either be left with a depleted



planet and culture that placed wealth over people, or an autonomous society that placed material reason over symbolic values – all according to who you talk to. However, it is important to stress that the first two narratives are organized as competing discourses based on the words of participants. In other words, the mutually exclusive nature of sensemaking variables within these competing discourses is a category that emerged *en vivo* (e.g., “How could you promote pure Lofoten seafood and oil drilling at the same time”).

Upon first look, organizational narratives about High North resource management can be seen in dialectical terms based on identity: environmentalists vs. industrialists, conservatives vs. liberals, locals vs. centralized decision makers. However, a closer examination shows these stories run much deeper into the common cultural structures of the Norwegian people. Many feel that based on the risks to people and environment, drilling in Lofoten represents a moral tipping point, a warning that Norway has moved too far from its cultural center. Even in the statements of the most vehemently pro-drilling advocates, a visible tension exists between the traditions of environmentalism and future of continued resource extraction. The overlapping levels of global, national, regional, and local organization represented by this sample indicate that identity construction in the context of resource management is not as simple as being pro or anti-petroleum development. In the meantime, Norwegian society must run on some type of fuel and within these competing sets of discourse are actually a number of shared values, beliefs, and actions surrounding technical knowledge and resource management.

First and most importantly, both narratives articulate the imperative decline of fossil fuel dependence and a renewable resource future. In each story, actors see natural resources as finite and agree upon the reality of climate change. Second, regardless of the timing of this shift, actors feel a sense of responsibility to the rest of the world in how they manage their resources. These characters are acutely aware that their system has worked better than most; now resting on the security of oil and gas wealth, they must continue to develop environmentally conscious technologies for managing natural resources. To do so, these organizational actors are tasked with making sense of management policies about natural resources based on a plausible interpretations of rational decision making. It is these organizations who will decide how the Norwegian fairy tale will end.

In such complex and equivocal decision making environments, reducing the plausible narratives for interpretation and enactment into mutually exclusive discourses can be a natural tendency for reducing uncertainty. This tendency is certainly evident in both the present study and global debates over resource management – conservation vs. development, materiality vs. symbolism, creation vs. destruction, etc. However, the postmodern reality of fractured, overlapping, and contradictory identities, such a linear approach towards understanding and prediction is questionable. Where this study breaks new ground is by articulating the complex environment of organizational identity within Norwegian resource management. Doing so illustrates that actors within this system are organized on local, regional, national, and global levels of interaction. This translates to multiple layers of identity, values, beliefs, and actions as reflected in competing sets of narrative discourse. Yet, despite the competing sets of narrative discourse between and within organizations in this system, there are some fundamental values of rational decision making. Whether they oppose, support, or hold mixed positions on High North petroleum development, these organizational actors have articulated a shared narrative of a renewable energy future based on technical knowledge and innovation.

## CONCLUSION

Constructing a plausible narrative for the future of resource policy that accepts the complexity of this decision making environment could encourage productive dialogue. As Weick and Browning (1986) argue, “all stories are not created equal...the claim that people make bad decisions when they have bad information may mask the true problem, which is that the information they have is good enough but is not sufficiently tied together with good reasons and narration [Fisher, 1984] so that it can be processed and remembered” (p. 255). By examining the role of technical knowledge as a narrative reference point in creating and reproducing organizational sensemaking in Norwegian resource management, this study offers future opportunities for understanding the complex decision making environments faced by a global community.

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Table 1

Theoretical Sampling for Organizational Diversity (arranged by interview order).

Name	Title	Affiliation (Region if applicable)
Ivar Kristiansen	Member of Parliament Member	Conservative Party (Nordland) Parliamentary Committee on Defense & Foreign Affairs
Siri Meling	Member of Parliament First Vice Chair	Conservative Party (Rogaland) Parliamentary Committee on Energy & Environment
Janne Sjelmo Nordås	Member of Parliament Member Parliamentary Delegate	Centre Party (Nordland) Parliamentary Committee on Transport & Community Nordic Council
Lars-Andreas Lunde	National Party Advisor	Conservative Party
Line Aune Kristin	Senior Adviser	Ministry of Foreign Affairs
Vegard Kaale	Senior Adviser	Ministry of Foreign Affairs
Jostein Mykletun	Ambassador/Special Adviser High North Project Manager	Ministry of Foreign Affairs
Helge Eriksen	City Mayor	Conservative Party (Harstad)
Ole Anders Lindseth	Director General	Ministry of Petroleum and Energy
Petter Nore	Director, Energy Department Committee Member	Norway's Oil for Development Program (NORAD) UN High Level Group on Sustainable Energy for All
Frederic Hauge	Founder, President & CEO Vice Chair  Steering Committee Member	Bellona Foundation European Technology Platform for Zero Emission Fossil Fuel Power Plants (ZEP) EU Biofuels Platform
Timothy Moore	Manager	U.S. Embassy (Oslo)
Eivind Sommerseth	Special Adviser, Division for Innovation	Research Council of Norway, Department of Regional Development (Nordland)
Tom Cato Karlsen	Member & Mayoral Candidate Member	Bodø City Council Progress Party
Kenneth Svendsen	Member of Parliament Member	Progress Party (Bodø) Parliamentary Committee on Finance
Anna Ljunggren	Member of Parliament Parliamentary Delegate	Labour Party (Nordland) Nordic Council
Gaute Wahl	President	People's Action Oil-free Lofoten, Vesterålen and Senja
Turid Thomassen	Member National Party Chair	Lillehammer City Council Red Party
Kristian Halvorsen	Member of Parliament National Party Chair Minister of Education & Research Former Minister of Finance	Socialist Left Party (Oslo) Socialist Left Party Ministry of Education & Research Ministry of Finance
Siv Jensen	Member of Parliament National Party Chair	Progress Party (Oslo) Progress Party
Nina Jensen	Conservation Policy Director	World Wildlife Fund Norway
Tore Sandoval	Chairman Former Director General	Sandoval Energy Ministry of Petroleum and Energy
Anonymous	Professor	High North University
Hild Marit Olsen	Member & Mayoral Candidate Member	Bodø City Council Labour Party