Petroleum activities in the Lofoten area: What is the (marine) scientists’ role in the decision making process?

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March 11 2011 the debate on whether to start extracting oil and gas in the Lofoten area, came to an end. One of the central questions raised in the debate was if it is possible to combine petroleum activity with justifiable management of other natural resources, especially with the fisheries. Scientists at the Norwegian Institute for Marine Research contributed with work that hopefully could give an answer to this question. As scientists they were asked to fill knowledge gaps while dealing with complex systems and uncertainties that were difficult to reduce, if reducible at all. What to do, then, when the scientific conclusion is that there is a profound lack of understanding about connections within the complex systems that may not even be remediated by further research? This situation may leave the decision-makers somewhat helpless. And because of this scientists are sometimes put in situations that amount to considerable indirect pressure on research. This paper will present a reflection on the role of the scientists in matters of uncertainty and complexity, with reference to the Lofoten issue.

Keywords: The Barents Sea, petroleum activity, natural resource management

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Introduction

We experience that resources are getting scarcer and that these resources have to be shared among a growing amount of people. Also, as an increasing number of people demand higher welfare, the pressure on limited resources, renewable as well as non-renewable, grows bigger.

The experience that resources are not enough to suit every need – together with the fact that needs, interests, desires and values differ – may explain the emergence of environmental conflicts over the use of these resources. There is an ongoing competition for power over resources even in countries like Norway where scarcity is not really something that people experience in their everyday lives. One example of such an ongoing conflict is the one on the possible exploitation of petroleum resources in the Barents Sea and outside the Lofoten islands on the Norwegian coast. The risk of environmental damage seems to be the biggest concern when it comes to bringing oil activity to these areas. The Norwegian Government has delayed the case since the 1980s when exploratory drilling first indicated valuable petroleum resources in the sea outside of Lofoten. The reason for this delay was the need to expand the knowledge of possible negative effects of petroleum activity on the environment. It is well known that the Barents Sea is important as a spawning and nursery area for fish and that its rich wildlife with marine animals and seabirds is valuable. In addition we now have new knowledge about cold-water ecosystems, such as those in the Lofoten - Barents Sea region. These ecosystems are considered as more vulnerable to physical disturbances, contamination and pollution, especially from oil. This is because the low temperatures, absence of sun most of the winter and possible ice-cover result in slow degradation of the petroleum components (Forsgren, Christensen-Dalsgaard, Fauchald, Järnegren, & Næsje, 2009). The question on how to combine the use of fish and petroleum resources in a complex ecosystem is given much attention in Norway since both are important to the national economy. Fish is the second most important source of national income after oil and gas, but the economic revenue from fish export is only a tiny fraction of what Norway gets from oil and gas export.

There seems to have been an idea that it was possible to gather enough knowledge to fill the knowledge gaps and quantify the risks of environmental damage in case of opening the Lofoten area to oil activity. The task of gathering information has mainly been given to the Institute of Marine Research (IMR). IMR is the key science-policy interface institution in Norway when it comes to advice on marine resources and marine spatial planning. Huge expectations are put on science and the experts to support future decisions and policy. This is
the focus of UncAP (Uncertainty Assessments Related to Opening New Areas for Petroleum),
the research project in which I have had the opportunity to work and contribute in the
framework of the course Research Project in Theory of Science (VIT201, 20STP). I have
been working on a paper as part of that course.

In the paper I want to try to highlight the complexity and underlying sources of conflicts in
natural resource management, using the conflict between oil and fish resources in the Lofoten
area in the Barents Sea, northern Norway, as an example. On the following pages, I will try to
give a detailed history of the resource management in the Lofoten area and the management
conflicts. The rest of the paper, including discussion and conclusion will be presented at the
ICES ASC 2012.

Possible Petroleum Activity outside of Lofoten

The sea outside of Norway is divided into three main areas named the North Sea, the
Norwegian Sea and the Barents Sea. These areas are (if opened to petroleum activity) divided
into blocks which are geographical units used in the petroleum activity on the Norwegian
continental shelf. The North Sea is the area where the extent of oil and gas activity is largest.
The development in the Norwegian Sea has been much slower, and in the Barents Sea there
was no petroleum activity until 2002 when the construction and operation of the Snøhvit gas
field was approved (production started in 2007). Before the offshore licensing round and
allocation of blocks to the oil companies, Stortinget (the Norwegian parliament) has to open
the area for oil and gas operation. A production license gives monopoly to perform
investigations, exploration drilling and recovery of petroleum deposits within the
geographical area stated in the license, and this may cover one or more blocks or parts of
blocks. The production licenses are given by the Ministry of Oil and Energy. (NPD, 2011)

Most of the shelf is already opened, and many of the remaining areas are considered as
environmentally sensitive. The production of oil is decreasing (although gas production is still
increasing) and the North Sea is now considered as a mature area with low expectations of
new findings (Miljøstatus, 2011). This increases the pressure on the less explored Norwegian
and Barents Sea.

The recent discussion has been about the coastal line, often referred to as the Lofoten area.
The map is from the Norwegian Directorate of Nature Management (DN) and shows the
entire area covered by the management plan for the Barents Sea and the sea areas off the
Lofoten islands. The latter areas are in fact part of the Norwegian Sea, but are included in the Barents Sea management plan because they are important spawning areas to important fish stocks in the Barents Sea.

Lofoten is an archipelago located between the 67th and the 69th latitudes north of the Arctic Circle. Administratively, it is part of the county of Nordland in Northern Norway. Vesterålen and Senja lie north of Lofoten and for the sake of simplicity, the sea areas of these islands are included in the term “The Lofoten area” in this paper, unless otherwise stated. The issue of opening new areas off the Lofoten region was first brought up in the 1980s and then again in the late 90s, when it was first decided to make a management plan for the Barents Sea – Lofoten area based on a multi-sectoral assessment. Already in 1994 large parts of the Barents Sea area (including Nordland IV, V and VI) were partly opened for exploration. These areas were closed again in 2001 after the Climate Pollution Agency advised that a new collection of
information and evaluation on possible environmental impacts ought to be done. In 2003 a study of the impact of year-round petroleum activities in the Lofoten area (called ULB) was presented. As a result of this, it was decided that there should be no further oil activity in Nordland V at that time and that the issue of opening the area to petroleum activity should be considered in the Barents Sea management plan.

The integrated management plan of the Barents Sea was presented by the Norwegian Government on 31st of March 2006. The plan aims for holistic and ecosystem-based management of activities in the Barents Sea - Lofoten area (Regjeringen, 2011). After the management plan in 2006, southerly parts of the Barents Sea was once again reopened to production, but the coastline outside the Lofoten, Vesterålen and Senja islands and the fish bank called Tromsøflaket were still closed. However, explorative seismic activity was allowed. One of the premises of the oil activity in the Barents Sea was that there would be zero spillage from the petroleum industry, but zero spillage does not mean that there will be absolutely no spillage. The term was introduced in a White Paper (no 54 1996-1997) from the Norwegian Ministry of the Environment, and is now applied to the entire Norwegian continental shelf. In practice it led to a reduction of emissions to the North Sea, achieved by giving drill cuttings, produced water and other waste a cleansing treatment before deposition in the sea. There were until 2011 special demands in the Barents Sea, no emissions or discharges should take place during normal operations, irrespective of whether they may result in any damage to the environment (detailed definition in White Paper no. 38 (2003-2004)).
The question regarding opening the Lofoten area for petroleum activity was brought up again in 2010 during the work on revising the Barents Sea management plan. A background report (also called the Lofoten joint report) was written by Scientific Forum (led by the Norwegian Polar Institute), the work group of monitoring the Barents Sea (led by IMR) and the work group of risk (led by the Norwegian Costal Administration). This report was the professional base for the updated management plan. The background report gathered information about all the activity in the Barents Sea outside Lofoten from 2004-2005 and was based on 13 ground reports from various expert institutions. One of the methods applied in the work on revising the management plan was systematic environmental monitoring, and continuous strengthening of the knowledge base. The programs MAREANO (systematic exploration of the condition of the seafloor) and SEAPOP (monitoring seabird populations) were created for further mapping and research.

The reopening of the question started an old conflict of interests between fisheries, the petroleum industry, environmentalists, local politicians and the Norwegian Government (mostly represented by the Ministry of Petroleum and Energy, the Norwegian Petroleum Directorate the Ministry of the Environment and the Norwegian Directorate for Nature Management). Somewhat simplified, the conflict runs between those who want to protect the area from possible environmental damage and those who want access to the petroleum resources regardless the risk. Because of the natural richness and beauty of the Lofoten area there has been a lot of discussion on whether it is responsible or not to open the area for petroleum activity.

The Lofoten area inhabits internationally important fish stocks and fisheries resources are an important part of local tradition and culture. The relatively untouched and unique natural and cultural landscapes are probably what make the area so attractive to tourists. Today fisheries and tourism are about equally important to the local economy of Lofoten (Univision English, 2012). A challenge in this area is to ensure that existing fisheries activities together with increasing maritime transport and new petroleum activities do not constitute a too large pressure on the environment. Not everybody believes that fisheries activities and new petroleum activities are possible to combine and this is one of the main sources of conflict. In a short term perspective there is no question that oil would generate more money than the fisheries do today, but there is not yet certainty that the oil exploitation will not have a negative impact on the renewable fish resources. The tourist season is short and likely to be negatively affected by an oil spill, and it is also possible that the building of necessary
infrastructure in case of petroleum activity could lead to a decrease in number of tourists (Vista Analyse, 2010). During January big schools of herring pass by and from February to April millions of east-arctic cod (the world’s largest cod stock) come to the area to spawn (WWF, 2003). It is also an important habitat for many birds and other marine species (Miljøverndepartementet, 2006). There are numerous sponge aggregations and deep water coral reefs on the seafloor and this high diversity and productivity on the seabed is an important premise for the rest of the marine ecosystem (Miljøverndepartementet, 2006). In 2002, the world’s largest known deep-water coral reef, the Røst Reef, was discovered south of Lofoten.

The question that turns up again and again is how much the society is willing to risk to get the economic benefit from exploiting another area for petroleum. The question about risk turns up in many, if not most natural resource management conflicts. Det Norske Veritas (DNV) has reported on their calculations of the probability of an accident related to petroleum activity in the Lofoten area. Their conclusion was that the probability of an accident is very small, but other actors question the methods used by DNV and point to the very negative possible outcomes of an accident. Environmentalists worry that the oil industry do not have a good enough emergency response in case of an oil spill and that the cleaning up will be further complicated by few hours of daylight in the winter, weather, wave-conditions and strong ocean currents, which the oil industry has little experience with. Because of a narrow sea shelf, the potential drilling probably will be done close to the shoreline which means that if there is an accident, the toxic spillage will reach the shore in a short amount of time. The oil industry has acknowledged that the emergency response in this area needs improvement and argues that petroleum activity will benefit the area because there could be other types of accidents like oil tankers going on shore that also can cause big oil spills. Fisheries biologists have written several articles to the media to shed light on the marine environmental effects from oil activity. In these articles the focus has been on seismic shooting, disruption on the seafloor, small continuous discharges from normal production and bigger spills that could be caused by an accident. Research shows that noise that kills larvae has no long term effect, but the fish get scared and move, which results in a smaller catch for fishermen. Marine species that live or spawn on the sea bottom are vulnerable, especially corals and sponges. The areas where installations have been built will not be suitable for spawning for a long time. This will affect sandeel, capelin and herring in the Lofoten area.
During the summers of 2008 and 2009 investigations outside Lofoten and Vesterålen led to an adjustment of estimated petroleum resources from 3.4 billion barrels of oil equivalents to 1.2 billion barrels of oil (Verdens Gang, 2010a). Because of conflict with local fishermen the surveys in Nordland VI (the sea outside the Lofoten islands) never finished. The fishers were worried that the fish could get scared from the noise seismic blasting made and pointed to the study by the IMR that found this effect.

Then the explosion of Deepwater Horizon (the Maconda blowout) on April 20th 2010 led to a large oil spill in the Gulf of Mexico. It took three months to stop the oil from flowing from the well. After this accident the Climate and Pollution Agency, The Norwegian Directorate for Nature Management, IMR and the Norwegian Coastal Administration questioned whether the issue of risk and especially worst case scenario in Lofoten should be revised. The Norwegian Petroleum Directorate and the Petroleum Safety Authority disagreed as they did not think that it was any reason to compare the Lofoten area with the Gulf of Mexico. This disagreement led to a delay in the revision process of the management plan. The workgroup of risk made a new evaluation of the accident in the Gulf of Mexico that was ready in late 2010 (Risikogruppen, 2010). On 11th of March in 2011 the Government presented an updated version of the management plan that postponed an environmental assessment of oil activity in Nordland VI (Lofoten), Nordland VII (Vesterålen) and TROMSII (Senja). The question of opening these areas will not be brought up again before the next parliament period, after the election in September 2013.

During the discussion there was a lot of attention put on the conflict between the different parties in the government. The Norwegian Prime Minister, Jens Stoltenberg who represents The Norwegian Labor party, was the minister of energy and business that opened the Barents Sea for the first time in 1994. It might be expected that he would want to open the Lofoten area to petroleum activity. There is little doubt that the discussion was affected by the political climate in Norway at that time. The people’s action committee against oil drilling in the sea of the Lofoten, Vesterålen and Senja islands is an NGO that has been working throughout Norway. In September 2009 they had gathered more than 53 000 signatures from Norwegian citizens who do not want the Lofoten area to be exploited. Yet, many locals and some local politicians side with the energy companies. It is fair to believe that this comes from the expectation that oil activity will create economic growth and jobs in Lofoten so that the residence pattern can be protected. The county of Lofoten has been facing a decline in jobs in the fishing industry, because even though fish catches have grown, the number of fishing
vessels has gone down due to better technology. Some cities, especially Stavanger and Bergen bordering the North Sea and its oil fields have experienced a positive economic development related to the oil activity. It is somewhat problematic not to give the North of Norway the same chance to take part in this wealth.

At the same time as the updated management plan was released and the Environmental Impact Assessment of petroleum activity outside of the Lofoten islands was postponed, an area south of Lofoten named Nordland V was opened to oil exploration. This was against advice from the background report, where the conclusion says that oil spill/leakage in the area south of Lofoten will be more damaging to the environment in Lofoten and Vesterålen than spills right outside of Lofoten and Vesterålen (Miljøverndepartementet, 2010). It will also cause damage in and in Nordland V, which is rich with deep coral reefs (Klassekampen, 2011). In addition to access to Nordland V, the oil industry got permission to release produced water and drill cuttings into the Barents Sea.
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