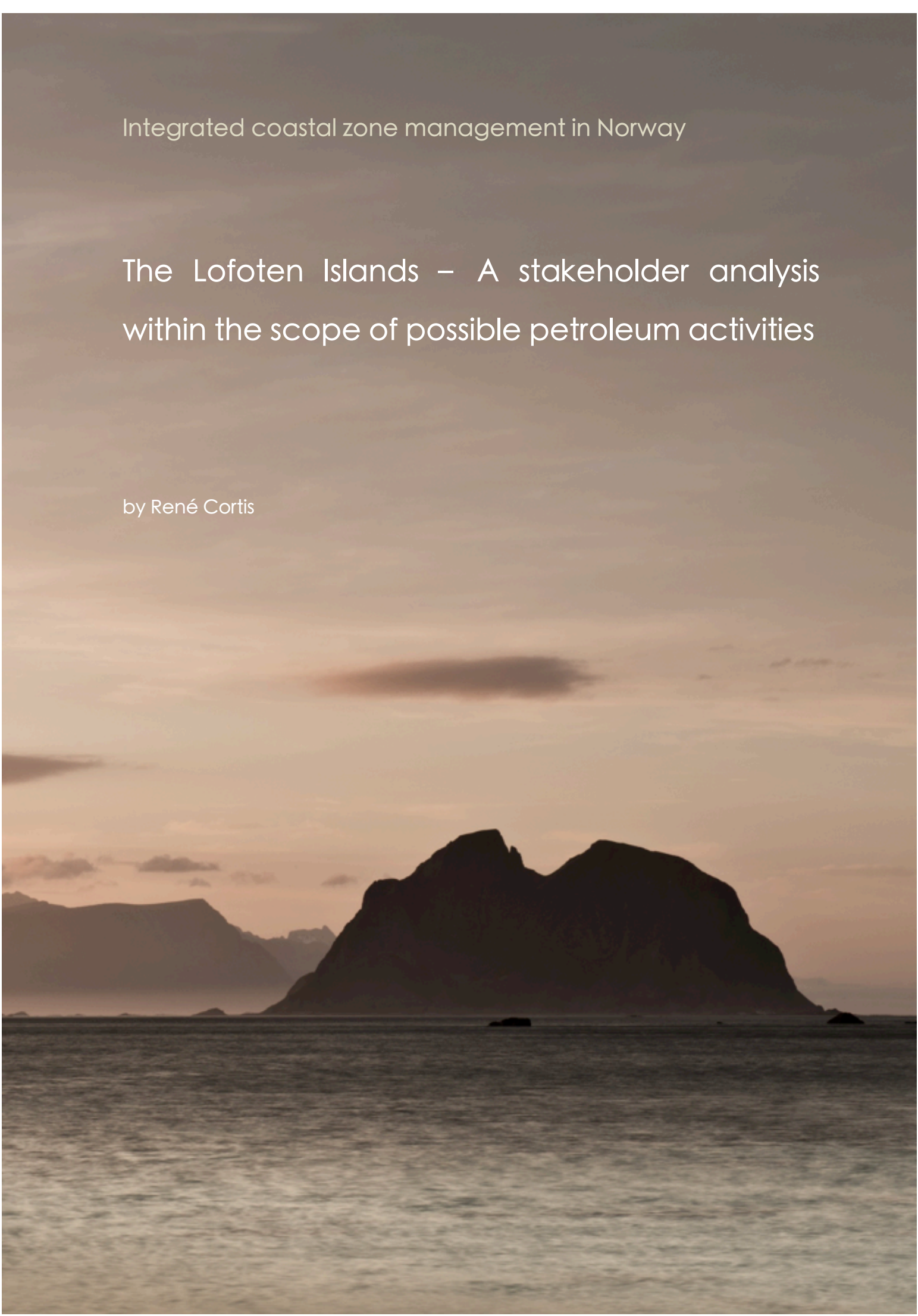


Integrated coastal zone management in Norway

The Lofoten Islands – A stakeholder analysis
within the scope of possible petroleum activities

by René Cortis



Carl von Ossietzky Universität Oldenburg

Rijksuniversiteit Groningen

Double Degree Master Program in Water and Coastal Management

Master Thesis

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Abstract

The thesis looks at the stakeholder environment in Lofoten against the background of possible petroleum activities off the coast of the Lofoten Islands. Because of the narrow continental shelf in the sea off Lofoten, possible offshore oil wells would be located close to the coast. When planning issues involve terrestrial and maritime concerns at the same time, an integrated coastal zone management is needed. Within the framework of such a collaborative planning and management approach, an overview of the stakeholder environment is of great importance. The thesis provides an overview of the natural, cultural and economical environment in Lofoten as the basis of all further studies. Building on this the, the focus of attention will be on stakeholder groups, which emerge from the natural, cultural and economical environment with regard to possible petroleum activities. With the theoretical background of stakeholder theory and cultural theory, the thesis investigates how coastal zone managers can analyze those stakeholders. As a final result, the thesis provides a comprehensive image of the stakeholder environment in Lofoten with nine stakeholder groups and several subgroups.

1. Introduction

1.1 Aim

Managing the coastal zone of the Lofoten Islands with their natural and cultural resources in a sustainable but also acceptable way for all participants, is a complex issue. Many scholars in geography and planning-science deal with the realm of integrated coastal zone management, which includes e.g. the fields of spatial planning, resource management or cultural heritage management.

The coastal zone of Norway is inhabited by the majority of all Norwegians and is therefore a place of many interests. An important step in the whole process of ICZM in Lofoten, is to find out who and what is a part of the coastal zone. This master thesis will focus on possible petroleum activities in the Lofoten area and will try to identify and analyze most of the coastal stakeholder and interest groups concerned (*definition see: Guidelines for Integrated Coastal Zone Management (World Bank, 1996)*). An important step therefore is, not only to identify the stakeholders, but rather the whole stakeholder environment. After that step, they will be classified and put into a stakeholder network. Besides examining scientific studies and regional politics, it is necessary during the research to talk to local people, since the research focus is on the local level. A. Hegarty (1997) describes this approach with the words: *“Start with what the people know.”*

The master thesis will provide a geographical overview of the natural social-cultural and socio-economic environment and a short introduction to the Norwegian coastal planning system, and the other aim of the survey (*which is under the umbrella of ICZM*) will be to assess individuals and groups who interact with the coastal zone in Lofoten and their attitudes to possible petroleum activities in that area.

1.2 Background and rationale

Even on the small islands of Lofoten you can find various ecological, social and economic activities and interests. Besides old traditional activities like fishery, new businesses like tourism and energy become bigger and bigger. During the last decade the pressure of petroleum related activities has increased in the Lofoten area. Although test drilling has been forbidden until now, the *Integrated Management Plan for the Barents Sea-Lofoten Area* will be renegotiated in 2011 with an unclear outcome so far. Keeping the complex situation in mind, it is obvious that the area of the Lofoten Islands needs an integrated coastal zone management that will lead to a sustainable and responsible use of the ecosystem and its resources.

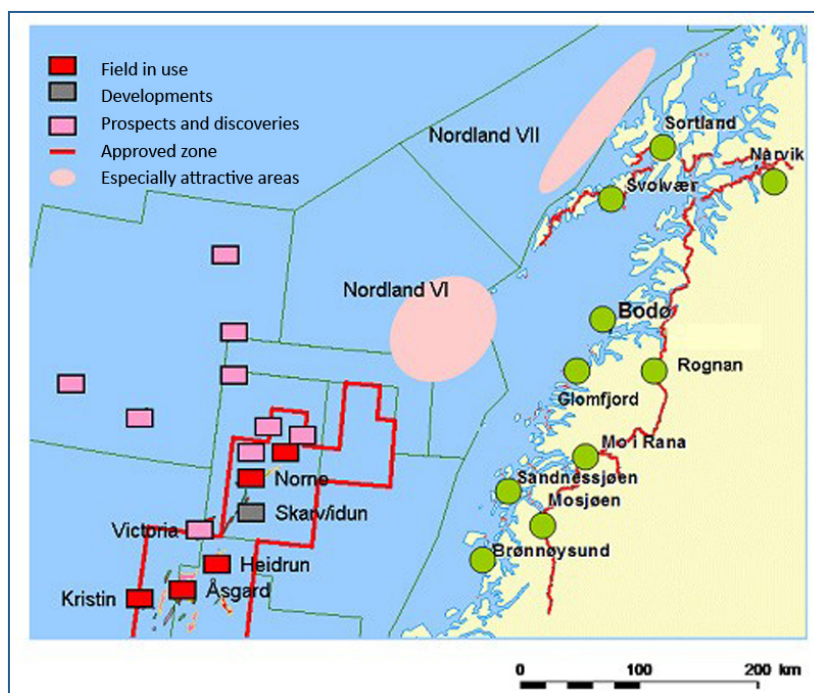


Figure 1 Oil exploration fields (Nilsen, 2008) (English translation added)

In 2008, the international consulting company Econ Pöyry estimates 2 billion barrels with 2/3 oil and 1/3 natural liquid gas in the area of investigation (*Lofoten and Vesterålen*) with a total value of 100 billion Norwegian crowns (*oil price based on 80 dollars per barrel*), ca. 12 billion Euro (Nilsen, 2008).

The Northern Norwegian Sea together with the Barents Sea belongs to the cleanest marine areas worldwide and houses nearly 150 species of fish. It is the spawning area and nursery ground of some of the world's most important fish stocks, like arctic cod

(Miljøstiftelsen Bellona et al., 2005). The rich fish stocks of Lofoten's surrounding sea (e.g. *Vestfjorden*) has been the basis for the Lofoten skrei¹-fishery for ages. The Vikings and their forefathers cast for fish, dried the fish like the people do today (*stockfish*), and exported it to many locations in Europe. The oil industry, marine environment and fishery are only three stakeholder groups, but the coastal area of the Lofoten Islands is a place of many interests. All these stakeholders are part of the interwoven network of ecological, social and economical issues. But who are all these different stakeholders in Lofoten and what are their relations to a potential oil and gas production off the coast of Lofoten in the marine area of Nordland VI and Nordland VII?

1.3 Problem definition

Understanding stakeholders, their thoughts, opinions and background: this is needed for further decision making in an integrated coastal zone management plan in Lofoten.

The first main point of the thesis is to focus on the difficulties of stakeholder analysis. Several scholars in planning related sciences have worked and are still working in this field. Therefore, the first step is to highlight two different ways of analyzing stakeholders and to give an overview of the current debate. After giving a clear overview of the area investigation with all its resources and social structures, the question on the system of stakeholders should be answered with the help of the theoretical knowledge on stakeholder analysis, the physical knowledge of the area and the feedback from the interviews. In summary the following questions arise:

- How can coastal zone managers analyze those stakeholders?
- How is the natural, cultural and economical environment in Lofoten built up?
- Which stakeholder groups emerge from this environment with regard to possible petroleum activities?
- What does the stakeholder environment in Lofoten look like?

¹ skrei = old Norwegian name for the Arcto-Norwegian cod and meaning "the wanderer" because it lives in the Barents Sea and spawns along the Norwegian coast (e.g. Lofoten) in March and April

1.4 Expected outcomes

During the preliminary study for the master thesis I found out that the Lofoten Islands are part of the project iKyst (iCoast). According to the project proposal, the *“ambition for this project is to create a system for BMP (best management practice) in Norwegian coastal zone management in accordance with the GG (good governance) principles”* (iKyst, 2009).

The master thesis is not linked to the iKyst project but should provide an insight into the interactive ecologic-socio-economic network of stakeholders in Lofoten with a focus on conflicts with a possible oil and gas development. The results are is one part in the puzzle of ICZM in Lofoten and could be helpful for further studies in this field in Norway.

1.5 Social and political relevance

It is always difficult to predict the future relevance of this thesis, but it can be said that the thesis could provide a better understanding of the stakeholder environment in Lofoten with its natural, social and economic components. The thesis will probably not have a great influence on political decisions concerning petroleum development in Lofoten, but the issue itself has an enormous relevance in Norwegian politics. Findings of the thesis and similar works by other authors could be of significance for people in Lofoten and foreigners like tourists. The understanding of the stakeholder environment could be helpful for future impact assessments, no matter in what area: petroleum activity, tourism or nature and culture protection and conservation. In addition, the thesis could be relevant for education in schools and at universities as an example of the process of development of ICZM.

2. Theory

The aim of this master thesis in a broader sense is to get to know, analyze and understand stakeholders within an ICZM plan for the Lofoten Islands in a view of possible petroleum activities in the area. A theoretical framework behind the analysis will therefore help to understand views, positions, behaviors, relationships, conflicts and consequences.

The coastal zone can be seen as a common resource used by many different groups and individuals, animals, plants and other organisms. All of them are also part of this resource – in a natural, social/cultural and economic view. What we get is a complex environment of many participants or possible stakeholders. If one wants to manage the coastal zone, one has to manage the resource and all its participants. Therefore one has to understand the stakeholder environment, which describes the cluster of all stakeholders in a given case. In this thesis, the stakeholder environment has to be seen in context to possible petroleum activities off Lofoten. Thinking one step further, even in the case of the Lofoten Islands, it will show that nearly everyone can affect the system or can be affected by the system.

As a hypothetical scenario, imagine that the Atlantic cod stocks around Lofoten are marred by an environmental disaster. Beside the environmental pollution, the Lofoten fishery will collapse and will not be able to meet the demands of stockfish² in Italy and Portugal, which will lead to a higher demand of stockfish from other coastal areas like the Finnmark in Norway, the Faroe Islands or Iceland. Economically the Lofoten fishery will be hit hard whereas the other regions will profit. This disaster will also have negative side effects on society and related economies in Lofoten and positive ones in the other coastal areas. This chain reaction could go on and on. It is obvious that a coastal zone management plan cannot attend to all the potential stakeholders. To manage a resource like the coastal zone of Lofoten needs therefore a way to identify definitive stakeholders and separate them from non-stakeholders, which means to prioritizing stakeholders in order to make the zone manageable. As stated by to Buanes et al. (2004), *“a major task of*

² Stockfish = dried cod

coastal zone planning is to identify who the stakeholders are, the precise nature of their involvement, and how they should be drawn into the management process.” The goal is to make the complex stakeholder environment as transparent and manageable as possible.

The concept of stakeholders has been a part of the thinking of business managers at least since the book *Strategic Management: A Stakeholder Approach* by R. Edward Freeman was published in 1984 (Mitchell et al., 1997). But until the mid-nineties stakeholder analysis was more or less a method without a theory behind it. In the last years of the 20th century, several articles were published (e.g. Mitchell et al., 1997) to contribute to a theory of stakeholder analysis, which led again to fruitful debates during the last decade concerning resource, fisheries and coastal zone management (Mikaelsen & Jentoft, 2001; Buanes et al., 2004; Billgren & Holmén, 2008).

2.1 Reasons for a stakeholder analysis in an integrated and collaborative approach

Before talking about the theory behind stakeholder analysis, it may be useful to look at the issue in a wider sense. What is the theoretical background that spurs us on to manage our coastal zones in an integrated manner and to consider, as a part of ICZM, on the different parties, which are involved in the zone and affected by the style of managing and decision making? Why should planners talk to these stakeholders and what are the benefits of listening to them? To understand the driving forces behind the integrated communicative approach in planning, I will give a short summary about planning theory and its evolution during the last centuries and decades.

Modern planning history or, in other words, the culture of spatial planning in Western Europe and North America starts with the Industrial Revolution in the 19th century. Starting from the philosophical and social movement and transformation, known as the Enlightenment, centered in the 18th century, new thoughts emerged and created a new sense of knowledge – scientific knowledge (cf. Hamilton 1996). After centuries of inflexible notions, preconceptions, superstitions and ideologies the main objective of the

Enlightenment was to create liberty and better human conditions through knowledge. According to Hamilton (1996) the following principles were regarded as important to reach the main objective:

- Reason
- Empiricism
- Science
- Universalism
- Progress
- Individualism
- Tolerance
- Freedom
- Uniformity of human nature
- Secularism

These principles or “building blocks of modernity” as Allmendinger (2002) calls it, led to the society we know as the modern era with its machinery of capitalism, liberalism democracy and national states. Retrospectively it can be concluded that the step into the modern era was like the popping of a champagne cork for our society and its development and pushed it forward with greater and greater steps.

As mentioned before, planning in the 19th century was influenced by the philosophical and societal developments of the Enlightenment and the step into the modern era. Originally, modern spatial planning has its roots in the three planning traditions of economic planning (*processes of production and distribution*), management of physical development (*urban areas*) and the management of public administration and policy analysis (*effectiveness and efficiency*) (Healey, 2005).

The early modernity³ was characterized by industrial cities with social disorder, immense population growth, increasing air and water pollution, etc. (Goodchild, 1990). The appearance of those problems called for solutions – solutions through spatial or town planning. One reaction to these problems was e.g. the Garden City movement, an urban planning approach by Sir Ebenezer Howard in 1898.

³ Modernity refers in this case to the development of spatial planning in the Western. Goodchild (1990) refers to the history of British town planning where early modernity had its heyday between 1900 and 1914, modernity between 1920-1970 and postmodernity since the (1960s) 1980s.

Later, from the 1920s onward, planning processes were more and more influenced by two key resources: scientific knowledge and instrumental rationality (Goodchild, 1990; Allmendinger, 2002; Healey, 2005) and have been known since then under the term (rational) comprehensive planning or blueprint planning (Faludi, 1970 in: Lawrence, 2000; Goodchild, 1990). This step can be seen as the turn from early modernity to modernity. According to Healey (2005, p. 9) scientific knowledge connected with spatial planning provided *“an objective basis for identifying present problems and predicting future possibilities”* while instrumental rationality focused *“on relating means (how to do things) to ends (what could be achieved), in logical and systematic ways”*.

But this type of modern planning, or, in a broader sense, modern life, also has its disadvantages. In his book *“All that is solid melts into air”*, Berman (1982) tries to give the reader an understanding of the dimensions of modernity, what happened to our life, the modern life. In his introduction he describes modernity as followed:

“To be modern is to find ourselves in an environment that promises adventure, power, joy, growth, transformation of ourselves and the world – and, at the same time, that threatens to destroy everything we have, everything we know, everything we are.”

Berman, 1982, p. 15

Most of the criticisms of modernity focus on instrumental rationality. The problem of instrumental or scientific rationality is its narrow technical view, which looks at the world as an object of technical manipulation where, as Allmendinger (2002, p. 159) argues, *“everything that could be is transformed into mathematical abstraction and everything that cannot, is ignored or suppressed”*. Instead of free and coequal people, bulwarks of power on the governmental level were generated through scientific expertise and lead to the opposite idea of modernity, to unequal people and an utilitarian society where measures, which lead to material usefulness and wealth, are the primary measures of worth (cf. Healey, 2005, p. 38 et seq.). This debate on instrumental rationalism was and is mainly held by representatives of postmodernism (e.g. Jean-François Lyotard, 1924 -

1998) and late-modernism (e.g. Jürgen Habermas). Other critics beside Habermas were the originators of the Frankfurt School, Max Horkheimer (1895 – 1973) and Theodor W. Adorno (1903 - 1969). At this point, the work of the Frankfurt School and Habermas' theories on communicative rationality cannot be covered because it would be outside the scope of the thesis. In the following, I will therefore concentrate on the need of communication from a planner's perspective.

With environmental, social and economical changes, our societies have to deal with more complex situations and many different interests. At this point, instrumental rationality in planning is reaching its limits. According to Lawrence (2000, p. 610) major negative tendencies of rationalism in planning are:

- *“Autocratic tendencies (“experts” dominate process with peripheral role for public)*
- *Fails to consider resource and cognitive limits*
- *Overestimates ability to predict and control environment (weak on implementation)*
- *Insufficient consideration of extrarational (creativity), of synthesis (compared to analysis) and of nontechnical and nonscientific knowledge, experience, and wisdom (scientific, technical, and quantitative bias)*
- *Fails to adequately consider the collective nature of planning and the central role of dialogue*
- *Fails to consider inequities and the political nature of planning (may reinforce inequities)*
- *Fails to integrate substantive issues (e.g., social and environmental needs) and to design the process to suit contextual characteristics”*

This becomes clearer when you look on the needs of an integrated management approach for the coastal zone with its many interests in environmental, social and economical issues. In a complex system like the coastal zone of Lofoten, you cannot predict and control the environment, you have to listen to the people with their experiences, wisdom and knowledge, you need the dialogue with the interest groups and you have to consider their needs. It is the step from planning by professionals to planning as a participative process (Allmendinger, 2002). Participation of interest groups in planning and management processes is also helpful if you have to deal with conflicts. It is obvious that different interests create conflicts between the interest groups. But how is a

conflict defined? In his study "Rationality and the analysis of international conflicts" Nicholson (1992, p. 11) gives this definition:

"A conflict exists when two people wish to carry out acts which are mutually inconsistent. They may both want to do the same thing, such as eat the same apple, or they may want to do different things where the different things are mutually incompatible, such as when they both want to stay together but one wants to go to the cinema and the other to stay at home. A conflict is resolved when some mutually compatible set of actions is worked out. The definition of conflict can be extended from individuals to groups (such as states or nations), and more than two parties can be involved in the conflict. The principles remain the same."

Taking this example to the coastal zone of Lofoten, the people Nicholson mentions, are the interest groups and the apple could be the coastal water of Lofoten. The example of the cinema could be transformed into the debate on environmental protection and petroleum development. Both could increase the value of the region, but the solutions are entirely different. Conflict handling will not be covered in detail at this point but a short excursus will be given. The Thomas Kilmann Conflict Mode Instrument (TKI) (see figure 2) will serve as an example of a conflict style inventory. The TKI consists of the two dimensions of assertiveness and cooperativeness. The higher your assertiveness, the higher the satisfaction of your concerns and the higher your cooperativeness the higher the satisfactions of the other party's concerns. Five conflict-handling modes are available to solve the problem with different outcomes for you and the other conflict party (cited from Kilmann, 2010):

*"**Competing** is assertive and uncooperative—an individual pursues his own concerns at the other person's expense. This is a power-oriented mode in which you use whatever power seems appropriate to win your own position—your ability to argue, your rank, or economic sanctions. Competing means "standing up for your rights," defending a position which you believe is correct, or simply trying to win.*

***Accommodating** is unassertive and cooperative—the complete opposite of competing. When accommodating, the individual neglects his own concerns to satisfy the concerns of the other person; there is an element of self-sacrifice in this mode. Accommodating might take the form of selfless generosity or charity, obeying another person's order when you would prefer not to, or yielding to another's point of view.*

Avoiding is unassertive and uncooperative—the person neither pursues his own concerns nor those of the other individual. Thus he does not deal with the conflict. Avoiding might take the form of diplomatically sidestepping an issue, postponing an issue until a better time, or simply withdrawing from a threatening situation.

Collaborating is both assertive and cooperative—the complete opposite of avoiding. Collaborating involves an attempt to work with others to find some solution that fully satisfies their concerns. It means digging into an issue to pinpoint the underlying needs and wants of the two individuals. Collaborating between two persons might take the form of exploring a disagreement to learn from each other's insights or trying to find a creative solution to an interpersonal problem.

Compromising is moderate in both assertiveness and cooperativeness. The objective is to find some expedient, mutually acceptable solution that partially satisfies both parties. It falls intermediate between competing and accommodating. Compromising gives up more than competing but less than accommodating. Likewise, it addresses an issue more directly than avoiding, but does not explore it in as much depth as collaborating. In some situations, compromising might mean splitting the difference between the two positions, exchanging concessions, or seeking a quick middle-ground solution.”

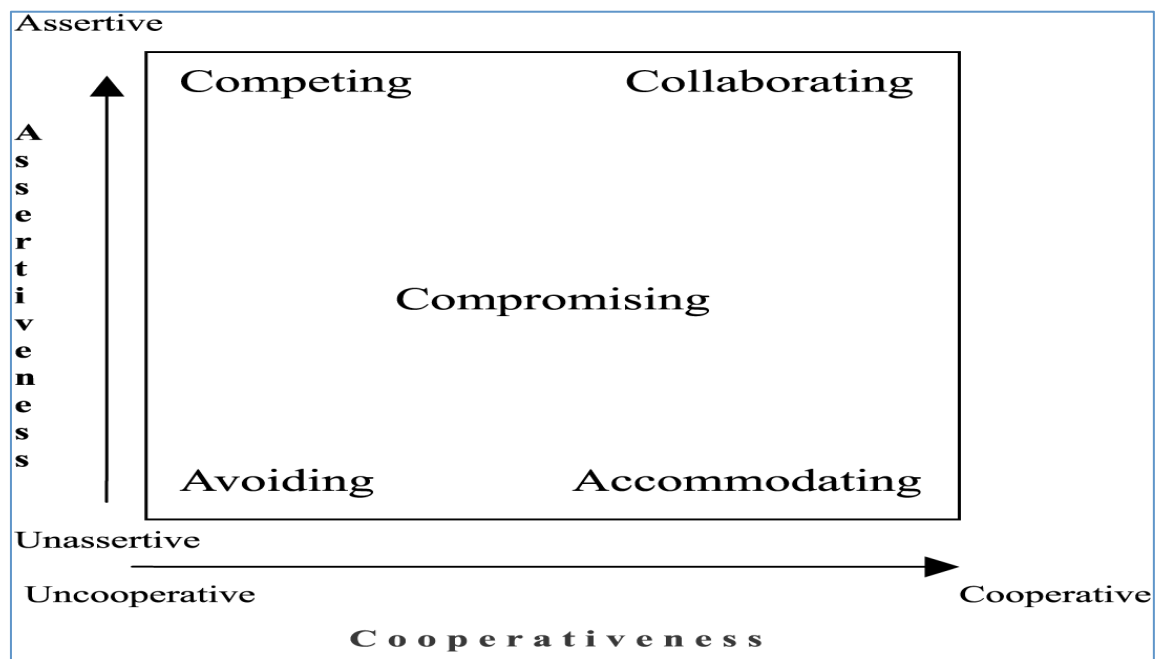


Figure 2 Two-dimensional taxonomy of conflict handling modes after Thomas and Kilmann (1974) (Thomas, 1992)

All these five conflict-handling modes will in the end lead to resolving the conflict. But it is only the collaborating mode, which satisfies all the two parties' concerns through a win-win solution. Planners and managers of the coastal zone should keep this in mind as the ultimate goal of an integrated approach.

The recognition of the need of collaboration was, as Patsy Healy (2006) calls it, the communicative turn in planning theory, away from instrumental rationalism and towards a planning culture, which sees planning as a communication process. This is what we know today by the term of collaborative planning. Although the ideas of collaborative planning evolved in the 1970s, public participation in spatial planning and management processes is not the standard and leads to clashes between the public and the government. During arbitration proceedings in Stuttgart concerning the project "Stuttgart 21", the German CDU-politician Heiner Geißler said: "*Governmental decisions on such serious projects without public participation, belong to the last century.*" (Zeit Online, 2010). Nor will integrated coastal zone management work without communication and stakeholder involvement.

2.2 Stakeholder theory

Stakeholders are groups and individuals, human and non-human who have interests in the activities of organization, who can be affected by those actions or can influence them. Stakeholder analysis will help to understand these relations and interactions in a certain environment, which is in the case of this master thesis the coastal zone of the Lofoten Islands respectively the case of possible petroleum activities in this area. The theory behind stakeholder analysis "*offers a maddening variety of signals*" (Mitchell et al. 1997, p. 853) to answer the two main questions of stakeholder identification and stakeholder salience. This will, as mentioned before, lead to an unmanageable number of stakeholders. Therefore, it is necessary to find a way of identification, which fits in with the area under investigation to keep the main stakeholders and sort out the non-stakeholders. According to Mitchell et al. (1997), stakeholders can be described and separated from each other by three attributes: power, legitimacy and urgency. These attributes can help to place the stakeholders in the system of the coastal zone of the

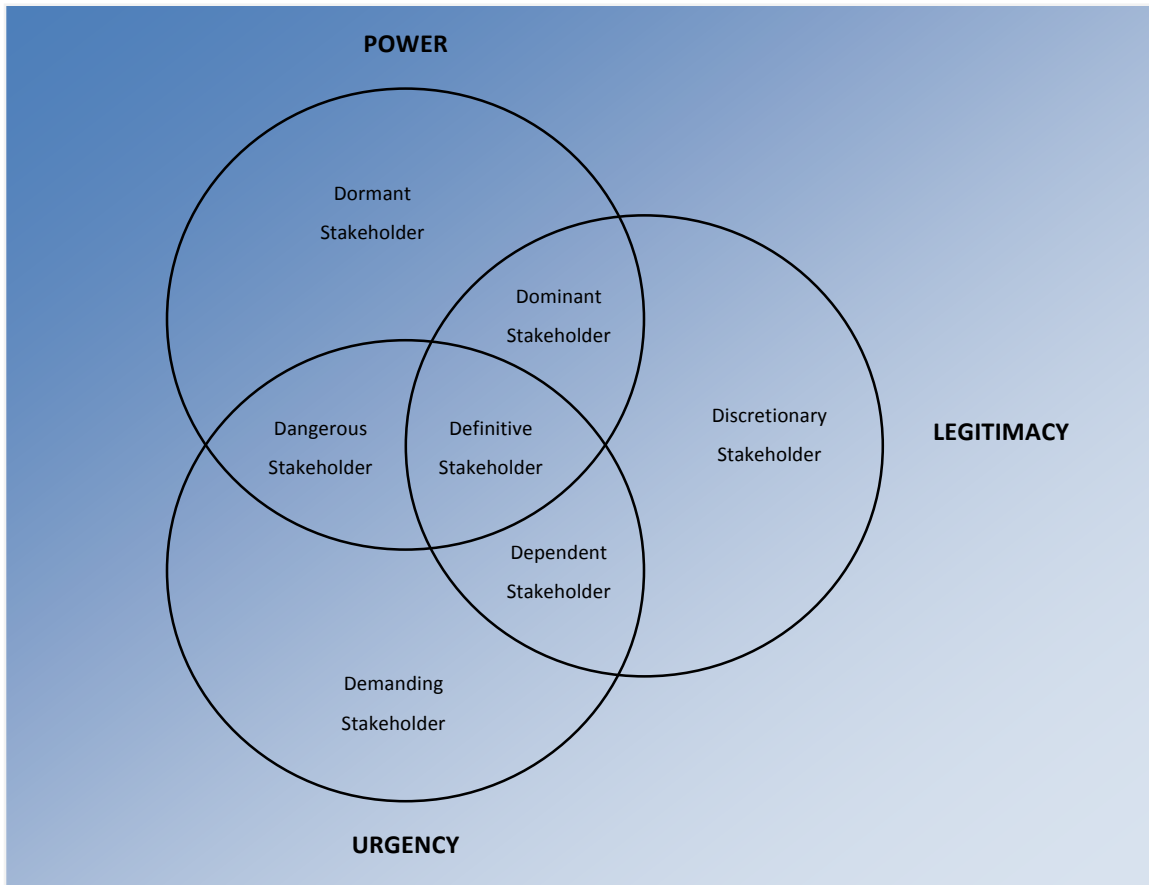


Figure 3 Stakeholder typology (after Mitchell et al., 1997)

Lofoten Islands and rank them by importance for a more effective and fair management. In the following I will look closer at this concept of stakeholder mapping by Mitchell et al. (1997), which can classify stakeholders of 7 different types by using the three attributes of power, legitimacy and urgency:

Power is the ability of a party in the stakeholder environment to impose its will against other parties. According to Etzioni (1964, p.59, in: Mitchell et al., 1997) power can be classified according to the resource, which is used to exercise power. If power is based on physical resources like force, violence or restraints, we call it **coercive power**. Material and financial resources lead to **utilitarian power** and the use of symbolic resources like prestige, esteem or acceptance is called **normative, normative-social or social power**. The last form of power could be very important for small stakeholders to gain their purposes.

Legitimacy of a stakeholder generally characterizes his acceptance by other organizations. According to Suchman (1995, p. 574 in: Mitchell et al., 1997) legitimacy can be seen as “a

generalized perception or assumption that the actions of an entity are desirable, proper or appropriate within some socially constructed systems of norms, values, beliefs and definitions”.

Urgency of stakeholder claims shows the degree of demanding immediate action or attention. It can be seen as a combination of important knowledge of high value and often a lack of time, according to the motto: “Listen to me now”.

Finally the combination of these three attributes will lead to a categorization of stakeholders and will show their salience. According to Mitchell et al. (1997) stakeholders can be latent, expectant and definitive. Stakeholders, which only have one attribute are latent stakeholders and can be dormant, discretionary or demanding. The main attribute of **dormant stakeholders** is power, but without a legitimate relationship and with the lack of urgency, their power is useless. A **discretionary stakeholder** only has legitimate claims, but due to the lack of power and urgency no pressure on the organization. Mitchell and colleagues call the **demanding stakeholders**, which have urgent claims but no power and legitimacy the “*mosquitos buzzing in the ears of managers: irksome but not dangerous*” (1997: 875). Demanding stakeholders could be individual people with interesting arguments, but to make their voice heard, they at least need power or legitimacy.

Expectant stakeholders, which have two of three of the attributes power, legitimacy and urgency have moderate salience and will be recognized by the organization. They can be described as dominant, dependent and dangerous. Attributes of power and legitimacy create **dominant stakeholders**. Very often these stakeholders seem to be the “only ones” in management because urgent claims are given comparatively less weighting. This mistake should of course not be made. If there is a lack of power but legitimate and urgent claims exist, stakeholders are called **dependent stakeholders**. For these stakeholders it is very difficult to be heard by the organization and it is often necessary to get help from more influential stakeholders, like dominant ones. The last group of expectant stakeholders is the one who have an urgent claim and power. Due to these attributes they are called **dangerous stakeholders**. Acting of these stakeholders,

according to their illegitimate status can in an extreme case e.g. be unlawful and violent, like bombing, kidnapping, sabotage or terrorism.

For **definitive stakeholders** the salience will be very high because they have all the important stakeholder attributes of power, legitimacy and urgency. Normally stakeholders are not “born” as definitive stakeholders. During the management process and negotiations, expectant stakeholders gain the missing attribute and can become definitive stakeholders. So the classification of different stakeholder types is not static but a dynamic process. It can change during the management, which has to be recognized by the managers and the organization.

These 7 different types of stakeholders can provide a first detailed overview of the whole network. The focus of stakeholder theory is very much upon power alongside with the ability to uphold interests. But what is their background, how are they organized and what is their view on society and nature. The next chapter on cultural theory will provide the theoretical background to answer the questions, stakeholder theory cannot answer.

2.3 Cultural theory

Reflecting on the previous chapter, it becomes obvious that stakeholder theory is a useful and usable tool to analyze social groups and their stakes, but it lacks one important matter regarding ICZM. As mentioned before, stakeholder theory was developed in business management and therefore focuses on the attributes of power, legitimacy and urgency. This might be enough in the case of strategic stakeholder management for firm strategies and decision plans but not for ICZM. But why do the coastal zone managers need more information of the stakeholders? What is missing in the traditional stakeholder analysis? Is it maybe the focus on nature and culture? For an integrated coastal management approach you need to be able to analyze social groups in a way to understand their view of society and how these different social groups perceive nature.

With their publication on cultural theory Thompson et al. (1990) supplied a theory of sociocultural viability that could improve our understanding of culture and nature. This could provide a more environmental and societal view on the case than the more economically oriented stakeholder theory. While stakeholder theory centers on power, legitimacy and urgency, cultural theory, according to Thompson et al. (1990), focuses on people's values, ideas and worldviews. In a system like the coastal zone you can discover a widely heterogeneous managing of resources by the stakeholders, which is a result of their different perception of nature and its resources. But why do they act as they act and what is the difference in their environmental and societal awareness? Can cultural theory give the answer?

The idea of culture theory was developed by the American scientist Mary Douglas in 1970 (cf. Thompson et al. 1990, p. 1 – 18). To avoid confusion, it has to be explained that more precisely cultural theory is a “*theory of sociocultural viability*” (Thompson, 2008, p. V). Interesting for a stakeholder analysis in ICZM is the fivefold typology of forms of solidarity, a grid-group typology, which claims that there are only five ways of life in our society – egalitarianism, hierarchy, individualism, fatalism and autonomy (Thompson et al. 1990; Thompson, 2008). If you want to analyze stakeholders you first have to get an idea of how our society is constructed. This will help us to understand the different social groups and stakes, their environmental risk perception and their understanding of ecosystems and their stability. According to Thompson et al. (1990) and the grid-group typology, our society is composed of groups with strongly positive group contexts and others with more negative group contexts. The same applies for the grid context which can be strongly positive or negative as well. In the following I will provide an overview of the five forms of solidarity and their characteristics. In addition see also Figure 4.

Egalitarian

Today the principles of an environmental organization like Greenpeace are typical examples of an egalitarian society. Egalitarians have a high group control but a low grid. Members are free to act, but controlled by ethical values and respect for the other

community members so “*that everyone gets their share of resources*” (Billgren & Holmén, 2008, p. 555). For egalitarians nature is very fragile and unstable like a ball on a hilltop (*figure 4*). Everything is interconnected and nothing can happen to anyone or anything without consequences for others. The only solution to the world’s problems is voluntary simplicity, which means that everybody should tread as lightly as possible on our planet and, in an ideal case, should leave nothing but footprints (Thompson, 2008).

Hierarchist

The hierarchists could be represented by today’s western governments and authorities. They have the same high group control as the egalitarians but a high grid with internal structures and external control. In hierarchical societies, the world is controllable through regulations and predictions. Therefore nature is relatively stable from their point of view and can manage itself (tolerant) until one pushes the limits, like a ball in a valley of a hilly countryside (*figure 4*). Then, the hierarchist can and will manage the problem using their knowledge (Thompson et al., 1990; Billgren & Holmén, 2008).

Individualist

Individualists have the same low grid without internal structures as the egalitarians but also a low group control. Their intention is to decide on their own what they want to do and they assume to have the ability to control non-individualists. Examples are the “*self organizing ego-focused networks*” (Thompson, 2008, p. 23) we call markets with their globally acting businesses. In their opinion nature is benign and forgiving and can therefore recover from almost every impact caused by manipulating and exploitation. Nature is as stable as a ball in a deep U-shaped valley (*figure 4*).

Fatalist

Fatalists have the same low group control as individualist and the same high grid as hierarchists. This means that they don’t have many choices in life because their lives are

mainly steered by external forces on which they also depend on (Billgren & Holmén, 2008). Nature in the fatalists' world is capricious and it is like a ball on a flat and dry salt lake, which will never change its vertical position (*figure 4*). Efforts of their own to change something, e.g. nature management, would make no sense. Therefore, they seldom participate in political debates and their rational management response often is: "Why bother?" An example of a fatalist could be the common man with his disenchantment with politics.

Autonomist

While autonomists are really rare in our society (strictly speaking they are not a part of the society), it can be assumed that you have only egalitarians, hierarchists, individualists and fatalists as players in the coastal zone in Lofoten.

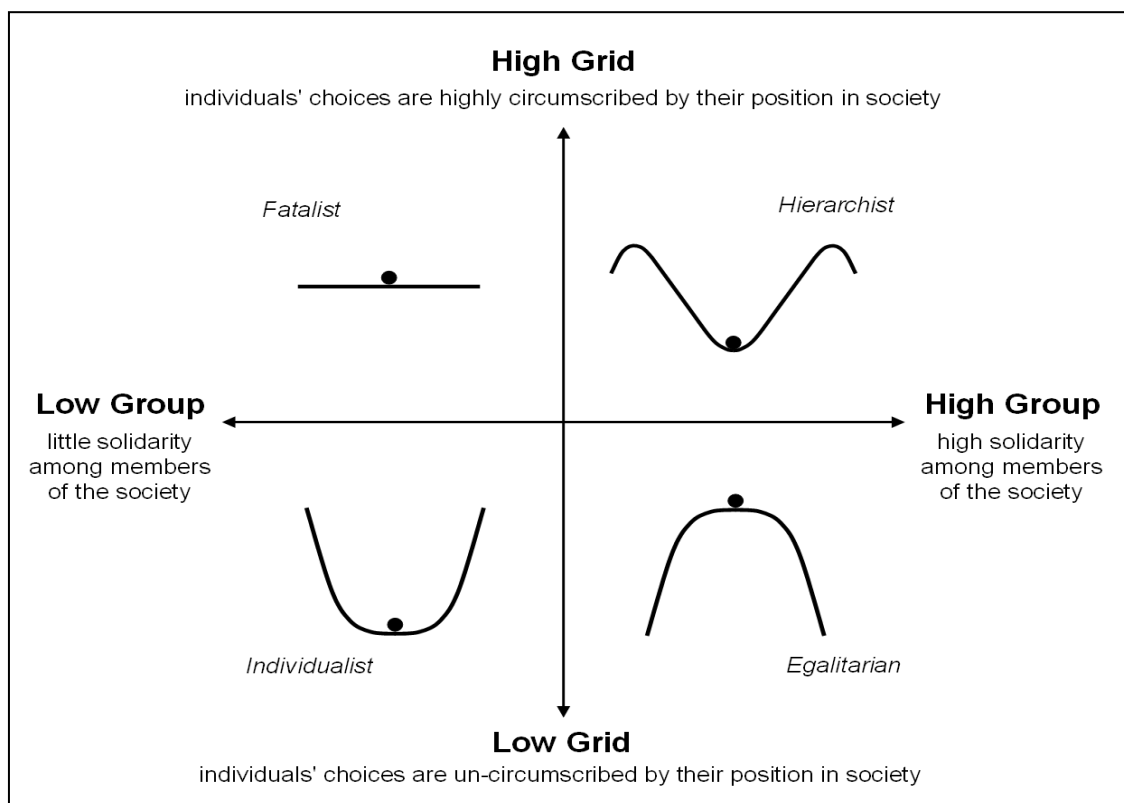


Figure 4 Grid-group typology of cultural theory (Thompson, Richard, & Aaron, Cultural theory, 1990)

2.4 Rationale

In the two previous chapters I presented two theoretical approaches to analyze stakeholders. But why have I chosen these both? As mentioned before, the goal of coastal zone management is to manage it in a sustainable way to satisfy everyone concerned. With the triad of sustainable development, with its three constituent parts of economy, environment and society, I want to explain, why I have chosen stakeholder theory and cultural theory as the theoretical background for my thesis.

Stakeholder theory can be seen as the traditional approach, which emerged from business management. It helps to understand relations and coherences in and between economy and society, through the attributes of power, legitimacy and urgency. Stakeholder theory is the basis of many studies in the field of stakeholder analysis and is e.g. combined with theories of social change and differentiation (Friedman & Miles, 2002). But is a theory on socio-economic relations enough to understand the stakeholder environment of the Lofoten Islands? Coastal zone management is more than just socio-economic management. It includes also natural resource management. But how can we understand environmental concerns with a theory, which does not imply nature as part of the analysis? Thompson's et al. (1990) work on cultural theory, with the analysis of society and its view on nature, is fundamentally different from the traditional approach of stakeholder theory. That fact is the decisive point for me to use cultural theory in the stakeholder analysis of the coastal zone in Lofoten. With a combination of stakeholder theory and Thompson's cultural theory, it is possible to take the step from a business orientated to a sustainability orientated stakeholder analysis with an eye on economic, social and environmental concerns.

3. Methodology

The interest in a research project on the Lofoten Islands emerged from reading about the debate on the update of the Integrated Management Plan for the Barents Sea and Lofoten in Norwegian mass media. The biggest issue, at least in the media, is a possible petroleum development off the coast of Lofoten, Vesterålen and Senja. The debate can be characterized as heated and there's enough room for research on stakeholders and their environment in this area. After having created such a rough shape of a research environment with keywords like Lofoten, stakeholders and oil development, interesting research questions have to be formulated and the project has to be placed into an existing field of research. A master thesis claims not to be totally new but in my opinion it should use previous research methods and data by adding new ideas – in a nutshell, it should develop known things further. Secondary data will therefore take up most of the space in knowledge and data gathering and they will also be used as background information for gathering primary data through interviews and mass media. Together they will build the basis for the analysis.

Doing a research project on stakeholders, you have to find the appropriate research method for the specific field of research. Literature on social research methods often distinguishes between two main research strategies: quantitative and qualitative research. (Bryman, 2008 p. 21 ff.; Flowerdew & Martin, 2005 p. 189 ff.; Schustermann, 2010). To choose a research method you have to focus on the main objectives of the research. The main objectives of this thesis are to identify and understand stakeholders, their thoughts and opinions and background, through a stakeholder analysis which is needed for further decision making in an integrated coastal zone management plan in Lofoten. Comparing these main objectives with the characteristics of a qualitative and quantitative research method, it becomes obvious that a qualitative research method is best suited for this research project (*see* Figure 5 Qualitative vs. quantitative research (after Schustermann, 2010 and Bryman, 2008)).

	Qualitative Research	Quantitative Research
What they do	<i>Uncover and understand</i> thoughts and opinions thus providing a basis for further decision making	Used to <i>measure and predict</i> , leading to a final course of action
What to do	<ul style="list-style-type: none"> • Develop hypothesis • Understand feelings • Identify needs • Generate ideas 	<ul style="list-style-type: none"> • Measure awareness • Offer statistical validation • Determine most desirable concept • Measure satisfaction
Other contrasts	<ul style="list-style-type: none"> • Words • Points of view of participants • Researcher close • Theory emergent • Process • Unstructured • Contextual understanding • Rich, deep data • Micro • Meaning • Natural setting 	<ul style="list-style-type: none"> • Numbers • Point of view of researcher • Researcher distant • Theory testing • Static • Structured • Generalization • Hard, reliable data • Macro • Behavior • Artificial settings

Figure 5 Qualitative vs. quantitative research (after Schustermann, 2010 and Bryman, 2008)

3.1 Qualitative research

One of the main advantages of qualitative research in social science is its ability to see “*through the eyes of the people studied*” (Bryman, 2008 p. 385). Bryman further argues that this ability shows the difference between natural science and social science because people are able to attribute meanings to incidents in their surrounding environment, which is nearly impossible or still a nonexistent fact in natural sciences. This, in my opinion, is an advantage that has to be considered. In a qualitative research, the author or researcher has the chance to “*participate in the mind of another human being*” (Bryman,

2008, p. 385) and will therefore see things in a different manner from the outside. Especially in heated debates like the “oil debate” in Lofoten it is important to get deep into the matter to see the different stakeholders as participants with emotions, feelings and meanings, and not as statistical objects in an artificial world.

Although every study starts with assumptions and images of the reality of the studied social world, the researcher should start as neutral as possible, to be susceptible to new aspects of the social world of people and groups. The close contact with these people and groups, which are involved in the research, postulate also a high degree of flexibility (Bryman, 2008). This flexibility gives and requires likewise the ability to adapt to new situations and findings in the studied social world and change emphases. A structured research approach could therefore be obstructive. In contrast, less structured and interactive approaches could guarantee a high degree of flexibility where one has the chance to change what is important to discover the natural, cultural and economical environment to understand the stakeholder environment.

But every research method has its downside and it's the same with qualitative research. According to Bryman (2008) one point of criticism is the lack of objectivity. It is often argued that the personal relationship with people and groups prevents objectivity, and sometimes the flexibility during the research process is criticized, because it may come a lack of transparency, so that the way of reaching a conclusion is not quite clear. On the other hand one have to ask itself if one researcher for its one could even be objective or not. A question that is surely difficult to answer. To be as objective as possible, the researcher has to have a critical attitude towards herself/himself and has to question the findings through the research process several times. Another point Bryman (2008) mentions, is the problem of generalization. Qualitative researches often gathers tons of data or knowledge from only a few sources: How can the findings be representative? Feelings, meanings and emotions are not numbers, so when you talk to people or group representatives you cannot automatically generalize these feelings and meanings. But, in my opinion, when you talk to people and groups and observe their environment, you will get a feeling for the social world you are studying. This feeling could help the researcher to generalize things.

3.2 Literature

As I mentioned before, secondary data from literature are one of the main sources of the thesis. It starts with information on theories, which is collected from different kinds of written media, like books and articles. These data build the basis of the theoretical part of stakeholder analysis and are not specific to the study field of Lofoten. During the discussion phase it will be shown if these theories are flexible enough to suit the circumstances of the natural and social world resp. environment in Lofoten.

The second big part of secondary data is used in the description of the natural, social and economic world, the stakeholder environment, which will be one of the biggest parts in this project. This background information is essential to analyze all the natural, socio-cultural and socio-economic parts, like terrestrial and marine ecosystems, occupation groups, governmental authorities and non-governmental organizations. The variety of literature sources for the natural and social background information is even higher and includes data from scientific reports by governmental and private institutions, scientific articles in magazines and newspapers, statistical data and websites of all these different groups and organizations.

Some literature, especially mass media, is also used to produce primary data due to analyzing their ideas, meanings and messages. It is meant as a supplement to the data gathered by interviews. More details on this can be found in chapter 3.4.

3.3 Interviews

Interviews are the main source for the primary data and were held over a period of two months in June and July 2010. For my thesis the process of interviewing people was not only aimed at providing data for a stakeholder analysis, but also at testing different styles of interviews and discovering their advantages and disadvantages as a kind of by-product. Maybe there are differences in the outcome between official interviews with paper for notes or voice recorder and interviews conducted in a more comfortable atmosphere,

e.g. with coffee and cake. The results could help future researchers to conduct more profound interviews for a better strategy in stakeholder analysis.

3.3.1 Why talk to people?

Talking to people as a research methodology in qualitative research is a widely employed method (Bryman, 2008). It can help the researcher, as mentioned before, to see the studied environment through the eyes of the interviewed persons. This view is very important in a complex system like the coastal zone to discover possible stakeholders. The interviewed persons do not have to be stakeholders themselves because their knowledge could be helpful, too, to understand the interconnections of the studied community resp. between the natural and social world. The philosophy behind such a community-based approach according to Hegarty (1997) is: *“Start with what the people know.”*

3.3.2 How talk to people?

For the interviews to deliver data for a qualitative research it is not necessary to have standardized questions and given answers. A standardized questionnaire is not flexible enough. But the flexibility during the interview is necessary to react spontaneously to twists during the interview and to understand and not to generalize the interviewed persons. In figure 6 you find the interview guide with six main questions, which was used during the talks. These questions were not directly asked, but served as reminder to gather all the necessary information on the research questions during the interviews.

- **Er du en aktør? Hvem er aktørene i kystsonen i Lofoten?**
Do you have a stake? Who are the stakeholders in Lofoten?
- **Hva er dine/dere interesser og hva slags ressurser bruker du/de?**
What are your/their interests and what kind of resources do you/they use?
- **Hva er dine/dere kunnskap om debatten og oljeindustrien og hva er informasjonskilden?**
What is your/their knowledge about the debate and the oil industry and what are the sources of information?
- **Hvilke strategier har du/de for å få en stemme i debatten?**
What kind of strategy do you/they have to get heard in the debate?
- **Hvem er akseptert som en interessent i debatten av petroleumsindustrien og myndigheter?**
Who is accepted as a stakeholder in the debate by the oil industry and public authorities?
- **Hvem er akseptert og hvem ikke? Er naturen og kulturen i Lofoten akseptert som en interessent/aktør? Hvorfor?**
Who is accepted and who is not? Are nature and culture in Lofoten accepted as stakeholders? Why?

Figure 6 Interview guide in Norwegian (English translation below)

3.2.3 Sampling

Authors of qualitative researches are often asked, how they found their interviewees and how many they were (Bryman, 2008). As mentioned before, qualitative research cannot and does not want to be representative, but wants to give a deep insight. From a remote researcher position at the beginning it is difficult to find the most appropriate individual person or responsible person in a group to interview (Flowerdew & Martin, 2005). In the beginning of the interview phase I started talking with many people in the street, in stores or bars, as multiple initial contact persons to start the snowballing. Starting with such a

wide-open circle is important to avoid like-minded interviewees (Flowerdew & Martin, 2005; Bryman, 2008).

3.4 Mass media

It is interesting to see how possible stakeholders in Lofoten use the mass media, like newspapers, internet, radio and TV as a platform for the debate to spread their message. Which picture of themselves do they provide in the mass media? Answering these questions is a part of a stakeholder analysis and can be seen as an addition to the interviews.

4. ICZM in Norway and Lofoten

4.1 Political system

Norway is a constitutional monarchy and the present king is Harald V. He acts as the head of state within the Constitution of Norway (*Norges Grunnlov*) which was adopted on 17th May 1814 but with some amendments nowadays. The last changes were adopted on 20th February 2007 and took effect on the 1st October 2009. Although parliamentarism was established in Norway already in 1884, it has been part of the constitution only since the last amendment. The members of the parliament (*Storting*) are elected directly and through party lists in 19 constituencies, which correspond to the 19 county municipalities (*fylkes kommune*) of Norway. These counties are divided into several municipalities (*kommune*).

Since 1987 there has also been a Saami Parliament (*Sameting*), with six constituencies in Finnmark County, three in Troms County and four in the counties of Nordland, Hedmark, North-Trøndelag and South-Trøndelag. It is responsible for e.g. Saami cultural issues and the development of the Saami language and functions as an adviser in state issues, which affects concerns of the Saami. The Saami therefore even have a voice of their own concerning spatial planning issues, which they fought for so long.

4.2 Planning system

The following passages focus on the main planning principles in Norway, including a short abstract of the history of Norwegian planning and the contemporary situation.

4.2.1 History of the planning system

Before the independence from Denmark in 1814 and during the first decades of the personal union with Sweden (1814-1905), only small urban settlements (*Oslo, Bergen, Trondheim*) were affected by official plans (*e.g. street grids*) or urban regulations, like the separation of polluting areas from living areas. In 1840 the national planning law became effective for the biggest towns in Norway but a jurisdiction for rural planning was still missing. This was changed with the introduction of the building act in 1924, 19 years after the dissolution of the personal union with Sweden. During the 1930s, 1940s and 1950s population growth and the constantly evolving transportation technology called for an overall land-use model. In 1965 the Norwegian Parliament adopted a new Building Act, which included the whole mainland of the national territory and divided planning into three levels, the central state, the counties and the municipalities "to extend the mandate of planning in general and on the municipal level" and to integrate "activity planning within different public sectors with land use planning" (COMMIN - The Baltic Spatial Conceptshare, 2007). The main effort was to co-ordinate budgeting of infrastructure planning and later local housing planning. In the end of the 1960s and the 1970s, local public tasks like education, health, social security system and culture expanded and needed a better overall co-ordination and led to the county municipal master plan for each county municipality in 1973. A new Planning and Building Act in 1985 consolidated and maintained in part the changes and evolution of the Norwegian planning system during the last decades. Environmental Impact Assessment was adopted in 1987 and its legal basis is the Planning and Building Act.

4.2.2 Present planning system

At the national level, the Ministry of the Environment is responsible for local and regional planning everywhere and acts as the national planning department. The municipalities have to implement the national targets in their local planning. It is also possible that several municipalities confer the planning of a certain project to the county municipality, which is, in the case of the Lofoten Islands, the Nordland County Municipality.

"Planning has to do with thinking through the possibilities and consequences involved before acting. Under the Planning and Building Act, planning is based on a popularly elected administration and participation by residents in the local authorities (municipalities) and counties. The Government and the Storting (Parliament) set national targets around which the local and regional authorities base their planning decisions."

Definition of planning in Norway (**Ministry of the Environment, 2007**)

As seen in the definition above, the Planning and Building Act (*plan- og bygningsloven*) is the legal core of the Norwegian planning system but there is no overall jurisdiction concerning environmental issues because they are scattered over sectoral laws. According to the COMMIN - The Baltic Spatial Conceptshare, 2007 paper on Norwegian planning, the three most important acts in Norwegian environmental planning are the: Pollution Act (*forurensningsloven, 1981*), Nature Diversity Act (*naturmangfoldloven, 2009*), Cultural Heritage Act (*lov om kulturminner, 1978*).

Those instruments or laws can be understood as plans and frameworks for e.g. landscape protection areas (*landskapsvernområder*), nature reserves (*naturreservater*) or national parks (*nasjonalparker*). Another national act that is important for the spatial planning is the Land Act (*jordloven, 1995*), which regulates planning in rural areas and is designed to protect cultivated and arable land.

4.3 Coastal zone management

The Norwegian coastline, from the Svinesund in the South to Kirkenes at the Russian border in the North, including the fjords and all islands, has a length of more than 57 000 km. 80% of the population or nearly 3.9 million people live along the coast in a stripe of land about 10 km wide, most of them in the urban areas in the south (Ministry of the

Environment, 2006). The coastal zone in Norway is described as the area between the outer line of the Planning and Building Act (*a line which can be drawn between the outermost skerries and headlands*), the transitional zone between the land and the sea, and the land, which is ecologically connected to the sea or belongs to it by use. This definition makes the coastal zone a zone with dynamic rather than with exact borders. In the case of possible petroleum activities in Lofoten, it becomes obvious that coastal zone and marine management merge together. Norway has been working on ICZM (*integrert kystsoneforvaltning*) for 20 years (Direktoratet for natureforvaltning, 2004) now with the goal to conserve ecosystems which are close to nature and and/or hardly affected by use.

4.3.1 Use of the Norwegian coastal zone

The Norwegian coastal zone is of high value and is therefore a zone with many interests in area and resource usage. According to Nettverk for miljølære (2010) the main interests that have to be considered by coastal zone management in Norway are:

- *Biodiversity*
- *Landscapes*
- *Friluftsliv (Recreation)*
- *Cultural heritage*
- *Economic interests*
- *Living and infrastructure*

According to these aspects the Ministry of the Environment provides the national guidelines for planning on regional and local level. It also has to approve the ICZM plans of the county municipalities. The responsibility for these county-plans lies with the County Council and the County Governor. They also have to give support to the

municipalities in planning and managing the coastal zone. Actually a number of county municipalities have implemented coastal zone management in their county plans, which contain "*objectives, long-term goals and a programme of action for sustainable development in the coastal zone*" (Ministry of the Environment, 2006). Examples of this are:

- *Beach zone protection (100 m belt)*
- *Tourism and recreation*
- *Aquaculture development and coastal fisheries*
- *Industrial development and deconstruction*
- *Nature conservation and management*
- *Pollution abatement*
- *etc.*

Subordinate government agencies like the Directorate for Nature Management, the Directorate for Cultural Heritage, the Pollution Authority and the Mapping Authority support the Ministry in its work. The responsibility for living resources and the biodiversity of the sea lies with the Ministry of Fishery.

4.4 Management plan

In 2006, the Norwegian Parliament decided the first *Management Plan of the Marine Environment of the Barents Sea and the Sea Areas off the Lofoten Islands*. The reason for such a management plan is the high environmental value of the Lofoten and Barents Sea with its clean waters and vulnerable fish, seabird and sea mammals stocks. In addition, the biodiversity of the seafloor with its coral reefs has to be mentioned. According to

Ministry of Environment (2010) the goal is “*a holistic and ecosystem-based management*”, which should be achieved through the following measures (Ministry of Environment, 2010):

- *Area-based management, where activities and measures are adjusted to the environmental quality of the ecosystems.*
- *Protection of the most valuable and vulnerable areas against negative pressures, included oil pollution.*
- *Reduction of long-range pollution.*
- *Strengthening of the fisheries management.*
- *Securing control with the development of the state of the environment in the Barents Sea – Lofoten area through a more coordinated and systematic environmental monitoring.*
- *Strengthening the knowledge base through better surveys and increased research.*

Coastal zone management in Lofoten falls between two stools, the marine management plan and the planning and building act. The management plan is mainly based on marine management and excludes the fjords and beach zone while the planning and building acts excludes offshore installations (*oil platforms*) and activities (*oil tanker*), which can affect the coastal zone. Therefore, it is the task of the administrative bodies on the national, regional and local level, to connect these two stools and create a basis for ICZM in Norway and Lofoten.

5. The Lofoten Islands and its natural, socio-cultural and socio-economic environment



Figure 7 Sharp peaks of Austvågøya

The Lofoten Islands are an archipelago in North Norway, 200 km north of the Arctic Circle. From the Raftsund east of the island Austvågøy to the outermost islands of Røst the Lofoten archipelago has a total length of around 200 km and a total area of 1226 km². The island chain with its main islands Austvågøy, Gimsøy, Vestvågøy, Flakstadøy, Moskenesøy, Værøy, and Røst is also often called Lofotveggen (*no: vegg = wall*) for its steep and sharp mountains which shelter the small fishing villages on the east coast against the bad weather from the west. The islands are located between the 67th and 68th parallels north, divided by the Vestfjord from the mainland in the Norwegian Sea. The distance from the outermost island Røst to the mainland is nearly 100 km. This remote location combined with the “heat pump” known as the Norwegian Current creates a unique living space for all creatures including human beings. In the following I will have a closer look at the area of Lofoten not as an end in itself but to show the factors that contributed and still contribute the natural environment, the socio-cultural identity and socio-economic structures. In this context I will also focus on the common forms of life as parts of the ecosystem and maybe stakeholders in their own right and as resources for us, the human beings. This overview of the natural, socio-cultural and socio-economic environment is

indispensable for the understanding of stakeholders and their environment, and of conflicts of interests in this particular area of Norway, the Lofoten Islands.

5.1 Natural Environment and its natural resources

As mentioned before, the Lofoten Islands are located 200 km north of the Arctic Circle. With its steep mountains higher than 1000 m, a relatively mild climate, huge bird populations and rich fish-stocks, one has to ask which circumstances make Lofoten so unique and provide such natural resources. Starting with the foundation, the geological evolution of Lofoten and its climate, I will also have a closer look at the terrestrial and marine resources. This knowledge is absolutely necessary for a stakeholder analysis and the understanding of conflicts of use, because all the stakeholders are dependent on certain natural resources in Lofoten.

5.1.1 Natural resources definition

As the term “natural resources” lacks clear-cut boundaries, it is necessary to define what is meant by it. In different natural sciences and countries, the term of natural resources is used in different ways, which makes it quite difficult to find one right definition. In my opinion a brief definition is that natural resources are resources, which are provided by nature with a focus on their potential use. In German geosciences, the term “Naturraumdarangebot” is used to describe this case very well, but there is no proper translation into other languages. Natural Resources can be divided into biotic ones, which include all terrestrial and marine organisms and their products, and abiotic ones like land and water or air. Petroleum belongs e.g. to the biotic resources because of its organic origin. Furthermore one can divide these resources into potential (*existing, but not surveyed and in use*) resources and actual ones that are in use. The last differentiation can be drawn between renewable (*forests, crops or sunlight*) and non-renewable (*petroleum*) resources.

5.1.2 Geology and Geomorphology

Looking at the geology of Lofoten has two reasons. First, to understand the geological conditions for possible petroleum findings outside Lofoten and secondly to get a feeling for the uniqueness of Lofoten's billions of years old geological history and heritage.

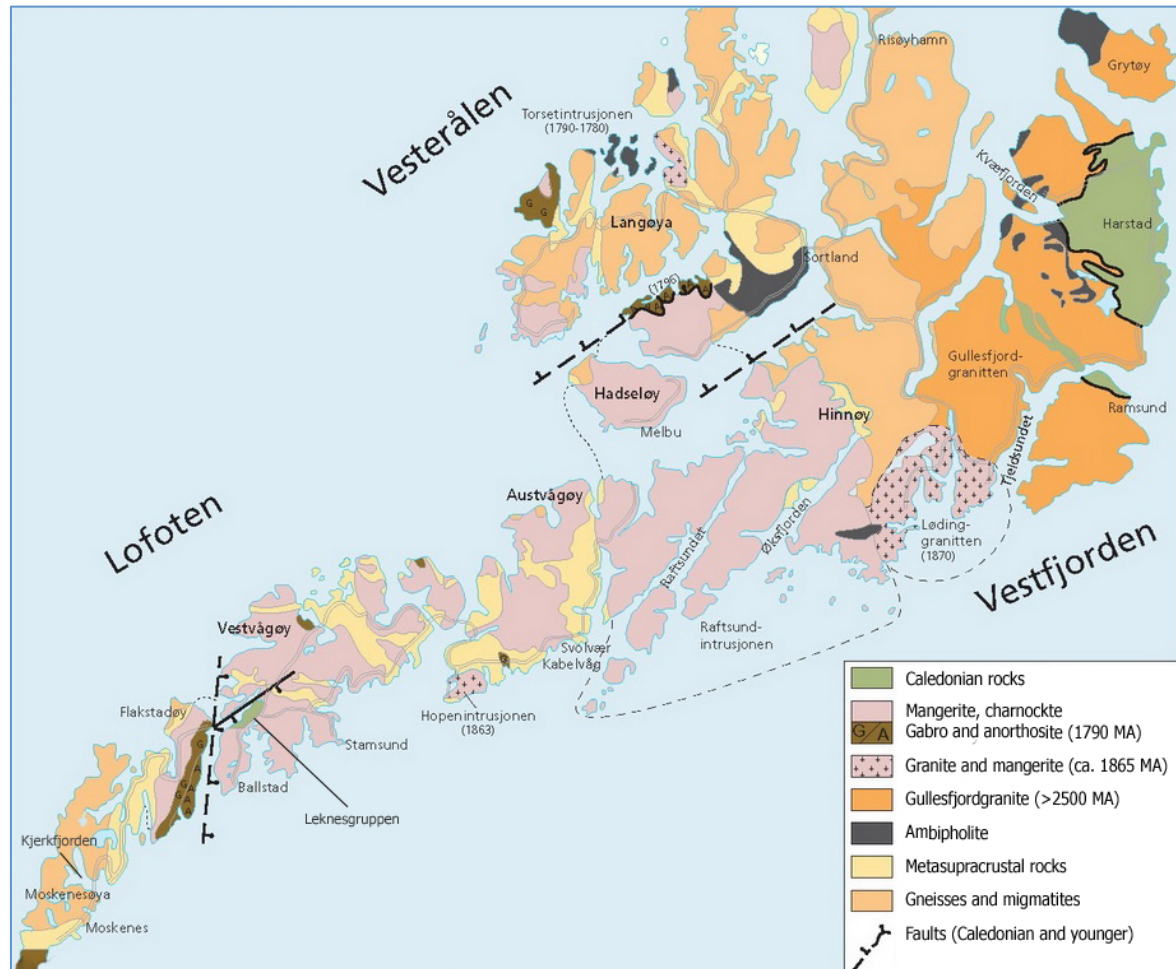


Figure 8 Geological map of Lofoten and Vesterålen (Ramberg, Bryhni, & Nøttvedt, 2006)

The oldest rocks found in Lofoten are Archean gneisses on Moskenesøya with an age of around 2.7 billion years, which are also some of the oldest rocks in Norway. A monumental example of these rocks is Seiltinden with its vertical rock face in inner Kjerkfjorden. Paleoproterozoic rocks (*AMCG⁴ suite*), which formed around 1.8 billion years ago, mainly dominate the other parts of the Lofoten archipelago. It can be assumed

⁴ AMCG = anorthosite, mangerite, charnockite and granite

that these Precambrian rocks are directly linked to the Baltic Shield (Ramberg, Bryhni, & Nøttvedt, 2006).

During the Caledonian orogeny at the end of the Silurian Period and the beginning of the Devonian Period (*400-450 million years ago*) the two continents Baltica and Laurentia collided and created the Caledonides. Although the Norwegian mainland is mainly crossed by the Scandinavian Mountains (*Skanden*), which are part of the Caledonides, only a small area inside Lofoten possesses elements of Caledonian rocks. The rocks in this area in western Vestvågøy belong to the Leknes group and overlie the Palaeoproterozoic basement (Klein et al., 1999; Corfu, 2004b in: Nordgulen et al., 2006).

During several rifting events and fault movements in the Mesozoic and Cenozoic (Løseth & Tveten, 1996 in: Nordgulen et al., 2006) the horststructure of Lofotryggen (*no: rygg = ridge*) developed as a part of the regional horst-graben system. Besides the uplifting of Lofotryggen you find the neighboring sedimentary basins (*NE-SW striking half-grabens*) of Vestfjordbassenget east of Lofoten and Ribbanbassenget in the west. Other horsts like Utrøstryggen are beneath sea level nowadays, but could have been exposed and dry during the last ice ages. During the Neogene periode (*the last 10 million years*) the bedrock of the Lofoten-Vesterålen region was uplifted by more than 1000 m (Riis, 1993; Hendriks & Andriesen, 2002 in: Nordgulen et al., 2006) to its recent level.

In the course of the last 100-150 million years, 6 - 7 km of sediments were deposited in Vestfjordbassenget and Ribbanbassenget (Hansen, Lofoten - et geologisk festmåltid, 2010a; Hansen, Lofoten - det lovede landet, 2010b). These uplifted sedimentary basins are nowadays the offshore areas where hydrocarbons (*petroleum and natural gas*) are prospected.

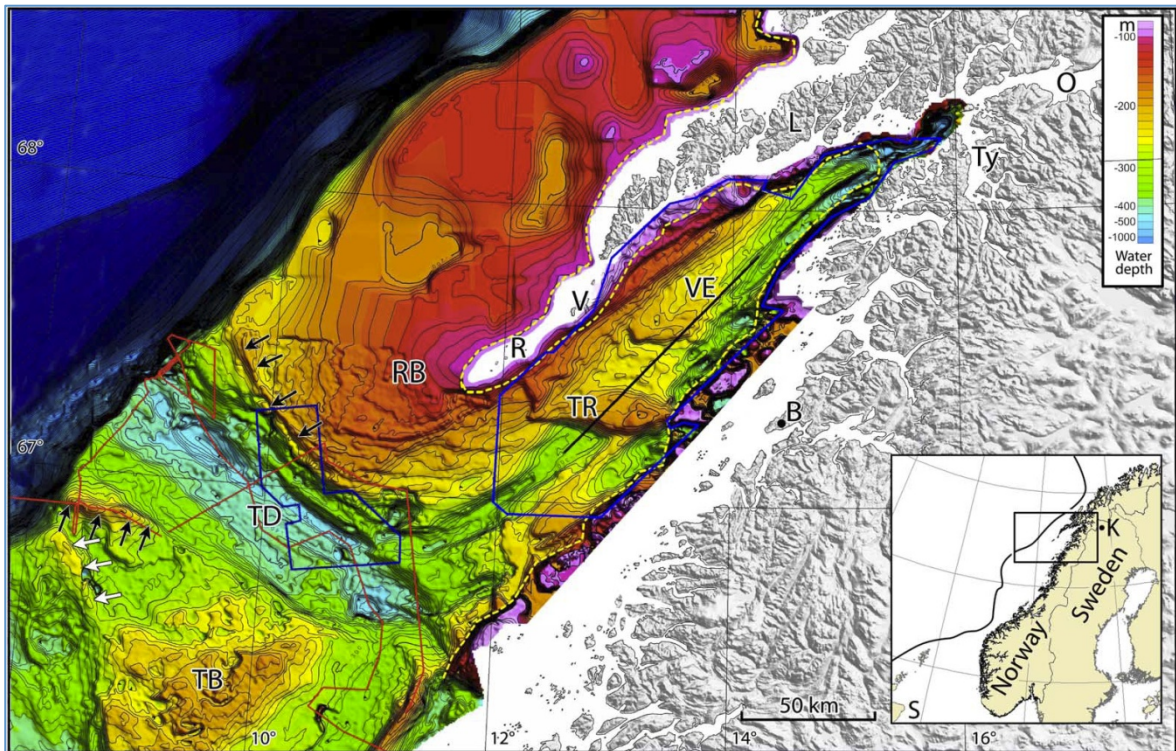


Figure 9 Regional bathymetry of Vestfjorden-Trænadjupet-system (TB—Trænabanken, TD—Trænadjupet, RB—Røstbanken, VE—Vestfjorden, R—Røst, V—Væråy, L—Lofoten, B—Bodø, O—Ofotfjorden, Ty—Tysfjorden, TR—Tennholmen Ridge, K—Kebnekaise) (Ottesen et al., 2005)

But not only tectonic events created the stunning landscape of Lofoten. Glacial erosion, weathering, the postglacial eustatic sea level rise and the isostatic post-glacial rebound also made their contribution to the today's appearance. During the Quaternary, Vestfjorden, with its length of 250 km, served as drainage for the Fennoscandic ice shield and was deepened into a U-shaped valley with a depth of around 600 m in its inner most part. The reason for this drainage is that Lofotveggen functioned as a barrier for the inland ice. Therefore it can be assumed that during the last glaciation Lofoten was covered by several small local glaciers and not primarily by the inland ice shield. It can also be assumed that parts of the characteristic sharp peaks of the Lofoten Mountains (see Figure 7) were not covered by ice and protruded as nunatakker through the glacier surface.

Geological processes over billions of years, glacial rejuvenation and isostatic land lifts in combination with eustatic sea level changes shaped a landscape full of history – a natural heritage with alpine areas, woodlands and wetlands, beaches and tidal mudflats and deep

shelf waters. This area, which we know as the Lofoten Islands today, with its extreme topography provides a rich gradient for all kind of plants and animals, including human beings.

5.1.3 Climate

When talking to locals in Lofoten about climate and weather, you often get one answer: "Be prepared to have all seasons in one day!" In the following I will have a closer look at the main elements of the climate and their influence on activities in Lofoten.

Temperature

It can be said that the climate in Lofoten is mild, in comparison with other locations on the same latitude in Greenland, Alaska or Russia. The mean temperature in Lofoten is around 5°C (*Leknes 4.5°C, Røst 5.3°C*) (Norwegian Meteorological Institute, 2010). Compared to Cambridge Bay in Nunavut, Canada, the mean temperature in Lofoten is ca. 20°C higher and, compared with the mean temperature measured on this latitude, Lofoten's mean temperature is even 24°C higher, which is the worlds' highest temperature anomaly (Gläßer, 1993). The mean summer temperature (*July*) in Leknes is 12.3°C and a little bit cooler on Røst with 11.6°C. The mean winter temperature (*February*) on Værøy is with 0.4°C slightly above zero and ca. 2°C milder than in Leknes with -1.5°C. The main reasons for these temperatures are runners of the North Atlantic Current, which are known as the Norwegian Current along the coast of Norway. Even in winter the coastal water has a temperature of around 5°C. Harbors and fishing grounds therefore remain ice-free all year round. Altogether it can be said, that the mild temperatures in spite of the high northern latitude are an enormous positive factor for businesses like fishery and agriculture. The mild temperatures allow all-year fishing and even small-scale cultivation of different plants like potatoes or strawberries.

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Skrova	-0.5	-0.8	-0.1	2.1	6.4	9.9	12.5	12.5	9.2	5.8	2.5	0.3	5.0
Leknes	-1.5	-1.5	-0.2	2.3	6.3	9.2	12.3	11.8	8.5	5.1	1.5	-0.2	4.5
Røst	1.4	0.4	1.4	2.9	6.2	9.3	11.3	11.3	8.8	6.1	3.5	1.7	5.3

Table 1 Mean monthly temperatures in °C from three stations in Lofoten (1961-1990) (Norwegian Meteorological Institute, 2010)

Precipitation



Figure 10 Orographic clouds at the outer coast of Vestvågøya near Myrland

Precipitation in Lofoten is strongly dependent on the topography. Therefore you can find enormous differences in precipitation values e.g. between Reine on Moskenesøya with high mountains up to 1000 m and the almost flat island of Røst with 12 m above sea level. The difference of the annual precipitation between these two stations is more than 1600 mm (see also Table 2 Mean monthly precipitation values in mm from four stations in Lofoten (1961-1990) (Meteorologisk institutt, 2010). The combination of high mountains around Leknes and Reine and humid air from the southwest (*Norwegian Sea*) or east (*Vestfjorden*) leads to orographic precipitation as a result of adiabatic cooling. The

amount of rain, which is the source for groundwater and mountain lakes, is very important for the drinking water supply in Lofoten.

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Skrova	69	53	54	47	39	42	57	60	86	117	87	91	802
Leknes	143	112	98	70	46	44	64	67	117	166	141	155	1224
Reine	240	207	183	145	89	93	121	140	228	322	244	273	2285
Røst	69	54	54	41	28	32	43	48	68	88	76	79	680

Table 2 Mean monthly precipitation values in mm from four stations in Lofoten (1961-1990) (Meteorologisk institutt, 2010)

Wind

Although the main wind direction for Lofoten is southwest, the directions can deviate from it through regional differences of topography and the distribution of land and sea. This becomes obvious if you look at the wind data for the small island of Litløy north of Lofoten. Wind is a very important factor for offshore petroleum development because it is the originator of wind waves or ocean waves. Using the Beaufort wind force scale one can derive wave heights from wind speeds. Wave heights are important for oil combating. According to Tore Aunaas from SINTEF (NRK, 2009), today's floating oil barriers begin to lose oil at wave heights of 1 m. At wave heights of 2 m they have an effectiveness of only 70-80% and at wave heights of 3 m and more the barriers are nearly useless. According to Steinar Solvang from NOFO and Tore Aunaas (NRK, 2009), currents with speeds of 2-3 knots have further adverse effects on the effectiveness of floating oil barriers.

Wave heights of 2-3 m occur with wind speeds 8.0-10.7 m/s, which is described with the term fresh breeze and force 5 on the Beaufort wind scale. Looking at the wind data of Litløy and Skrova shows that force 5 and higher occur especially during the darker fall and winter months (*October – March*). That means that today's floating oil barriers are nearly useless during this time because of wave heights and currents.

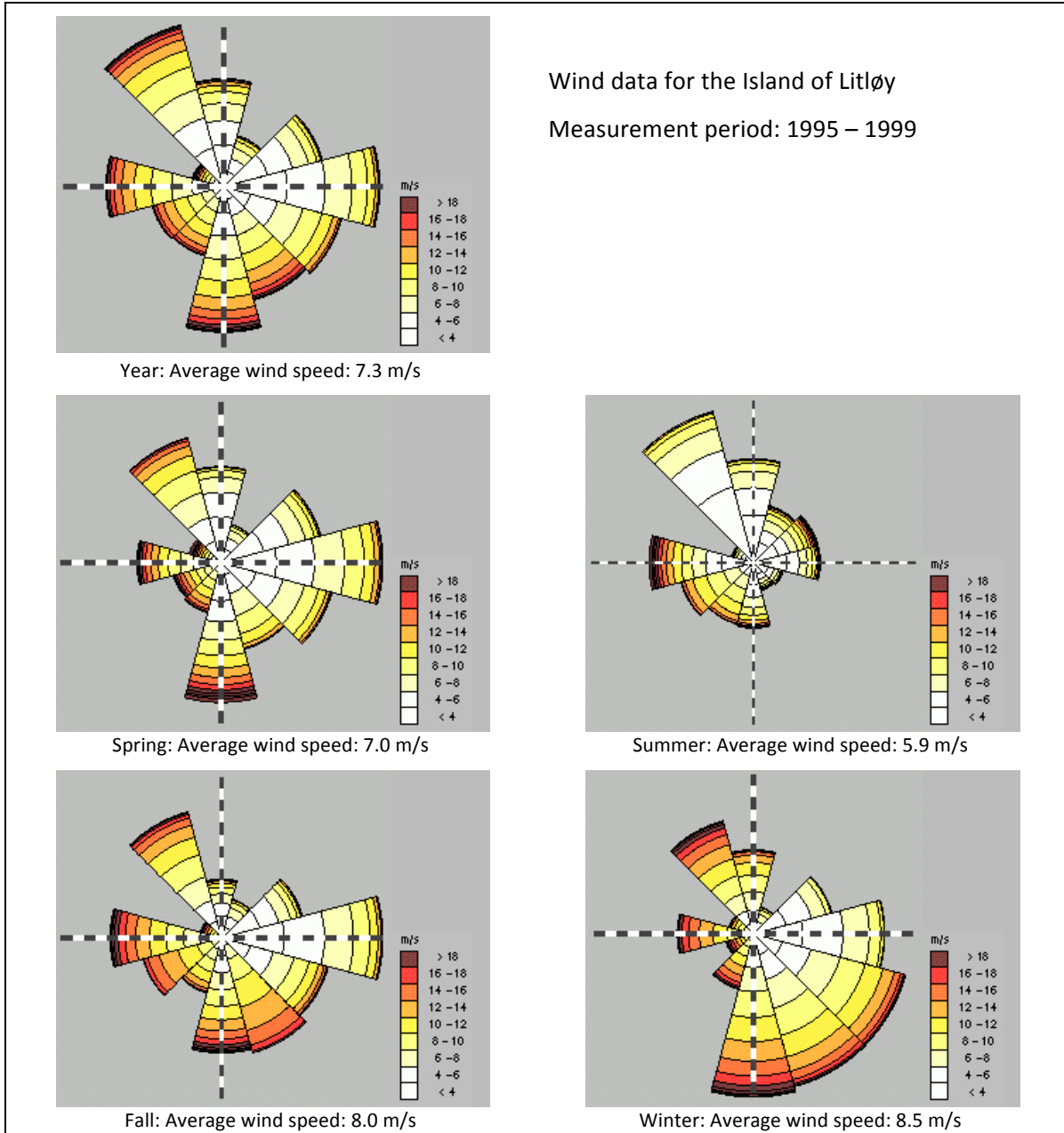
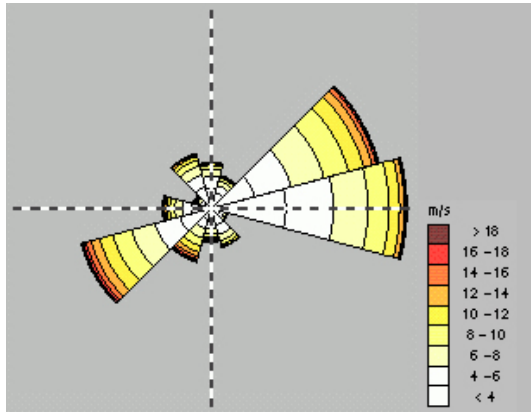
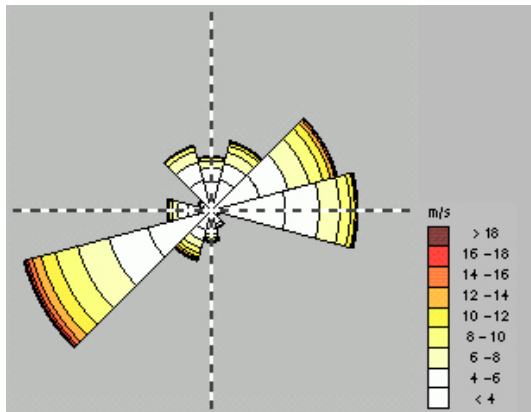


Figure 11 Wind data for the Island of Litløy (Norwegian Water Resources and Energy Directorate, 2001)

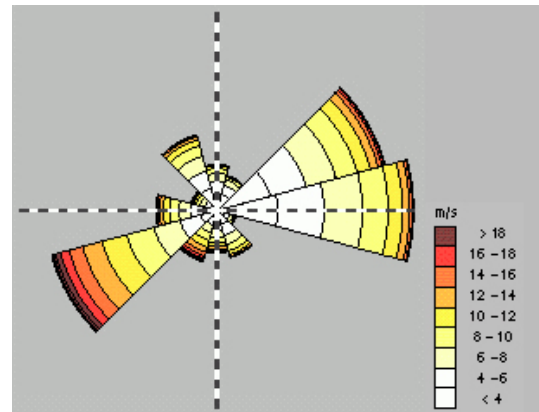
Wind data for the Island of Skrova
 Measurement period: 1961 – 1990



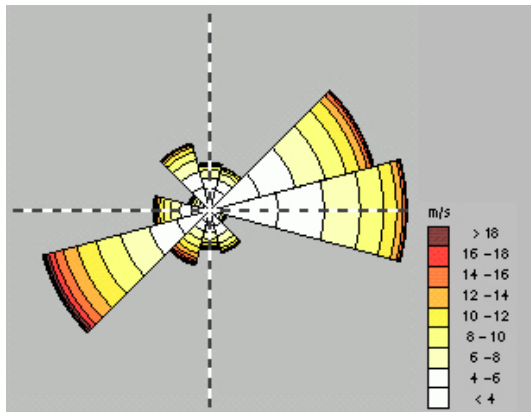
Year: Average wind speed: 6.3 m/s



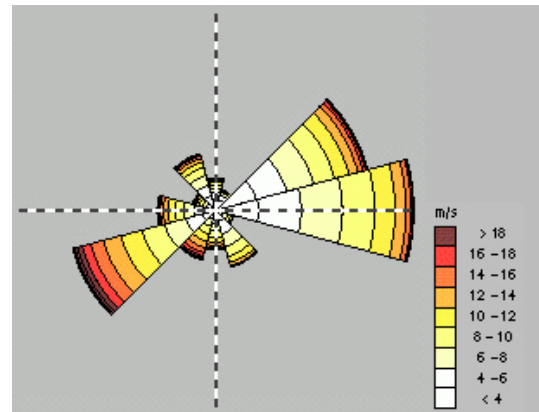
Spring: Average wind speed: 5.9 m/s



Summer: Average wind speed: 4.8 m/s



Fall: Average wind speed: 6.9 m/s



Winter: Average wind speed: 7.8 m/s

Figure 12 Wind data for the Island of Skrova(Norwegian Water Resources and Energy Directorate, 2001)

Skrova 1971-2000	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Fresh breeze or more	26	23	24	19	17	15	14	15	18	24	23	25	243
Strong breeze or more	19	17	16	11	8	7	6	8	11	16	16	18	151
Near gale or more	11	9	8	4	3	2	2	3	4	8	8	10	70
Gale or more	5	4	2	1	0	0	0	1	1	3	3	4	23

Table 3 Wind conditions on the island of Skrova; average number of days per month (Norwegian Meteorological Institute, 2010)

Light conditions

As the Lofoten Islands are located north of the Northern Arctic Circle, the polar night and midnight sun are an issue in planning in this region. In Svolvær the polar night begins around the 6th of December and ends around the 6th of January. On the island of Røst, the polar night is approximately 12 days shorter and starts around the 16th of December and ends around the 4th of January. The midnight sun is visible approximately between the 30th of May and the 14th of July on the island of Røst and between the 26th of May and the 19th of July in Svolvær. While the bright summer nights in Lofoten have positive effects on all kinds of 24h activities, the darkness during the winter months can be problematical in the case of accidents and oil spills in petroleum industries and transports. Although it is not totally dark during the polar night, because of the twilight effect (*see figure 13*), rescue and protective measures would become difficult.

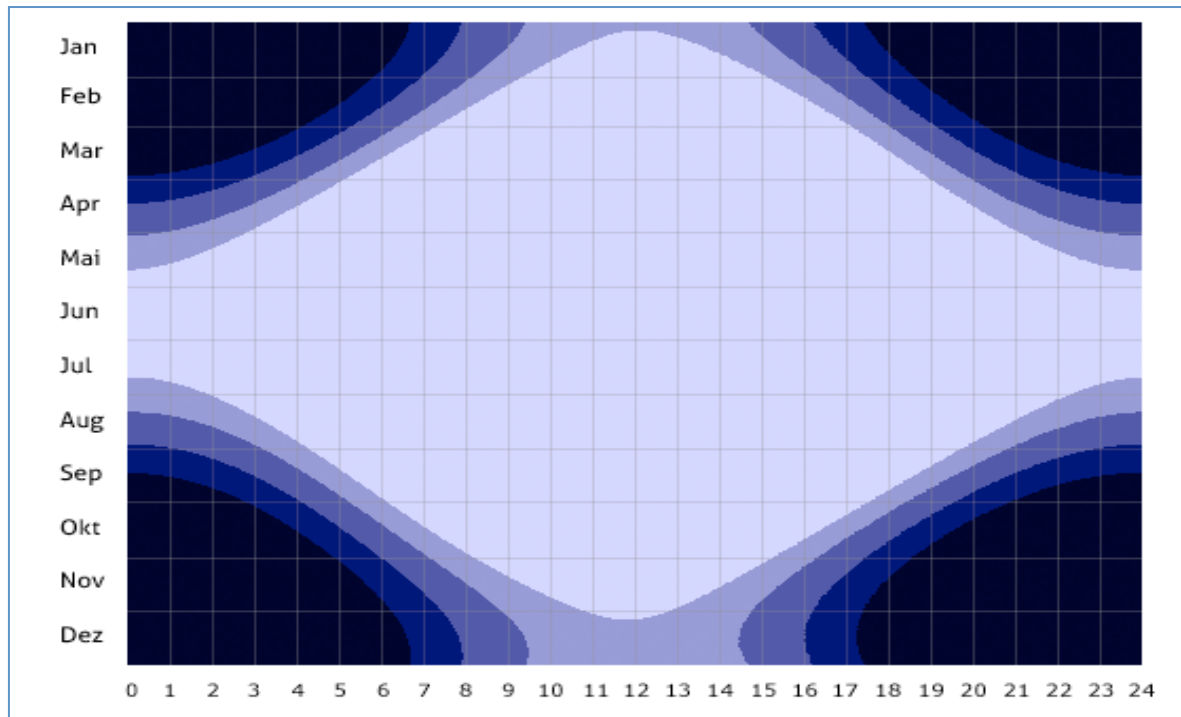


Figure 13 Light conditions with twilight⁵ (sunshine, civil twilight, nautical twilight and astronomical twilight, night (from light blue to dark blue)) for Stokmarknes, Hadseløya in Vesterålen

5.1.4 Terrestrial environment

Soils

Because of the last ice age, the soils in Lofoten are, with an age maximal 9500 years, very young. The marine transgression and the isostatic movement led to marine sediments along the coast of Norway. Most of the soils in Lofoten, which are used for agriculture, can therefore be found on layers of marine deposits like clay, sand or gravel. On this basis mostly primitive soils like lithosols, rankerlike soils, swamp soils developed, but also more developed soils like podzols and, mainly in the inner part of Vestvågøya, brown earth can be found. Especially the cultivation of the soils in Lofoten, with ploughing and manuring (see also chapter 5.1.5 Marine environment) for 4000 years (Destination Lofoten, 2010) has developed some brown earths on the basis of podzols and bog soils.

⁵ Sun's center positions: civil twilight $-6^\circ \leq \theta_s < -0^\circ 50'$; nautical twilight $-12^\circ \leq \theta_s < -6^\circ$; astronomical twilight $-18^\circ \leq \theta_s < -12^\circ$ (θ_s = solar elevation angle)

Forests

Due to the windy and cool maritime subarctic climate, the relief, sheep and goat farming, agriculture and other human impacts, Lofoten do not have large contiguous forests. But in some sheltered places trees are able to grow and mainly mountain birches (*Betula pubescens*) can be found. While birch trees have a natural occurrence and geographical distribution, Norway spruce (*Picea abies*), which is not indigenous in Lofoten, has been planted in private tree nurseries in Lofoten since 1900 together with the more robust Lutz spruce (*Picea X lutzii*) which is indigenous in Alaska, and Sitka spruce (*Picea sitchensis*), which can be found originally along the Pacific Coast of North America (Alden, Mastrantonio, & Ødum, 1993). Due to economical and societal changes, the breeding of sheep and goats decreased during the last decades and birch forest has again taken root in many areas. On the one hand, these circumstances can be seen as positive for the forest ecology, but on the other hand, they are linked to a loss of cultural landscape and heritage. Together with birches, mountain ashes (*Sorbus aucuparia*) characterize the sheltered inner parts of Lofoten, especially on Austvågøya and Vestvågøya. The tree line is very dynamic in Lofoten and varies between sea level on the west coast and a height of several hundred meters in sheltered places. Above the treeline, the landscape is dominated by dwarf birches (*Betula nana*), dwarf willows (*Salix herbacea*), lichen, Arctic graminoids, cottongrass (*Eriophorum*) and other tundra species.

In past times, with warmer climatic conditions, even pine trees grew naturally in Lofoten and were certainly used as building material for houses and ships. Mountain birches are not really suitable for building purposes and are therefore used for domestic fuel.

Terrestrial fauna

Nowadays the moose (*Alces alces*) is the only big game in Lofoten, but in former times, during the warm period 3000-4000 years ago, reindeer (*Rangifer tarandus*), red deer (*Cervus elaphus*) and bears (*Ursus arctos*) were also endemic in Lofoten. Today most of the mammals seen in Lofoten are farmed animals like cattle, pigs, sheep and goats.

Domesticated reindeer are only located on the island of Hinnøya (Municipalities of Hadsel, Lødingen, Sortland and Vågan), north east of Austvågøya, today owned e.g. by the Inga Sámi Siida with 500 – 600 animals (Inga, 2010). Together with the three other siidas⁶ on Hinnøya, there are ca. 1500 reindeer (Reindrifftsforvaltningen, 2009). As the southern tip of Hinnøya and the island of Årsteinøya, which belongs to the Municipality of Vågan, are an all-year reindeer pasture area, it can be said that there are still reindeer in Lofoten.

Avifauna

The bird cliffs of the islands of Vedøya, Storfjellet, Ellefsnyken, Trenyken and Herynken southwest from Røst, and the cliffs of Måstadjellet on Værøy are famous for their extremely large bird populations. Together with the other four main islands of Lofoten a number of at least 282 bird species can be found and at least 119 species use the Lofoten Islands for breeding (Anker-Nilssen, 2006). Main reasons for this richness of species are the high marine productivity at the thermocline of the Atlantic Current and the Coastal Current (see chapter 4.1.4), the varied landscape with its many ecological niches, and of course the mild oceanic climate with its small annual temperature fluctuation. Some important species are Arctic divers (*Gavia*), King Eider (*Somateria spectabilis*), European shag, White-tailed Eagle (*Haliaeetus albicilla*), Black-legged Kittiwake (*Rissa tridactyla*), Razorbill (*Alca torda*), Common guillemot (*Uria aalge*), Black guillemot (*Cepphus grylle*) and the Atlantic puffin. But the bird stocks are not stable and especially depend on small-fish stocks like capelin and young herring. According to Tycho Anker-Nilssen, the decline of these fish stocks made the stock of Atlantic puffin decrease from 1.5 million in 1979 to 410 000 birds on Røst in 2010 (Lyngmoe, 2010).

⁶ Siida means in traditional sami culture a group of one or more families. Each family member has its own reindeers, which are together in one herd with all the other reindeers from the siida. Every siida has its pasture areas and can be seen as corporation. Only Sami people are allowed to drive reindeer herding in Norway.

5.1.5 Marine environment

The Northern Norwegian Sea together with the Barents Sea belongs to the cleanest marine environments worldwide and houses nearly 150 species of fish. The area is the spawning area and nursery ground of some of the world's most important fish stocks, like cod.

Fish

Fish is still one of the main resources in the marine environment around Lofoten, which are used since the first people settled in the area 6000 years ago.

The geology with the narrow coastal shelf in the area of Lofoten, Vesterålen and Senja and the resulting coastal current create an environment, which is favorable for many fish species. For the Arcto Norwegian cod (*Gadus morhua*), the areas off Lofoten and Vesterålen and the Vestfjord are the main spawning areas. Between 1993 and 2002, one third of the cod spawned inside Lofoten while



Figure 15 *Gadus morhua*, Illustration: Jón Baldur Hlíðberg (Icelandic Fisheries, 2010)



Figure 14 *Clupea harengus*, Illustration: Jón Baldur Hlíðberg (Icelandic Fisheries, 2010)

another third spawned between Røstbanken and Moskenesgrunnen. The rest of the spawning cod is spread along the coast of North Norway (Olje- og energidepartmentet, 2003). The spawning season of the Arcto Norwegian cod is between March and May and spawning takes place at a depth of 50 – 200 m in the pelagic zone (Olje- og energidepartmentet, 2003) at the thermocline of the cold coastal current and the warmer underlying Atlantic current, where the water temperature is around 4°C (Føyn et al., 2002). After spawning, the eggs and larvae float with the coastal current along the narrow continental shelf of Nordland VI, Nordland VII and Troms II to the north. During this journey, the eggs and larvae are in their most critical phase. It is obvious that a human intervention in this ecosystem in form of petroleum activity could have negative effects on the Arcto Norwegian cod stocks.

Another important fish species for Lofoten is the Norwegian spring-spawning herring (NSSH) (*Clupea harengus L.*), which belongs to the Atlanto-Scandian herring. Although their main spawning ground is in Møre (Møre og Romsdal county) in February and March, the area extends up to Lofoten and Vesterålen. Adult sild also uses the coast of Lofoten and Vesterålen as a wintering area between September and January (Havforskningsinstituttet, 2009). Through overfishing and climatic cooling, the NSSH stocks collapsed during the 1960's. Prohibition of fishing, later international regulations and more favorable climatic conditions contributed to an increase in NSSH stocks (ACIA, 2004; Statistics Norway, 2010d). The silver, as the herring is called, is back in Lofoten and the stock is as large today as in the early 1950's (see also Figure 16 NSSH stock and mean annual surface water temperatures (ACIA 2004).

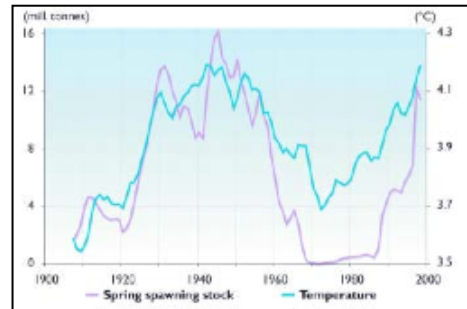


Figure 16 NSSH stock and mean annual surface water temperatures (ACIA 2004)



Figure 16 *Melangrammus aeglefinus*, Illustration: Jón Baldur Hlíðberg (Icelandic Fisheries, 2010)



Figure 18 *Pollachius virens*, Illustration: Jón Baldur Hlíðberg (Icelandic Fisheries, 2010)

Beside cod and herring, saithe (*Pollachius virens*) and haddock (*Melangrammus aeglefinus*) live and have their spawning grounds around Lofoten near Røstbanken. The time of spawning for saithe is from January to March and for haddock from March to July (Havforskningsinstituttet, 2009).

Marine mammals

The most famous marine mammals in Lofoten are whales and they are interesting for at least two main businesses: whale safaris and whalers. Especially from a Middle-European perspective, whale watching is a great pleasure and every year thousands of tourists come to Lofoten and Versterålen to see Sperm whales (*Physeter macrocephalus*) and orcas (*Orcinus orca*). Sperm whales are mainly observed near Eggakanten off Andøya in Vesterålen, but orcas, minke whales (*Balaenopterus acutorostrata*) and long-finned pilot whales (*Globivephala melas*) can also be observed in the Vestfjord and off the Lofoten coast. Especially during the wintertime, orcas come to the Vestfjord, which is connected to the overwintering of herring (NSSH). While three of the named whale species are protected against whaling, an amount of ca. 800-1200 minke whales is allowed to be hunted every year. In 2007 and 2008 the quota was 1052 whales, in 2009 it was 885 whales, and 1286 in 2010. This quota is based on the two estimated stocks in the Norwegian economical zones, the central stock around the island of Jan Mayen and the Northeast Atlantic stock in the North Sea, along the Norwegian coast, Barents Sea and around Svalbard. The estimation is based on calculations between 1997 and 2007 and expects a stock of 26 700 minke whales around Jan Mayen and 81 400 minke whales in the Norwegian part of the Northeast Atlantic. So it can be said that the whale hunting quota is more or less 1% of the total stock (Gjørseter, et al., 2010). But due to bad weather, high fuel costs and decreasing demand only 484 minke whales were caught in 2009 and around 600 animals in the years before. Ca. 30 vessels (Statistics Norway, 2010c) participate every year and the majority of them are registered in Lofoten. The minke whale's diet consists of krill, herring, capelin, cod, haddock and pollock, which make the waters around Lofoten a well-suited feeding area.



Figure 17 Minke whale (*Balaenopterus acutorostrata*), Sperm whale (*Physeter macrocephalus*), Orca (*Orcinus orca*) & Long-finned pilot whale (*Globivephala melas*), Illustration: Jón Baldur Hlíðberg (Icelandic Fisheries, 2010)

Beside the whales, the sea around the Lofoten Islands are also inhabited by two species of resident seals. Most common on the coasts of Lofoten are the harbor seal (*Phoca vitulina*) and grey seal (*Halichoerus grypus*), which have their main natural range on the islands of Røst. There, the stocks of the small harbor seal and the bigger grey seal count 100-200 individuals each. The female harbor seals have a length of up to 150 cm and a weight of 80 kg while the males are larger than 150 cm and weigh around 100 kg. Male grey seals are 230 cm long and weigh over 300 kg, the females on the other hand have only a length of up to 190 cm and a weight of 190 kg. Harbor seals mostly eat pollock, Norway pout and herring while grey seals prefer wolfish, cod, pollock and haddock. Sustainable hunting is only for stock control and has a quota of 5% of the total stocks. In areas of dense seal population and conflicts with fishery, the quota can rise up to 30% of the local stock (Gjørseter, et al., 2010).

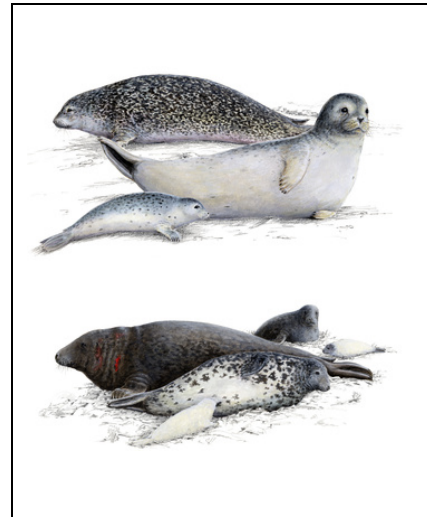


Figure 18 Harbor seal (*Phoca vitulina*) & Grey seal (*Halichoerus grypus*), Illustration: Jón Baldur Hlíðberg (Icelandic Fisheries, 2010)

Therefore whales and seals are at the end of the food chain, interference with nature due to marine pollution may have massive effects on these marine mammals. In addition, they are also competitors in fishing, which leads to several conflicts in the area.

Seaweeds

The usage of seaweeds, especially brown seaweed in coastal regions all around the world has a long history. Focusing on the Lofoten Islands, seaweed has been in use to fertilize nearby land at least since the Viking age, but it can be expected that it has been in use with the beginnings of agriculture in Lofoten. The most common species on the Lofoten coast is *Ascophyllum nodosum* better known as Norwegian kelp. Several techniques of use were practiced in other Northwest European regions, which should be transferable to the Lofoten Islands. In general beach-washed and drift seaweed was collected by farmers and even transported even over several kilometers inland, which describes the importance of this natural fertilizer. From the Scottish coast it also known that farmers cut the seaweed at low tide (figure 20). It was ploughed in or first mixed with sand and after the seaweed was rotten, it was dug in (Mc Hugh, 2003). The results are widespread, from higher yields and increased soil fertility to higher resistance to plant diseases and frost damage (Mc Hugh, 2003). Today seaweed-based fertilizer is industrially produced. In Norway, the company Algea AS, located in Kristiansund, produces seaweed meal and extracts in solid and liquid form in their two factories in Brønnøysund and Vestbygd (*Lødingen*). But seaweed is used not only as a fertilizer today, it is also used in human food, as animal feed for pigs, cattle or fish, cosmetic products and biomass fuel (Algea AS, 2010; Mc Hugh, 2003).

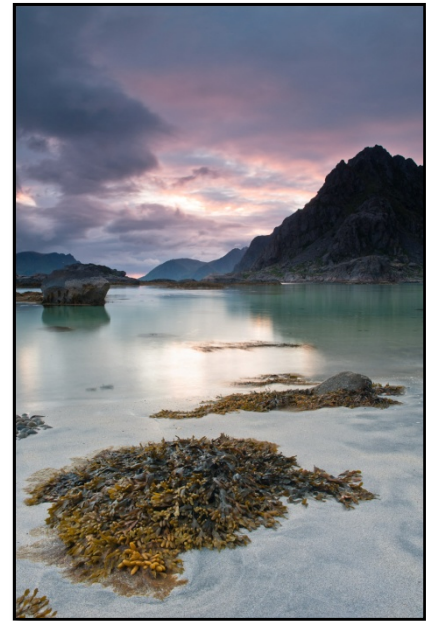


Figure 19 *Ascophyllum nodosum* at low tide near Henningsvær, Austvågøya

Coral reefs

The coral reefs situated along the Norwegian coast are deep, cold water coral reefs which need a water temperature between 3 – 14°C. The largest one of the species *Lophelia pertusa*, the Røst reef, was discovered in 2002 and is located 110 km southwest off the

island of Røst. It is 35 km long and 3 km wide. The reef together with the surrounding area has a high biodiversity which is very important as a nursery ground for fishes like cusk (*Brosme brosme*), ling (*Molva molva*) and rose fish (*Sebastes marinus*). Although some reefs, including the Røst reef, are protected against trawling, many other reefs are endangered by the fishing and oil industry. But also pollutants from drilling residues and emissions can reach protected reefs due to the currents along the Norwegian coast. It is currently impossible to calculate the consequences for the reefs and the animals, which are dependent upon them because of the lack of knowledge of these complex ecosystems. With an age of 8500 years, coral reefs belong to the oldest ecosystems in Norway (Harbo, 2010).

Oil and gas

Although oil and gas are not primarily resources of the marine environment I will deal with them in this chapter because all the explored and estimated oil fields in Norway are situated on the Norwegian continental shelf and not on land.

During the Later Jurassic, 161 – 146 million years ago, the basis for the Norwegian oil wealth was created. The spreading of the Atlantic Ocean caused several rifting events on the Norwegian shelf. According to (Ramberg et al., 2006), 99% of the discovered oil and gas has its origin in Later Jurassic source rocks. Gas mainly originates from terrestrial plants, which were transported by rivers into the sea. Sediments of algae and marine plankton above the terrestrial plant sediments are the basis for oil.

The latest findings on petroleum resources off Lofoten in the areas of Nordland VI and VII were published in April 2010 by the Norwegian Petroleum Directorate (NPD). These findings are based on 2D-seismic studies in the area in the summers of 2007, 2008 and 2009. Together with the area Troms II, 202 million Sm³ oe⁷ are estimated in the area of investigation, which are around 1.27 billion barrels oe. But due to several factors this outlook is still uncertain. Therefore, NPD estimates in their analysis at least 76 Sm³ oe

⁷ standard cubic meter oil equivalent (oil and gas) 1Sm³ oe = 6.29 barrel oe

with a certainty of 95% and with a certainty of 5% that there will be more than 371 Sm³ of oil and gas off Lofoten, Vesterålen and Senja. The expected gross value of the oil and gas resources in this area is about 600 billion NOK. 47% of the total amount is located in Nordland VI, in the prospected areas off the island of Røst.

But why is it so unclear how much oil or gas is located off Lofoten? The source rocks where oil and gas was created through several geological processes do not have the ability to keep it. As the density of oil is lower than water, it moves upwards through different layers of rocks. The migration of the oil can only be stopped by impermeable rock layers, called cap rocks and appropriate structures like tight faults. This combination has the ability to hold the oil back, which will accumulate at the highest point beneath the cap rocks in the porous rock layer, the so-called reservoir rocks (Ramberg, Bryhni, & Nøttvedt, 2006). Due to the turbulent geological history of Lofoten with lots of rifting events, it is unclear which amount of oil and gas was held back in the reservoirs and how much escaped to the sea along fault lines without being held back in reservoirs. That's the reason why it could happen that most of the assumed reservoirs are dry (Hansen, 2010b).

5.2 Region and its cultural resources

The archipelago of Lofoten is located north of the polar circle between the 67th and 68th parallels north. Lofoten from west to east includes the main islands Røst, Værøy, Moskenesøy, Flakstadøy, Vestvågøy, Gimsøy and Austvågøy with a total area of 1226 km². The name "Lofoten" probably has its origin in the Norse word "lófótr" which means "foot of a lynx" and was the old name of Vestvågøya.

5.2.1 History and early settlements

After the maximum of the Weichselian glaciations 22 000 – 21 000 years ago, the ice shield began to retreat. Even in the Younger Dryas (12 800 – 11 500 years ago) the Norwegian coast was ice-free while the inland was still dominated by the ice sheet. The

ice age ended around 9 500 years ago when only a small part of ice was left in North Scandinavia. Forests recovered the former tundra in Middle Europe and forced the big reindeer herds to move ice to the north with the retreating ice. European big game hunters followed these herds along the Norwegian coast and through Sweden and Finland (Broadbent, 2004). 6000 years old rock paintings on Røst and Moskenesøy show that the first Stone Age people, who belong to the Fosna and Komsa culture, had arrived on the Lofoten Islands. This was during the first Holocene climate optimum, when the global temperature was 1°C higher than today. A positive effect on the settlement of North Norway can be considered. Whole Lofoten were covered with pine and birch trees and the people hunted all kinds of animals like red deer, reindeer, moose and also bear, beaver and lynx. The forests and bogs provided different kinds of berries, like blueberry or cloudberry, and fish, seal and whale were caught in the sea around the islands. The rock paintings on the remote island of Røst also indicate that the early settlers must have been good sailors. Agriculture was developed in Lofoten during the second Holocene climate optimum around 4000 years ago. The soils, especially in the inner part of Vestvågøya, are fertile for crop and meadows for cattle and sheep (Destination Lofoten, 2010).

The most tangible period of ancient settlements in Lofoten is the Viking Age. Starting in the 8th century and ending in the 11th – 12th century, it was a period of trade, discovery and plundering. During the late Iron Age several powerful chieftains grew up even in Lofoten and Vesterålen. In Borg, on Vestvågøya, the remains of the largest ever found chiefdom together with some boat houses were excavated in the 1980s. The longhouse, built in the 6th century, was 67 meters long and was rebuilt or extended to 83 meters in the 8th century. Only ten meters to the north, the chieftain's house with its five rooms including a living room, an entrance hall, a banquet hall, a storage room and a barn, was rebuilt in the 1990s as an example of ancient heritage. Several findings of gold medals, silver, glass and ceramic, all of which were imported, are signs of wealth and power. The diet of the people in this period was not very different from the diet one century ago. The mild climate during the Medieval Warm Period together with the warm Norwegian Current allowed the inhabitants around Borg to grow barley, which was used for beer production and baking. Also sheep and cattle were kept. Moreover, like today, the nature

provided a lot of food, like vegetables, mushrooms, birds and eggs, moose, sea mammals and of course the rich fish stocks of the sea. The winter fishery was as important as Lofotfisket today. Cod, haddock and similar species were caught, dried and also traded to the south, so it can be said that this was one of the first Norwegian fishing economies (cf. Perdikaris & McGovern, 2006). This fact shows the cultural importance of more than 1000 years of cod-fishery and stockfish-trade in Lofoten.

The Viking Age ended during the 11th and 12th century due to the loss of influence on the British Islands, the Christianization in Scandinavia and the beginning of the Little Ice Age which put an end to the traditional lifestyle of the Vikings. In spite of these changes the Lofoten fisheries were still very important. King Øystein realized their importance and built the first church in Lofoten in the year 1103 in Vágur, the place we know today as Kabelvåg (*it can be assumed, that the name has its origin in the name "kapell våg", which means "chapel bay"*). The first rorbu (*en: fishing hut*) was built in 1120 to accommodate the seasonal fishermen in the time of skrei⁸-fishing. As in the Viking Age, stockfish was exported to markets across Europe. Vágur (*Kabelvåg*) can be regarded as the first city foundation in Northern Scandinavia and was the center of Lofoten for a long time. From 1860, Lofoten has experienced a remarkable upswing due to large drifts of herring. Many people came to Lofoten in the hope of profitizing from this wealth. This was the foundation of the Lofoten community we know today (Destination Lofoten, 2010).

5.2.2 Municipalities

The Lofoten Islands consist of six municipalities (*no: kommune*), which are mostly correspond to the islands. All municipalities together have 23569 inhabitants (*January 2010*). Important branches of economic activity are tourism and fishery, but with big local fluctuations. Since the completion of the communication to the mainland in the north, called *Lofast*, the four municipalities of Vågan, Vestvågøy, Flakstad and Moskenes are accessible by car through bridges and tunnels without ferries. The municipalities Værøy

⁸ Spawning cod

and Røst are accessible through the ferry line Bodø-Moskenes-Værøy-Røst. Another ferry line operates between Skutvik and Svolvær and a third one between Melbu on Hadseløy and Fiskebøl on Ausvågøy in the municipality Hadsel (Vesterålen). Another way of getting to Lofoten is the coastal shipping line Hurtigruten, which calls at the ports of Stamsund and Svolvær. Furthermore, one can find three airports (*STOLports*⁹) in Røst, Leknes and Svolvær. The STOLport on the west coast of Værøy was closed in 1990 after the Widerøe flight 839 crashed into the sea after take-off due to heavy turbulences and construction failure. All five people on board were killed. Since 1995, a helicopter service has been operating between Værøy and Bodø.

A short description of each municipality can be found below.

Vågan

The municipality of Vågan comprises an area of 459.3 km² and has 9023 inhabitants (January 2010). Since 2008 the population development has been positive and also the prognoses estimates a smooth growth. Vågan has an average population density of 18.9 inhabitants per km² and 69% of the inhabitants live in populous areas. With 4325 inhabitants as of 2008 the

	Nordland county	Norway
Primary sector	6.3%	3.2%
Secondary sector	18.7%	20.7%
Tertiary sector	74.6%	75.7%

Table 4 Employees per economic sector in Nordland county and Norway in 2007 (Statistics Norway, 2010a)

administrative center Svolvær is the largest town in Vågan and Lofoten. Svolvær can also be seen as the capital of Lofoten with its many public facilities like the regional court or the Lofoten fishery administration. The most important economic sector is the tertiary sector with an amount of 69.7% employees, followed by the secondary sector with 20.8% and the primary sector with only 8.8%, which is close to the regional average level (see Table 4) (Statistics Norway, 2010a).

⁹ STOL = short take-off and landing; STOLports are therefore airports with a single short runway

Vestvågøy

With 405.5 km² Vestvågøy is the second largest municipality in Lofoten. With a number of 10674 inhabitants as of January 2010, it is the most populous municipality with a population density of 25.2 inhabitants per km². But the quota of people who live in densely populated areas is with 56% below the quota of Vågan. The number of inhabitants is actually relatively stable but you can recognize a migration flow from the small villages to the area around Leknes, which is the administrative center of the municipality and can also be regarded as the center for whole West-Lofoten with its big shopping center, the secondary school and the hospital in the neighboring village of Gravdal. The tertiary sector is, like in Vågan, the most important economic sector with 69.9%. As agriculture in addition to fishery plays an important role in Vestvågøy, therefore the primary sector accounts for 12.5%, which is four times the national level. The secondary sector with 17% is only marginally higher. (Statistics Norway, 2010a)

Flakstad

Flakstad with its administrative center in Ramberg, is the third largest municipality with an area of 178.1 km². The municipality has a few small rural areas but no densely populated areas. The population density is with 7.7 inhabitants per km² therefore relatively low. In January 2010, 1369 people lived in Flakstad and a small decline is estimated by 2030. The economic sectors are divided as follows: primary sector 31.4%, secondary sector, 14.6% and tertiary sector 52.1%. The high percentage of the primary sector makes it clear that fishery is significantly more important in Flakstad than in Vestvågøy and Vågan (Statistics Norway, 2010a).

Moskenes

With 118.6 km² and 1130 inhabitants the municipality of Moskenes has an average population density of 9.5 inhabitants per km². 66% of the people live in relatively densely populated areas along the sheltered east coast of Moskenesøya. The administrative

center of Moskenes is Reine, which has 301 inhabitants. Sørvågan, the second densely populated area, is a little bit bigger and has 448 inhabitants (Statistics Norway, 2009). The economic sectors are similar to the ones in Flakstad with 30.2% in the primary sector, 16.1% in the secondary sector and 52.8% in the tertiary sector (Statistics Norway, 2010a).

Værøy

With an export value of ca. 300 000 NOK (37 600 EUR) per inhabitant, the municipality of Værøy is one of the most productive municipality in Norway. The most important exported product is stockfish (Værøy kommune, 2009). Værøy also has a great number of employees in the primary sector with 25.4%. The secondary sector has a share of 17.7% and the tertiary 56.2%. The importance of fishery is underlined by the fact that 43% of all jobs are directly connected to fishery. Although Værøy is relatively remote, the number of inhabitants has almost been stable during the last 5 years and was at 761 inhabitants in January 2010. The municipality extends over an area of only 18.5 km² and therefore has a relatively high population density of 41.1 inhabitants per km². So it is hardly surprising that 77% of the inhabitants live in the densely populated area of the administrative center of Sørland (583 inhabitants (January 2009)) (Statistics Norway, 2010a; Statistics Norway, 2009).

Røst

The municipality of Røst is an archipelago at the southernmost point of the Lofoten Islands. It contains more than 365 larger and smaller islands and skerries. Røst Island is the largest one with the highest point of only 12 meters above sea level and is located 25 km southwest of Værøy and 100 km away from the mainland. With 10.5 km², Røst is the smallest municipality in Lofoten but with 58.5 inhabitants per km² it has the also the highest population density. In January 2010, 612 people lived in Røst and 60% of them lived in the administrative center of Røstlandet. 21.2% of the employed persons work in the primary sector, 34.6% in the secondary sector and 42.7% in the tertiary sector. The production of fish and fish products in Røst has also a very high export value of around

250 000 000 NOK (31 000 000 EUR) per year. 75.9% of all jobs in Røst are connected to the fishery business (Statistics Norway, 2010a; Røst kommune, 2010). The municipality of Røst and its inhabitants are well known in Norway because of the TV documentary series “Røst” with its eight episodes, which was broadcasted by NRK¹⁰ in 2008.

5.3 Economy

The economy in Lofoten has always been connected to the natural resources from the marine environment. In the following I will have a closer look at these economies.

5.3.1 Agriculture

As mentioned in chapter 4.2.1, agriculture has been in use in Lofoten for 4000 years. From this date it was combined with fishery until the 20th century. The people on Lofoten were not only farmers or fishermen. They had some land next to their houses, cultivated potatoes and crops and also had some sheep, which grazed in the mountains. Due to economic pressure agriculture and fishery were divided. The main island with respect to agriculture is Vestvågøya with ca. 170 farms. The annual milk production e.g. is 10 million liters and the production is stable, in contrast to other areas in Norway (Lofoten.com, 2010).

5.3.2 Fishery

Fishery can be seen as the oldest economy in Lofoten (see also 4.2.1). Cod and herring are the most important fish species today, followed by saithe and haddock. Especially for the smaller municipalities in Western Lofoten, fishery and its connected businesses are still the main source of income (see also chapter 5.2.2 Municipalities)

¹⁰ NRK = Norsk rikskringkasting AS, the Norwegian Broadcasting Corporation (government-owned), established in 1933

Lofotfisket

If you use the words "Lofoten" and "fishery" in one sentence you have to mention one of the most important fishery events in Norway, called Lofotfisket. This period from February to April is the main fishing season in Lofoten, when the spawning cod (*skrei*) comes into the Vestfjord and waters off Lofoten and Vesterålen. During the last years, 20 – 50 million kilograms of skrei were caught per year (Lofoten.com, 2010). While the catches have been relatively stable during the last decades, the number of fishermen participating in Lofotfisket has declined extremely. 100 years ago, nearly 30 000 fishermen came to Lofoten to participate in Lofotfisket, today there are only 2500 to 4000 (Statistics Norway, 2000). In 2005, 1149 fishermen and 767 fishing boats, mainly small ones, were registered in Lofoten. Referring to the whole of Norway, cod, which includes skrei, only amounts to 10 % of all catches but 25% of the value. Cod is therefore one of the most important fishes for Norway and especially for Lofoten, where most of the stockfish production takes place. The relatively mild, dry and windy climate during late winter and spring and the waters that are rich in fish are the most important factors for Lofoten's stockfish production of world rank. As stockfish is mainly an export good for Southern Europe (*Croatia, Italy and Portugal*) the price depends on the European economic situation and fluctuations of the NOK. This is visible by looking at the price for stockfish. In 2008 the average price¹¹ for one kilo of stockfish was 155.42 NOK but decreased in 2009 down to 122.52 NOK and were below the price in

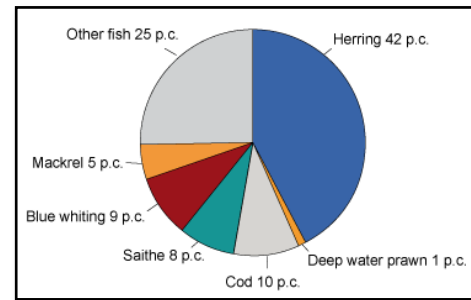


Figure 22 Catches in 2009, by fish species in percent (Statistics Norway, 2010d)

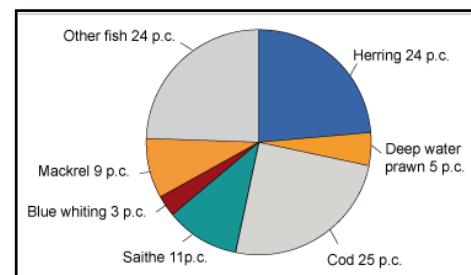


Figure 21 Value of catches in 2009, by fish species in percent (Statistics Norway, 2010d)

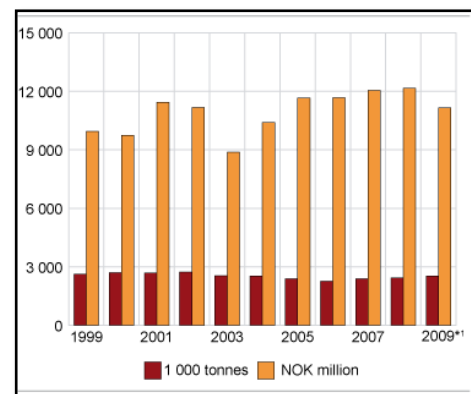


Figure 22 Quantity and value of catches between 1999 and 2009 (Statistics Norway, 2010d)

As stockfish is mainly an export good for Southern Europe (*Croatia, Italy and Portugal*) the price depends on the European economic situation and fluctuations of the NOK. This is visible by looking at the price for stockfish. In 2008 the average price¹¹ for one kilo of stockfish was 155.42 NOK but decreased in 2009 down to 122.52 NOK and were below the price in

¹¹ There are in total 18 different quality and price levels for stockfish from Lofoten.

2004 with 127.22 NOK. But 122.52 NOK for stockfish was the highest price for one kilo of fish/fish product in 2009, followed by cod fillet with 66.90 NOK and salmon fillet with 63.14 NOK per kilo. In 2007, Norway exported 6100 tons of stockfish with a total value of approximately 936 million NOK (Statistics Norway, 2010d).

According to Bjørn Kjensli, the cod fishery in Lofoten is a good example how one can manage a resource to the satisfaction of all parties.

“The sea off Lofoten and Vesterålen were divided in zones for “juksa” fishing, longline fishing and fishing with nets. Different interests were carefully considered against each other. This strategy works perfectly for 150 years now. It was a good decision to do it like this. There should actually be the same approach today – with a management that suites to all stakeholders concerns.”

Bjørn Kjensli, 2010

Other important fish species beside cod are herring, saithe and haddock. Saithe is, like cod, also used for clipfish¹² production and the price even increased from 23,36 NOK in 2008 to 25.20 NOK in 2009.

The total value of landed fish in Norway in 2009 was 11.1 billion NOK

Whaling

Whaling of minke whales has a long tradition in Lofoten and written sources go back to 800 CE (Ministry of Foreign Affairs, 2000). Whaling is mainly pursued with modified fishing boats (50-80 feet) by small family businesses of 3-8 persons. Whaling is important for fishermen in small fishery communities like Lofoten, because it is a source of income

¹² In Lofoten mainly dried and salted cod and saithe. Other species like haddock or whiting is also used.

during the summer months, when no fishing takes place. Main whaling grounds for Lofoten's fishermen are Vestfjorden and the Barents Sea. 484 minke whales were caught in 2009 and around 600 animals in the years before, which is about 0.5% of the total stock in the Northeast Atlantic. Around 30 vessels participate every year and the majority of them are registered in Lofoten (Statistics Norway, 2010c) (see also chapter 5.1.5 Marine environment). Despite the international moratorium on whaling in 1985, the Norwegian government allowed whaling on minke whales again in 1993 (Ministry of Foreign Affairs, 2000). From the 597 whales caught in 2007, 767 tons of meat were produced for the national market with a value of 24 million NOK including subsidies (Statistics Norway, 2010c).

Fish processing industry

Typical fields of work of the fish processing industry in Lofoten are e.g. sorting, cutting, skinning, filleting, salting and more. End products are mainly fresh fish, canned fish, frozen fish, stockfish, clipfish, whale steak, fish oil and fishmeal (mainly as food for fishes in aquaculture). Refinement processes of fish oil are also included. Suppliers are fishery and aquaculture businesses. Several processed fish products are sold worldwide as healthcare products.

"We provide products without using chemicals. We remove environmental toxins from the fish oil and remove typical flavoring substances."

Morten Helgesen, 2010

5.3.3 Fish farming

Fish farming exists in Norway since the 1970s and is still a growing business. In 2008 the total production of farmed fish was nearly 850 000 tons with a gross value of around 17.5 billion NOK (Statistics Norway, 2010b). This makes Norway a big global player in fish

farming, not only in production but also in expertise. The main species are salmon and trout, but cod is gaining ground. 19.2% of the annual total production is farmed in Nordland and Lofoten produces according to the amount of facilities around 2.5% of the Norwegian farmed fish with a gross value of 450 000 million NOK in 2008 (Statistics Norway, 2010b). The total labor input in Lofoten is around 156 man-years. Important companies are Lofoten Seafood Export AS in Leknes and Svolvær Fiskeprodukter AS in Svolvær.

Salmon was the first species used in fish farming in Norway when it started 40 years ago. Today salmon is still the most popular farmed fish in Norway with a total amount of 737694 tons in 2008. This is more than 87% of the farmed fish production (Statistics Norway, 2010b). In 2008 Lofoten produced more than 18 000 tons of salmon with a gross value of nearly 390 000 million NOK.

There has been a lot of criticism over the last few years because of an intense use of drugs (*antibiotics*), because of an increase of parasites like the sea louse (*Lepeophtheirus salmonis*), which endanger especially wild salmon stocks, because of huge amounts of escaped salmon, which have a negative effect on the genetic diversity of wild salmon stocks, and because of the eutrophication of water bodies. During the last years Norwegian authorities have put much effort into reducing the negative effects and making fish farming more sustainable.

With a production of 85 266 tons in 2008 and a percentage of 10%, farmed rainbow trout takes the second place in Norwegian fish farming. For Lofoten it is not as important as for other regions and it is mainly carried out in fresh water basins on land.

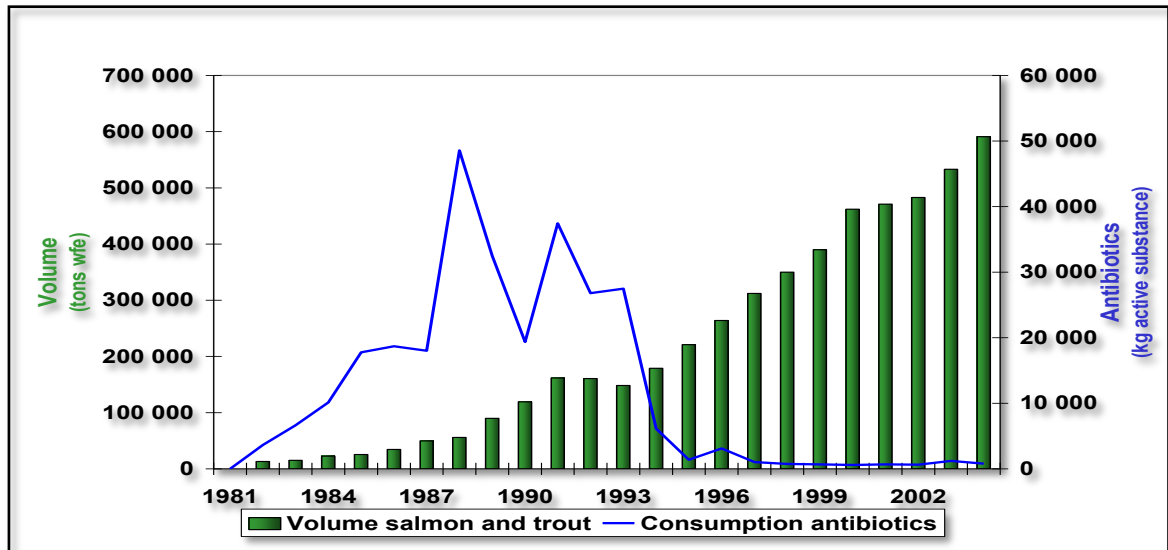


Figure 25 Use of antibiotics in Norwegian salmon and trout farms and their annual production (FHL, 2010)

5.3.4 Retail trade

The main shopping areas are located in the two big regional centers in Eastern and Western Lofoten, Leknes and Svolvær. There, one can find supermarkets, all kind of shops for everyday necessities and also specialized shops like do-it-yourself stores. By building shopping centers and malls, Leknes, for Western Lofoten and Svolvær, for Eastern Lofoten, underline their position in retail trade in the region. The smaller villages usually have supermarkets with a small offer of everyday necessities only.

5.3.5 Manufacturing

Like other economies in the region, the manufacturing industry in Lofoten is linked to fisheries and their fleet of vessels, and to other marine businesses like ocean shipping and petroleum activities. Shipyards are e.g. located all over Lofoten. Most of these facilities can be found in Svolvær with its big workshop halls. Svolvær therefore covers most of the demand for fishing and cruise boats. Other important facilities can be found in Kabelvåg, Henningsvær, Ballstad and Reine (Lofoten.com, 2010). Especially the big shipyards in Svolvær regard a possible petroleum development in the region as positive and hope to

obtain contracts from the petroleum industry. Beside shipyards, there are other industries, like NorLense AS in Fiskebøl/Ausvågøya (*located in the municipality of Hadsel*), who produce oil-combating systems.

5.3.6 Tourism and leisure

The Lofoten Islands are one of the most popular tourist destinations in Norway and therefore an important business for the archipelago 200 km north of the Arctic Circle. The main reasons for this popularity are the beauty of Lofoten's nature, the cultural heritage with its tradition of fishery (*Lofotfisket and rorbuer*), and phenomena like the midnight sun between May and July or the Northern light (*Aurora borealis*) between late September and early April. In a ranking of 111 islands around the world in the National Geographic Traveller magazine, Lofoten took the third place after the Faroe Islands and the Azores. The main comments were: *"Chilly, high latitude islands form a "masterpiece" of spectacular outcrops steeped in cherished tradition."... "Many of the villages rent out cozy rorbu, the historic fishermen's cabins."... "There are several excellent museums and art galleries."... "Good environmental quality."* (Tourtellot, 2007, p. 110). These comments show that the natural and cultural heritage is the ultimate tourist magnet for Lofoten.

Employees

While the numbers of people employed in the primary sector like fishery and agriculture are decreasing, tourism has a positive growth and gains in importance. This importance slowly began to grow after the Second World War but today the Lofoten Islands are one of the most strongly demanded destinations in Norway and all Scandinavia together with the majestic fjord landscape in Southwest Norway and the North Cape. This fact led to increased efforts in the tourist business, and significant investments were made to meet this demand by building new hotels, rorbu facilities, campgrounds, museums, galleries, event sites etc. (Lofoten.com, 2010). Recent examples of such investments are the Lofoten kulturhus and the Thon hotel in Svolvær next to the Hurtigruten pier.

Municipality	Employees in hotels and restaurants	Proportion of employees
Vågan	265	6.1 %
Moskenes	22	4.4 %
Røst	11	3.5 %
Vestvågøy	143	2.9 %
Flakstad	13	2.1 %
Værøy	2	0.2 %

Table 5 Direct employees in hotels and restaurants in Lofoten (Haugberg, 2010)

If one looks at the numbers of direct employees in hotels and restaurants, the Lofoten Islands are the most important destination in the coastal region¹³ with four municipalities among the top five (Haugberg, 2010).

Guests

Lofoten had 365 000 overnight stays in 2009, which is an increase of 46% compared to 2000. Of these stays, 163 000 were in hotels, 137 500 in huts (*rorbuer*), and 65 500 on campgrounds (tent, caravan and RV). This means that Lofoten had 1.32% of all overnight stays in Norway, 13.1% in Northern Norway (*Nordland, Troms and Finnmark*) and 25.3% of all overnight stays in Nordland. Since 2007, the stays in Lofoten increased every year by 25 000 – 46 000 overnight stays (see Figure), despite the bad worldwide economic situation in 2009. The main reasons for this increase are the focus on the transformation of summer tourism to an all-year-round tourism, which will be a goal for the next years (see Figure 23). In winter 2010 (*January-March*), the tourist numbers have increased by 28.5% compared to 2009 and for foreign tourists even by 95.4%. The main winter attractions are winter fishing (*skrei*) and backcountry skiing with perfect conditions of snow and terrain. Norwegians tourists are still the ones with the most overnight stays in Lofoten, which were 215 728 in 2009, followed by Germans with 52 659 and French citizens with 13 141 stays (Statistiknett.no, 2010).

¹³ The mentioned coastal region includes Harstad region, Lofoten, Senja region and Vesterålen. All together, the region had 107228 inhabitants in 2008.

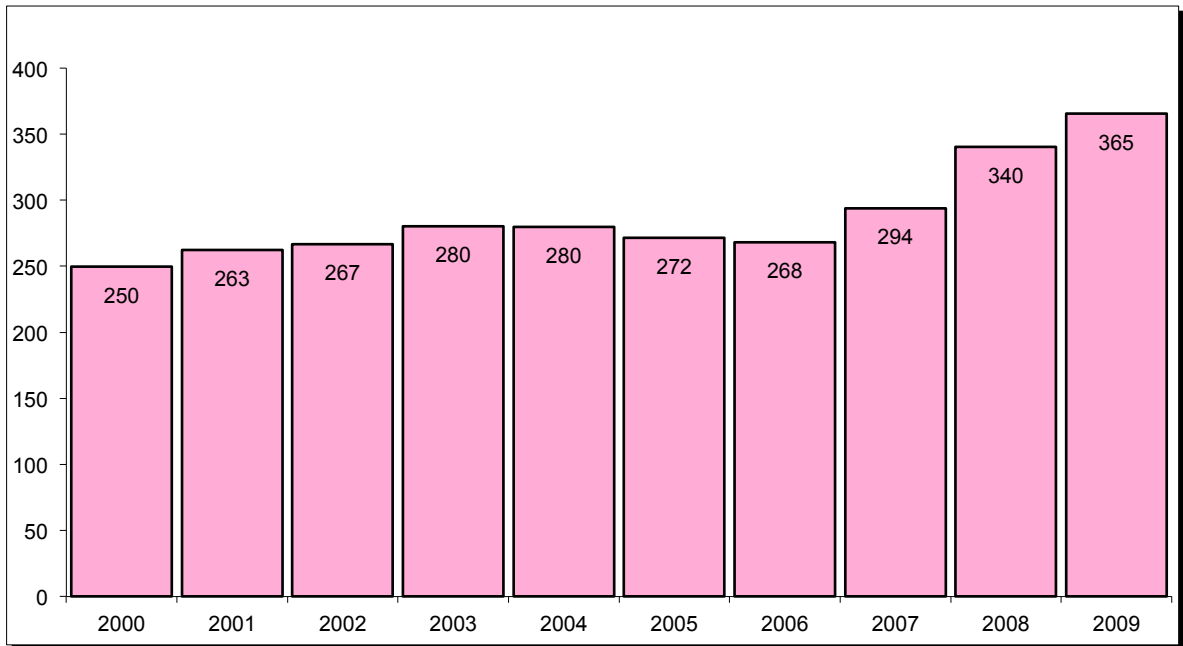


Figure 26 Overnight stays in Lofoten from 2000 - 2009 (1000 stays) (Statistiknett.no 2010)

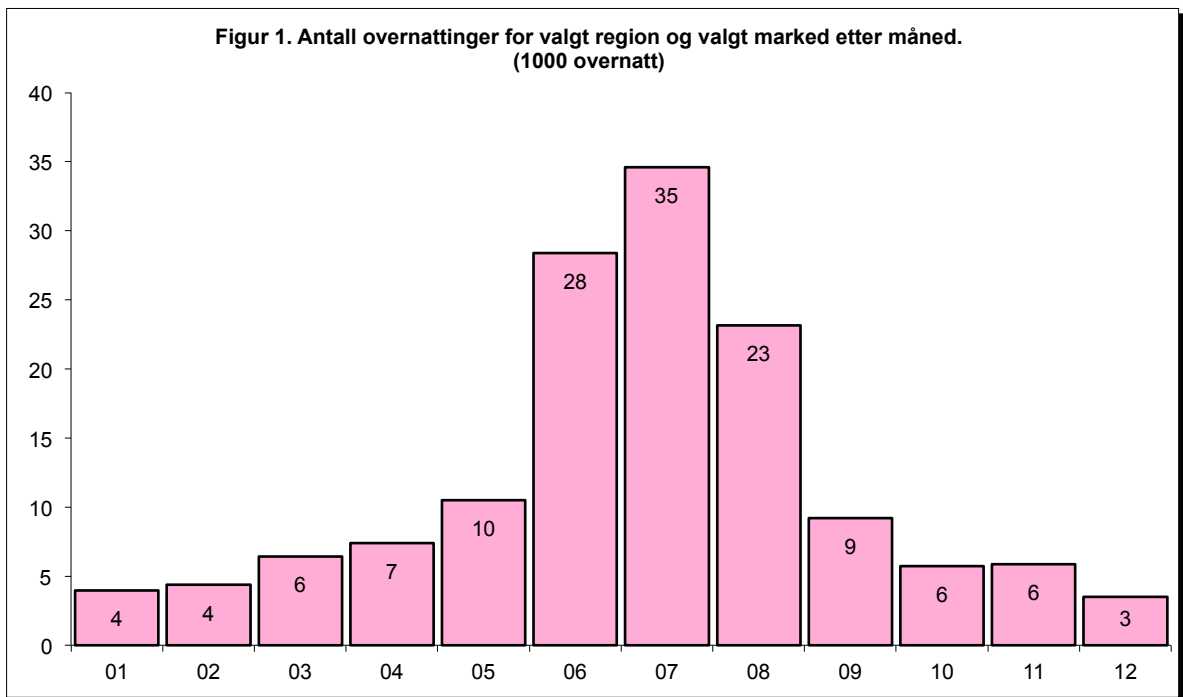


Figure 23 Overnight stays for hotels in Lofoten in 2008 (1000 stays) (Statistiknett.no 2010)

But not all the tourists stay in hotels, huts or on campgrounds in Lofoten. Many foreign tourists come just for a one-day visit with one of the Hurtigruten ships and other cruising ships or prefer the great outdoors with their tents, which is legal and defined by law

(*friluftsløven*). Moreover many Norwegians from the region come to Lofoten for one day for all kinds of outdoor activities known as *friluftsliv* in Norway. *Friluftsliv* is a very Norwegian type of outdoor recreation. It is impossible to translate *friluftsliv* into English, but you can describe it as a "*Norwegian tradition for seeking the joy of identification with free nature*" (Faarlund, 2002).

The combination of nature and culture in Lofoten as a tourist magnet is also reflected by the number of museums, galleries and their visitors. The three most attractive sites of the region are all located in Lofoten. In the period from the 1st of May to the 1st September 2009, the Gallery *The House of Lofoten* in Henningsvær had 62 459 visitors, followed by the Wiking Museum *Lofotr* in Borg with 58.929 visitors and the Lofoten Aquarium in Kabelvåg with 47 673 visitors (Haugberg, 2010).

To make Lofoten even more attractive to tourists all around the world, the head organization of tourism in Lofoten, Destination Lofoten, is a great supporter of a UNESCO World Heritage nomination.

5.3.7 Petroleum development

Back to the 1950s only a few people in Norway expected petroleum resources along the Norwegian coast. With the gas finds in Groningen (NL) in 1959, the focus was shifted to the North Sea. Only 3 years, later in 1962, Philips Petroleum asked for permission to explore oil and gas fields on the Norwegian continental shelf (NCS). It can be seen as one of the greatest maneuverings of the Norwegian government to specify that Norway has the sovereignty over the NCS. This means that only the Norwegian state has the right to distribute licenses to oil and gas companies. During the first licensing round in 1965, 22 production licenses for 28 blocks were distributed (Olje- og energidepartementet, 2008). With the oil discovery of Ekofisk in 1969, the Norwegian oil adventure, as it is called in Norway, started. After other big discoveries the Norwegian oil company Statoil, owned by the state, was founded and it was to get 50% or more of all the licenses on the NCS (Olje- og energidepartementet, 2008). Statoil entered the stock market in 2001 and became a

semi-privatized company. The Norwegian state sold some shares but was still the biggest shareholder. In 2007 Statoil merged with Hydro to StatoilHydro and the share of the Norwegian state fell to 62.5% (Olje- og energidepartementet, 2007). The Norwegian State bought some shares of StatoilHydro in the beginning of 2009 and raised its share to 67% (Olje- og energidepartment, 2009). In November 2009, StatoilHydro changed its name back to Statoil.

In 2010 there were 65 fields in production on the NCS. In 2009, the daily oil production (*including NGL and condensates*) was 2.3 million barrels of oil. The total annual production in 2009 was 238.6 million scm o.e. including a annual gas-production of 102.7 billion scm. Norway was the world's fifth largest oil exporter in 2008 (Ministry of Petroleum and Energy & Norwegian Petroleum Directorate, 2010) and the world's second largest natural gas exporter with 98.85 million scm oe in 2009 (Central Intelligence Agency, 2010).

Petroleum development in Lofoten

Petroleum related activities have taken place since 1969, which were mainly seismic explorations. While Nordland VII and Troms II were never open for test drillings, the Norwegian Parliament (*St. meld. nr. 26; (1993-94)*) opened the western part of Nordland VI for petroleum activities in 1994 (Oljedirektoratet, 2010). In 1996, two permits were given to Statoil ASA (permit 219, field 6710/6) and to Enterprise Oil Norge AS (permit 220, field 6710/10), a subsidiary of Norske Shell AS. 3D seismic surveys were made and in 2000 wildcat drilling was carried out in block 6710/10-1 which turned out to be a dry well. Although the two permits are still valid, there have been no activities in the area since 2001 (Oljedirektoratet, 2010).

The latest activities of the petroleum industry in the area off Lofoten were 2D seismic surveys between 2007 and 2008. In addition, 3D seismic surveys were made off the west coast of Vesterålen and Senja between 2008 and 2009 (*see also figure 28*). These surveys led to protests of local fishermen, fishery authorities and NGOs like Bellona and Natur og

Ungdom. They were afraid that the seismic activities could harm the fish stocks in the waters off Lofoten, Vesterålen and Senja and would lead to a decline of the catches. A report of the Norwegian Institute of Marine Research (*IMR*) on effects of seismic activities on fish stocks, financed by the Norwegian Petroleum Directorate (*NPD*) shows changes in the behavior of different fish species. Noticeable was an increased wandering activity, which was responded to changes in catches of e.g. saithe, haddock, Greenland halibut and rose fish. The increased wandering activity, according to Løkkeberg et al. (2010), is connected to stress reactions amongst the fish species as a result of the acoustic survey. For longline fishing the commercial catch rates decreased while the catches with gillnets increased as a result of the higher wandering activity. While the fishermen and environmental groups regarded the results as a demonstration of the riskiness of acoustic surveys, the petroleum industries and agencies saw it as clear evidence of the opposite.

But it has to be said that seismic surveys should take the fishing grounds into consideration in order to harm them as little as possible because negative effects are known from other marine areas, e.g from the Barents Sea (Løkkeberg, et al., 2010). An increased seismic activity could therefore have more significant negative effects on fish stocks in a short- and long-time perspective.

On 12th October 2010, Statoil presented a report to show the possible future of petroleum activity in Lofoten and Vesterålen for the offshore fields of Nordland VI and Nordland VII (see also figure). For Nordland VII there exists just one scenario (1), which envisions underwater wells and transportation to a land-based oil storage and transfer facility in Vesterålen. For Nordland VI, Statoil developed three scenarios. Oil from underwater wells could be carried to a land-based facility in Lofoten (2A), a land-based facility on the mainland near Bodø (2B) or an offshore facility next to the wells (2C). For the municipalities in Lofoten, only scenario 2A would have positive economic effects through tax on land and buildings.

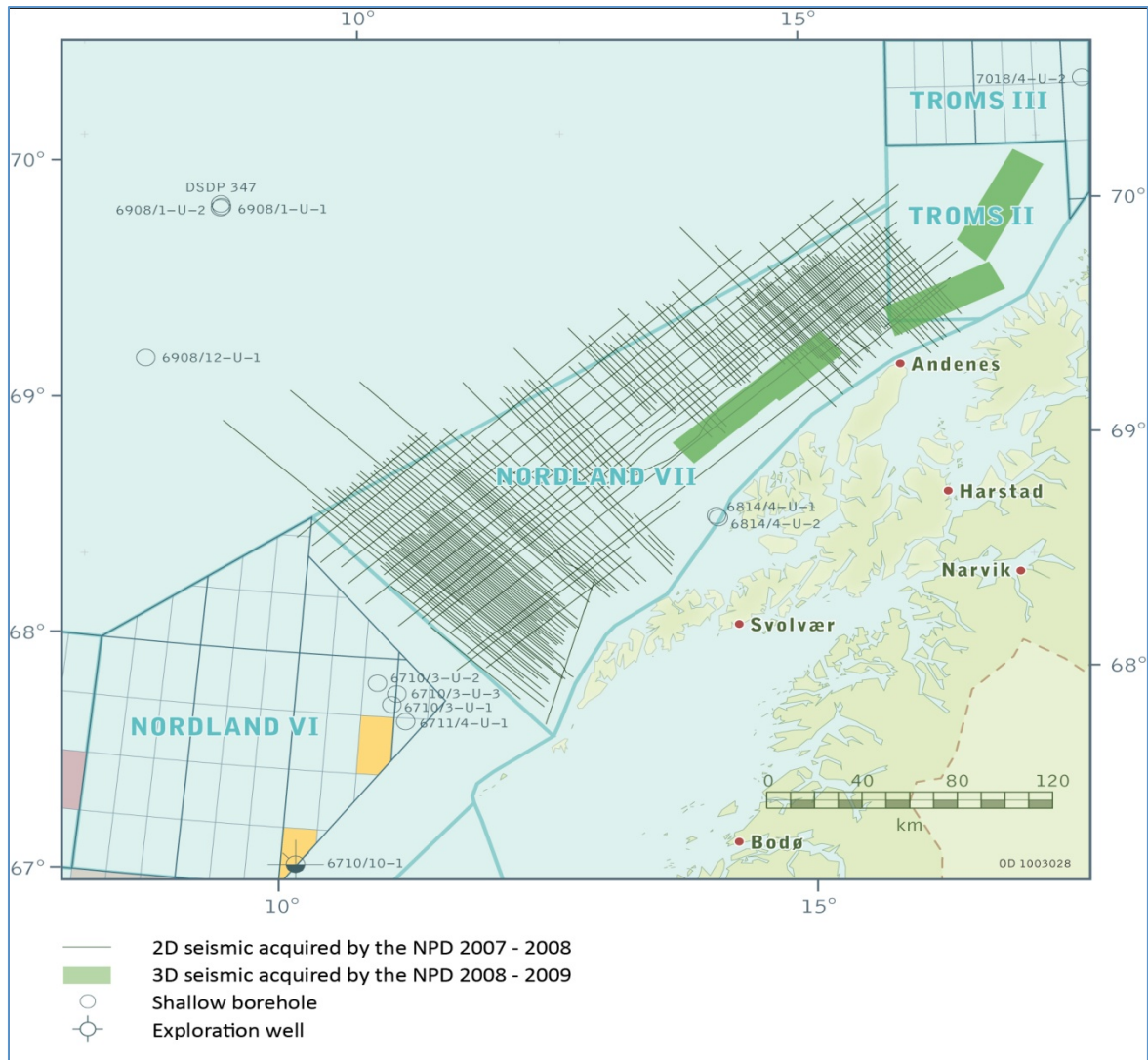


Figure 24 Seismic surveys conducted in 2007 – 2009 (Oljedirektoratet, 2010)

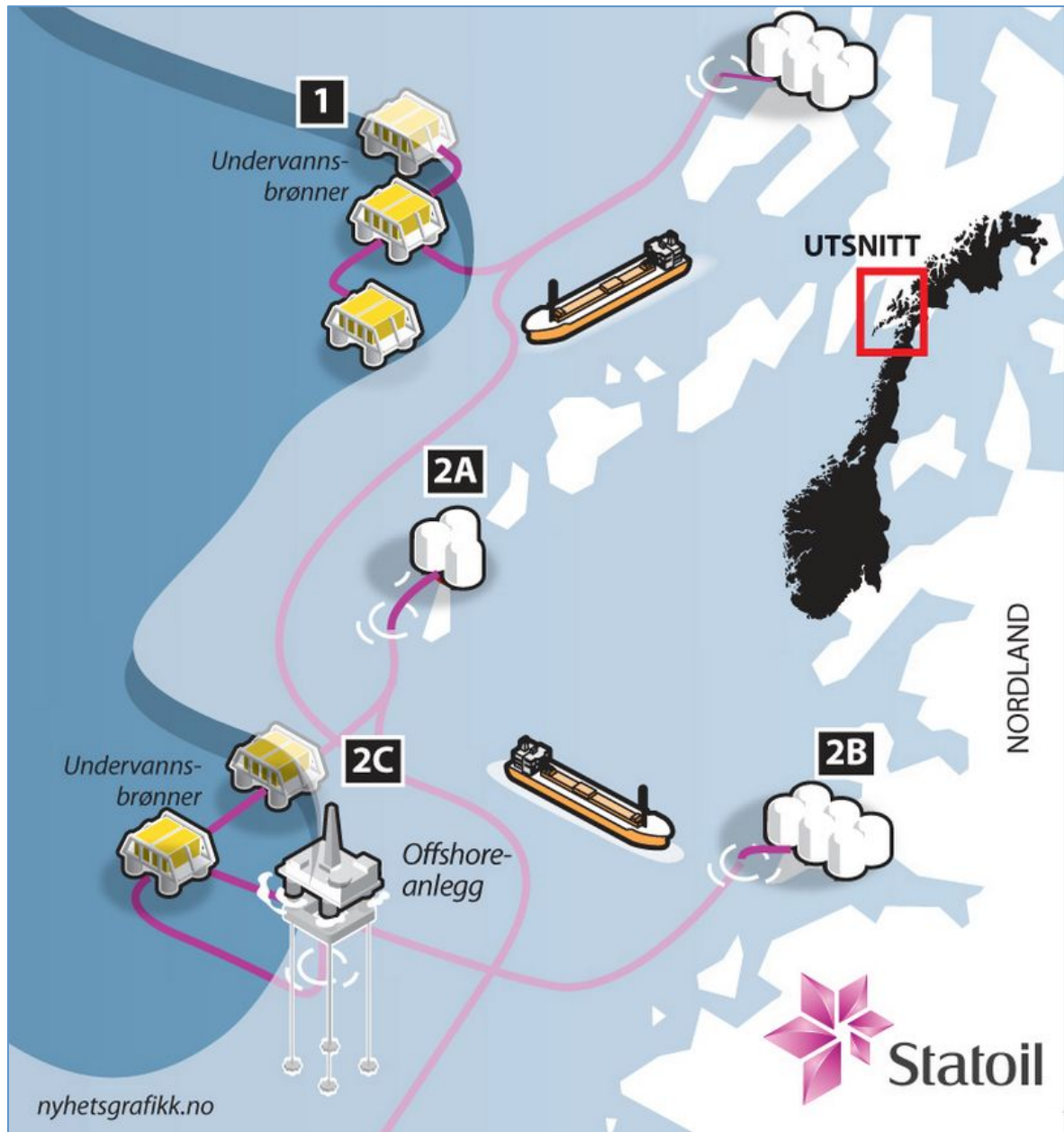


Figure 29 Possible petroleum development in Lofoten and Vesterålen (Statoil / Nyhetsgrafikk in: Vesterålen Online, 2010)

Ship traffic

Due to the increasing petroleum activities in the Barents Sea, in the fields Snøhvit and Goliat off the coast of Finnmarken, and eventually in Lofoten, ship traffic will increase within the next years. A prognosis for the ship traffic development between 2008 and 2025 estimates a doubling of the number of oil and gas super-tanker (von Quillfeldt, 2010). Possible risks from ship traffic related to petroleum are oil spills due to ships,

which run aground or collide. Bad weather conditions in the sea off Lofoten and the light conditions during the polar night could increase the risk. To estimate possible consequences of such an accident, the foundation Det Norske Veritas (DNV) simulated the following scenario at a basis (von Quillfeldt, 2010):

- A 283 m long tank-ship runs aground southwest of Røst at Vestskjærholmane due to bad weather and strong winds from southwest.
- The ship breaks apart and 20 000 tons of crude oil leak during the first 24 hours and 40 000 tons the next 3 - 4 days. Moreover 1500 tons of heavy crude oil leak.
- The calculation is made with Russian heavy crude oil and several seasons are taken into account to estimate the extension of the oil spill and the consequences.

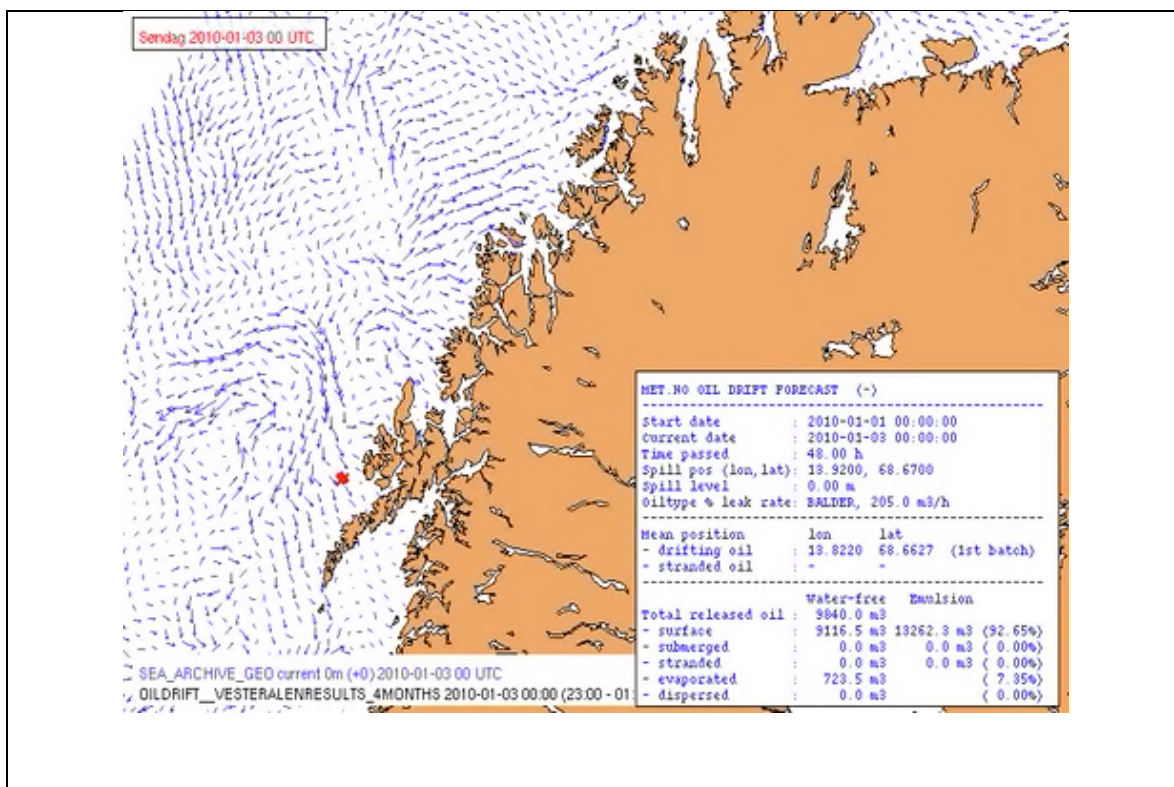
The strong coastal currents and winds will spread the oil spill very fast and only five days after the accident, the West Lofoten will be affected on both sides of the coast and after 10 days the whole region will be affected. The areas affected worst of all will be those on the west coast of Lofoten, which are difficult to access. Damage to the environment will be enormous and the negative effects on fish, birds and marine mammals depend on the season and their habitat (coast or open sea). As a result of environmental damage, economies like fishery, tourism, aquaculture and other connected businesses will be negatively affected as well.

Oil and gas production

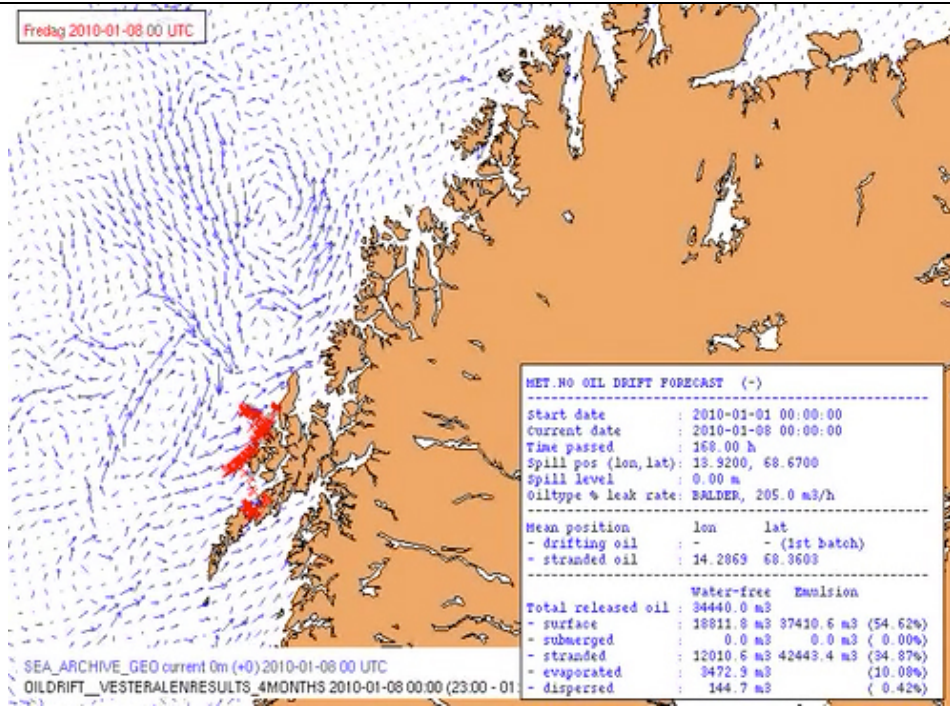
The presentation of the scenarios by Statoil in October 2010 shows the obscurities concerning oil and gas production in Lofoten and Vesterålen. It is therefore difficult to estimate negative and even positive changes for the natural and the socio-cultural and socio-economical environment. DNV did not only develop scenarios for a possible shipping disaster, they also developed scenarios for different kinds of oil spills from offshore oil installations and sea floor oil installations. The problem is that at the time of

the development of these scenarios, the results of the seismic survey had not been published and DNV positioned their oil wells not where the largest deposits of oil are now estimated. The newly estimated positions of petroleum installations are now closer to the coast, which reduces the timeframe for an effective oil spill response. Bellona accused DNV of building their scenarios on a wrong base of evidence. Also shows the accident and huge oil spill of the BP oil installation Deepwater Horizon in the Gulf of Mexico also shows, that a worst case scenario of 225 000 tons in 50 days is underestimated (Bellona, 2010). It is difficult to present an exact number of how much oil was emitted but assumptions are between 500 000 and 1 000 000 tons of crude oil.

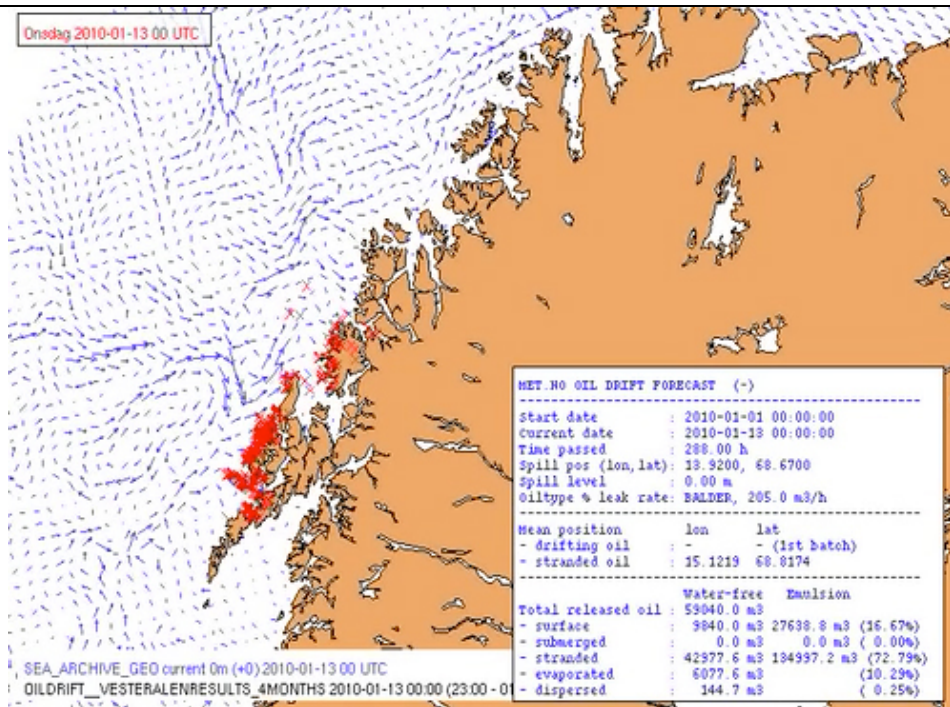
On behalf of Bellona, a new scenario with a corrected position and an oil spill of 4500 tons per day over a timeframe of 87 days were set up by the Norwegian Meteorological Institute. Below you can see four figures of the scenario, which describe the first 15 days after the oil spill off Lofoten and Vesterålen. You can also see the strong coastal currents, which contribute to the spread of oil in addition to wind and waves.



Fredag 2010-01-08 00 UTC



Onsdag 2010-01-13 00 UTC



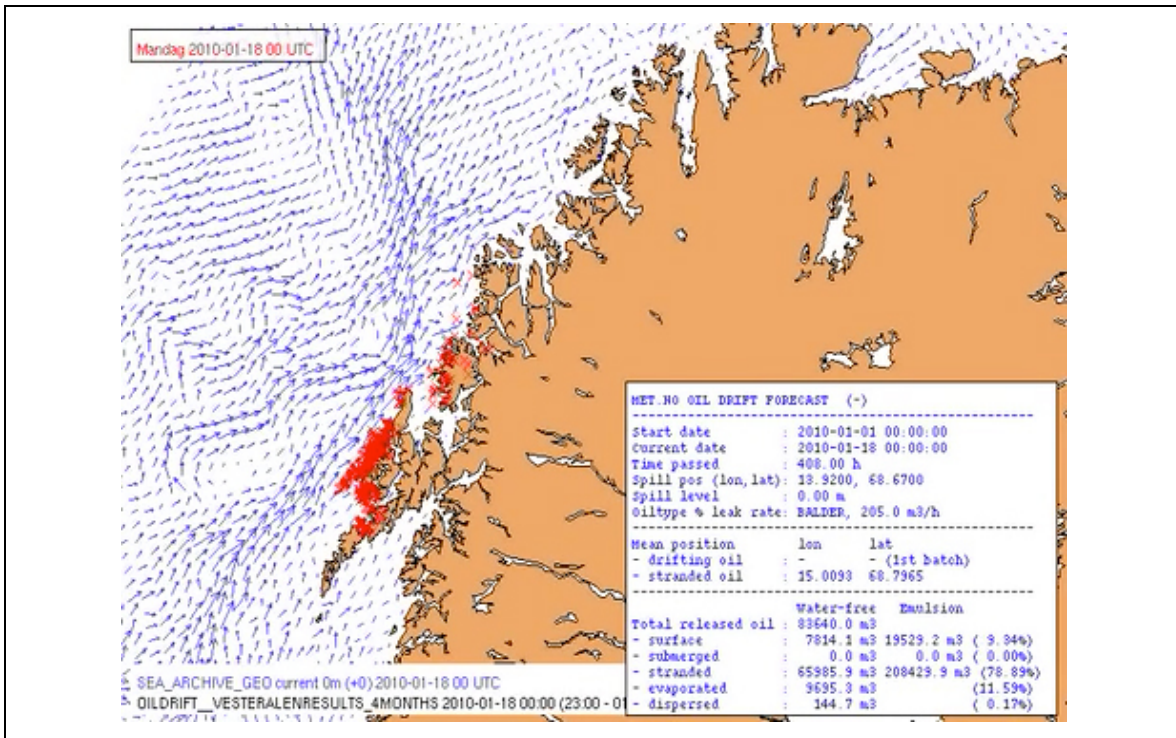


Figure 30 Oil drift scenario (Bellona, 2010)

6. Stakeholders

In this chapter on stakeholders in Lofoten I want to focus on the question “ who is or should be a stakeholder in Lofoten”. In a communicative approach of integrated coastal zone management it is necessary to know the people and groups, who are part of the communication process. Of course it will not be possible to give a final answer to the question because every author or groups of authors has a different background of knowledge, especially in a qualitative research. Although objectivity is desirable, every stakeholder analysis is therefore subjective to a certain extent. But the goal should be to make it as objective as possible. If the author of such a stakeholder analysis wants to reach this goal of maximum objectivity, a wide spectrum of knowledge is very helpful.

During the interview phase when I stayed in Lofoten in June and July 2010 I tried to gather as much knowledge as possible of the region and the possible stakeholders to ensure a higher degree of objectivity. Although I had a room in Kabelvåg in Eastern Lofoten, I travelled a lot all over Lofoten. I took part in a private midsummer celebration or in a hiking tour on the island of Værøy. Therefore, I did not only have planned interviews with possible stakeholders, I also had the chance to speak with many different people in different places, on streets, in cafés, in museums, on ferries or at the beach, which in my opinion was one of the most important sources of knowledge. All these experiences with locals and tourists, together with the cultural impressions and impressions of the unique natural environment gave me access to a wide spectrum of knowledge, knowledge that I expected from a qualitative research.

As mentioned in the chapters before, the coastal zone in Lofoten is a zone of many interests and potential stakeholders. You have industries, aquaculture, fishery, shipping, tourism, settlements and of course the natural and cultural environment(Norges forskningsråd, 2003; Nettverk for miljølære, 2010). From these general interests, together with the background knowledge from chapter 5 and the qualitative data from the research in Lofoten, the following groups resp. fields of more or less definitive or expectant stakeholders in Lofoten can be derived. The order is no ranking:

- Natural and cultural environment (nature- og kulturmiljø)

- Agriculture (*landbruk*)
- Oil and gas industry
- Manufacturing industry
- Seafood sector (*fiskeri of havbruk*) (fishery, aquaculture, fish processing, and seaweed production)
- Tourism (*reise- og friluftsliv*)
- Local municipalities (*Lofotrådet*)

In addition to these seven stakeholder groups, which are directly connected to the stakeholder environment in Lofoten, there are three other stakeholder groups, which also have a stake but are mainly entrusted with planning, allocative and advisory functions. These are:

- NGOs
- Administration (county, government and parliament, governmental bodies)
- Research institutes

In the following I will fill these groups of stakeholders with possible stakeholders using the gathered information from the qualitative study. After the presentation of the Scientific Basic Report for the Updating of the Management Plan for the Barents Sea and the Sea off Lofoten (*Det faglige grunnlaget for oppdateringen av forvaltningsplanen for Barentshavet og havområdene utenfor Lofoten*), all possible stakeholders had the chance to hand in a public hearing notice until 1st of July 2010. But due to the oil spill in the Gulf of Mexico and the need for new research results, the Bellona Foundation obtained two deadline extensions, so in the end the deadline was the 1st of October 2010. The results from the public hearing flow into the presentation of the stakeholders.

6.1 Natural and cultural environment

The question, if culture and especially nature could or should be a stakeholder, is much debated in science (Billgren & Holmén, 2008). As mentioned in chapter 2.2 Stakeholder theory and according to Freeman (1984 in: Mitchell et al., 1997) stakeholders are groups and individuals who have interests in the activities of an organization, can be affected by those actions or can influence them. But why has non-human nature and culture not been considered in stake theory? It is widely accepted that nature influences all stakeholders in a certain way and nature has to be seen as the basis of every stakeholder environment, but arguments against a view on nature as a stakeholder are that including nature would go beyond the scope of stakeholder theory, and nature would never be able to speak for itself (Billgren & Holmén, 2008). This kind of argumentation can simultaneously be used for culture as a stakeholder. Of course, it will never be possible to talk with nature and culture in a way we talk with human beings, but is it right to say that nature and culture do not have a voice?

The natural environment can affect an organization and can be affected by the organization. This fact should make nature a legitimate stakeholder according to Mitchell (1997). Nature can also articulate urgent matters, not by human voice but through indicators and environmental parameters like species populations, water quality, biodiversity etc. What we get, is a dependant stakeholder who has legitimate and urgent claims. The only attribute, which is missing to become a definitive stakeholder, is power. As mentioned in chapter 2.2 Stakeholder theory, for those stakeholders it is very difficult to be heard by the organization and it is often necessary to get help from more influential stakeholders. Powerful stakeholders can therefore use their power in combination with the legitimate and urgent claims of nature to function as the mouthpiece for nature. Those stakeholders can be environmental NGOs like Greenpeace Nordic, WWF, Miljøstiftelsen Bellona (*Bellona Foundation*) and Natur og Ungdom (Nature and Youth). But governmental bodies and institutions like the Ministries of the Environment or Fisheries and Coastal Affairs or the Norwegian Directorate for Nature Management can

also act as mouthpieces for nature. The same applies to research institutes like the Norwegian Polar Institute or the Norwegian Institute of Marine Research.

Another possibility of compensating nature's lack of power was mentioned during the interview with Bjørn Kjensli (2010). He argued that the status of a UNESCO World Heritage Site would give nature the power to survive in a stakeholder environment. The reason is that a UNESCO World Heritage Site would attract worldwide attention, a fact that even other powerful organizations like petroleum companies cannot deny. The establishment of a National Park can also attract attention and may be an argument in favor of nature, but due to the national level on a much smaller scale.

Looking at the cultural environment in Lofoten, the situation is similar. The cultural heritage of Lofoten is a product of the daily life of Lofoten's peoples, a life, which was/is steered by natural circumstances and the knowledge developed through generations. Cornerstones of this heritage are the early settlers after the last Ice Age with their fishing and agriculture skills, the Vikings, Lofotfisket, stockfish production, international marine trade and the resulting maritime identity, recognizable by fishing villages and rorbuer, shipyards and drying flakes.

How can culture be a legitimate stakeholder? Culture is history, present and future and organizations like the petroleum industry can have negative effects on all three periods. Historically important sites near the coast e.g. may be destroyed or contaminated by oil spills or petroleum facilities. The lively coastal culture of the present time is highly dependent to the access on intact marine resources like clean waters, and on healthy cod and herring stocks. Petroleum activities could also change society by industrialization and e.g. offering better paid jobs, which could lead to a further decrease in fishermen and maybe a loss of irretrievable knowledge, identity and, in the end, culture. These facts ought to make culture a stakeholder with legitimate claims, even if culture cannot directly affect other organizations. Even today, without petroleum activities in Lofoten, a loss of coastal culture, due to a decrease in fishermen and other traditional coastal activities, can be observed. The loss of coastal culture shows that action is urgent, especially with regard to the possible establishment of petroleum activities.

Although culture, like nature could not speak with a human voice, it has the power to underpin its stake in the process of ICZM in Lofoten. Most of the people of Lofoten are still part of the lively coastal culture and they have a voice as individuals or organized in a group to point out their interests, opinions and feelings about the present and future coastal culture in Lofoten. A group that points out such coastal cultural issues among other things, is *Folkeaksjonen oljefritt Lofoten, Vesterålen og Senja*, a social movement, which fights for a petroleum-free area off Lofoten, Vesterålen and Senja. On the governmental level, the Ministry of Culture and the Norwegian Directorate for Cultural Heritage are mouthpieces for the cultural issues in Lofoten (see chapter 6.9).

The title of UNESCO Cultural World Heritage for Lofoten would have the same positive effect of getting a voice for culture as it would for nature. On the smaller scale, nature has National Parks to gain a voice. You can find National Historical Parks in the USA, but in Europe and also in Norway, it is more common to have classic indoor or open-air museums and cultural monuments. In Lofoten, it is the museums that can mainly be seen as the voice of historical culture. Three of them will be described below.

Lofotr Viking Museum Borg

Lofotr Viking Museum Borg, Prestegårdsveien 59, 8360 Bøstad, +47 76 08 49 00, vikingmuseet@lofotr.no, <http://www.lofotr.no>

The Viking Museum in Borg was constructed during the 1990s only a few meters from the remains of a chieftain from the 8th century. The main museum building is a reconstructed longhouse. In addition you can find a traditional boathouse from the Iron Age, a copy of the Gokstad Viking ship and other smaller exhibits. It is obvious that the Viking Museum is the voice for the historical coastal culture of the Iron Age in Lofoten. The museum can also be seen as an experimental project in archaeology, which tries to preserve the several thousand years old coastal culture of combining fishing and small-scale agriculture.

The Lofoten Museum

The Lofoten Museum, Storvågan, 8310 Kabelvåg, +47 76 06 97 90, lofotmuseet@museumnord.no, <http://www.lofotmuseet.no>

The Lofoten Museum in Kabelvåg on the island of Ausvågøya is a combination of a classical indoor and open-air museum. The buildings of the museum were part of the owner's farm in the fishing village in the 19th century. At this time, Storvågan was one of the most important fishing villages in Lofoten. The aim of the museum is to tell the history of the Lofoten Fishery. The exhibits date from several centuries and include a collection of Nordland-type boats, old boat engines, fishermen's cabins (*rorbu*) from 1797 and 1850, boathouses and different kinds of smaller and bigger historical fishing equipment. In addition you can find an AV-show about lighthouses and a culture trail to the center of Kabelvåg to illustrate the history of the mediaeval town of Vågar.

Norwegian Fishing Village Museum

Norwegian Fishing Village Museum, Å i Lofoten, 8392 Sørvågen, +47 76 09 14 88, nfmuseum@lofoten-info.no, <http://www.lofoten-info.no/nfmuseum>

The Norwegian Fishing Villiage Museum in Å i Lofoten is another important mouthpiece for the coastal culture in Lofoten, especially for the fishing village realm of Flakstad and Moskenes. The museum covers many buildings in the small village of Å, like a bakery, post office, chapel, smithy, fish hall, boathouse, etc. The museum itself sees its mission in collecting, recording, preservation, documentary and carrying out research. On the museum's website, the mission is described as follows (Norwegian Fishing Village Museum, 2010):

"In close collaboration with the local community, the Museum's objective is to work towards achieving the sustainable management of our cultural and natural resources - in order to help preserve our way of life and our identity.

The museum is intended to be a resource centre for the presentation of knowledge and understanding of the development of the fishing villages along the coast. Knowledge and understanding of coastal culture is presented by way of

exhibitions, demonstrations, active participation, the sale of culturally "correct" souvenirs, various events and educational courses.

The museum shall be developed in collaboration with the local population, schools, cultural institutions and the tourist trade - and through regional, national and international networking."

The goal of sustainable management of the cultural and natural resources to preserve the way of life and identity of the coastal community in Lofoten shows the active involvement of the museum as a representative of culture as a stakeholder. While many museums mainly focus on the historical cultural issue the Norwegian Fishing Village Museum also takes the position of a preserver and developer for the present and future coastal culture in Lofoten.

Beside museums, art galleries are an expression of the coastal culture in Lofoten. Especially notable are the Gallery Espolin in Kabelvåg and The House of Lofoten with paintings which often show the hard daily life of the coastal community in Lofoten around the turn of the 19th century.

Summing up it can be said that nature and culture have or can have a voice in the stakeholder environment of Lofoten. The status of a World Heritage site is obviously a powerful "amplifier" for the voice of nature and culture. This was often stressed during the interviews (Kjensli; 2010; Wulff-Nilsen, 2010). An indication of the power of a World Heritage status is the freezing of the application up to the decision of the government for possible petroleum activities (Wulf-Nilsen, 2010). Reservations are that a possible nomination could block the freedom of action referring to possible petroleum development (Johansen, 2008). Museums can be seen as important agents for culture as a stakeholder and the same applies for environmental NGOs and nature. The part of the local coastal community which is against petroleum development and for the preservation of a vital natural environment and living culture, is organized in the social movement Folkeaksjonen oljefritt Lofoten, Vesterålen og Senja or sympathises with it.

Research institutes or governmental bodies function more like advisors for nature and cultural concerns.

6.2 Agriculture

Norsk Landbruksrådgiving Lofoten and Lofotlam BA, Storeidøya 87, Leknes, +47 76 06 42 00, lofoten@lr.no, <http://lofoten.lr.no> and <http://www.lofotlam.info>

Agriculture has a long tradition in Lofoten and was combined with seasonal fishing until the last century. Although the main agricultural zone is located in the inland of Vestvågøya, especially the sheep pastures are located next to the coast. Lofoten lamb belongs to the best in Norway. The reason for this is the combination of the forage, which grows up in the mountains, at the shoreline and also consists of seaweed. An oil spill could destroy or contaminate parts of the sheep pastures. Although there can be conflicts between petroleum activities and at least sheep breeding, agriculture is until now not an active stakeholder, but rather a potential one. According to stakeholder theory as described in chapter 2.2, agriculture in Lofoten can be seen as a weak discretionary stakeholder. Today, 91 sheep farmers are organized in the Lofotlam BA, which is a kind of an umbrella organization. According to cultural theory of Thompson et al. (1990) and Thompson (2008), I would put Lofotlam BA into the categories of hierarchists and fatalists, because of their organizational status and the dependency on external, mostly natural forces. Their view of nature can probably be described as something between “nature is tolerant” and “nature is ephemeral”. Until now, there have been no signs of a participation in the management process concerning a possible petroleum development in Lofoten. Nor was there any reaction during the public hearing. Therefore, farmers who are against petroleum activities in Lofoten get no support by local or national farming organizations. To get their voice heard, they depend on other organizations or social movements.

6.3 Tourism



Figure 25 West coast of Værøy near Nordland and *robuer* in Risøya (Moskenesøya)

Tourism in Lofoten is mainly based on great, untouched nature and the living coastal culture. This became clear again, when I talked to several tourists in Lofoten. The breathtaking coastal mountain scenery, secluded coves and the small fishing villages, which are crowded together on skerries and in small inlets, were the attractions mostly mentioned (see Figure 25). This included among others the Reinefjord, Kvalvika, the beaches of Utakleiv, Unnstad and Myrland and the fishing villages of Å i Lofoten, Risøya, Nusfjord and Henningsvær. Tourism is the most important business in Lofoten today and you can find a wide range from family driven businesses to hotel chains. Most of the accommodation or facilities, like *robuer*, hotels or tour and activity providers, are located at the beach zone or quayside, which makes them particularly susceptible to possible oil spills. Many activities, like kayaking, whale and bird watching, diving and fishing, also depend on the eco-label of Lofoten and in addition, conflicts with offshore petroleum facilities can emerge. But even without major incidents, the petroleum industry can weaken tourism due to the loss of the image of the small coastal communities, who live in harmony with nature and from its resources. The strong involvement of tourism in the coastal zone in Lofoten has given it the attributes of legitimacy and urgency. This applies to all businesses in tourism, small ones and large ones. But when it comes to the attribute of power, things become different. Large hotel groups like Rica Hotels or Thon Hotels, which are located in Svolvær should have no problems with the attribute of power. A

similar situation exists e.g. for the larger museums, which have also their stake in tourism. But for small family-owned businesses, it is difficult to get heard by larger organizations in the petroleum sector or by the government.

Destination Lofoten

Destination Lofoten AS, N-8301 Svolvær, +47 76 06 98 00, lofoten@lofoten.info, www.lofoten.info

The Svolvær-based company Destination Lofoten can be seen as an umbrella organization and as the agent, promoter, coordinator and presenter of tourism in Lofoten. With its 132 members, Destination Lofoten is the mouthpiece of tourism as a stakeholder – a powerful and definitive stakeholder. Regular publications and interviews in national and local newspapers, like *Aftenposten* and *Lofotposten*, strengthen its position as a definitive stakeholder in the debate. During the public hearing, Destination Lofoten stated their position concerning the future management of Lofoten's coastal zone. From their point of view, it is absolutely necessary to take the special importance of tourism in Lofoten into account, because of its great economic value and growth. Furthermore it is mentioned that the coastal culture with its seafood sector is a central element in promotion of the region. Weakening this basis, which also includes nature, could in the end endanger tourism, too. The Lofoten Islands should be considered separately because they are the forefront of tourism in Norway and Northern Norway. To increase the market value of Lofoten, Destination Lofoten is a supporter of a candidature as UNESCO World Heritage and of a national park on the island of Moskenesøya.

Destination Lofoten carried out an investigation amongst 83 of the 132 members within their public hearing notice to underline their position. As a result, 92% (75 of 83) of the interviewed members are against petroleum activities off Lofoten and 97% (80 of 83) support a candidature as UNESCO world heritage (Vikan, 2010). Particularly larger hotel facilities in Svolvær see chances in petroleum development and expect a market growth in the hotel sector due to increasing numbers of meetings and conferences.

Finally, how can the tourism sector with its various actors be categorized according to Thompson's fivefold typology? If you look at every tourism business separately, you can describe them as individualists or even fatalists. But as members of Destination Lofoten, they rather become egalitarians, because with Destination Lofoten opinions of e.g. larger hotels do not carry more weight than opinions of smaller businesses. The view of nature also depends on the activity in tourism and can take all four shapes, but due to the concentration on eco-tourism by Destination Lofoten, the view of tourism is between regarding nature as tolerant and regarding nature as ephemeral.

6.4 Seafood sector

For a long time the seafood sector was the most important economic sector in Lofoten but changed places with tourism during the last decades. It is important to mention that this situation is not uniform because in some smaller municipalities, like Værøy, the seafood sector still beats tourism. In Lofoten, the sector includes fishery, whaling, fish processing. In addition there is a small seaweed production in Lødingen, which harvests seaweed near Lofoten. Coastal fishery and whaling are mainly done by self-employed fishermen, who sell their catches to the fish processing company. Fish farming facilities are often connected to fish processing companies because of the high effort of fish food production, fish rearing and slaughter.

The major concerns of the coastal fishery are the risk of an oil spill and the associated pollution of the fishing grounds and the negative side effects for the fish stocks. In addition, seismic activity and offshore installations are also seen as great problems, which lead to conflicts of use. While large trawlers have the chance to fish in other areas, coastal fishermen with their small boats would not be able to do so. Seafood products from Lofoten, like stockfish, enjoy a reputation of being natural products from a clean marine environment. This is incompatible with petroleum development, because even without any major incidents, through oil drilling and production, chemicals and produced water go into the sea and so into the food chain.

All the four seafood economies in Lofoten are represented by three organizations, which can be seen as the main stakeholders in this sector. The coastal fishery in Lofoten is represented by Norges Fiskarlag (*Norwegian Fishermen's Association*) and Norges Kystfiskarlag. The fish processing companies and the seaweed factory in Lødingen are represented by the Fiskeri- og havbruksnæringens landsforening (*Norwegian Seafood Federation*).

Norges Fiskarlag and Norges Kystfiskarlag

Norges Fiskarlag, Postboks 1233 Sluppen, 7462 Trondheim, fiskarlaget@fiskarlaget.no, www.fiskarlaget.no

Norges Kystfiskelag, Postbox 97, 8380 Ramberg, post@norgeskystfiskarlag.no, www.norgeskystfiskarlag.no

Norges Fiskarlag is a national organization, based on regional groups and political ly independent. Their main office is in Trondheim and the regional group in Nordland is based in Bodø, close to Lofoten. The structure of the organization can be seen as hierarchical. While Norges Fiskarlag is responsible for all self-employed fishermen, fishing companies and fishing vessel owners, Norges Kystfiskarlag is mainly responsible for the fishermen who work with coastal fishery. Norges Kystfiskarlag has around 1000 members in the whole of Norway, which includes around 600 vessels (Norges Kystfiskarlag, 2010). The organizational structure is similar for Norges Kystfiskarlag. Their main office is in Ramberg in Lofoten, which underlines the importance of coastal fishery in Lofoten. Norges Kystfiskarlag can therefore be seen as one of the most important stakeholders for the seafood sector in Lofoten. Both associations have expressed their opposition to petroleum activity in Lofoten due to the danger for the marine environment and its fish stocks, the working basis for fishermen, which may lead to a loss of cultural identity. Both associations can be classified as definitive stakeholders with hierarchical structures, while the fishermen can be seen as individualists with egalitarian tendencies, e.g. during Lofotfisket. Before the collapse of the herring and cod stocks in Lofoten, most fishermen viewed nature as benign, but this view changed and today they rather see nature as tolerant (*with respect to their fishing*) or even ephemeral (*considering the negative effects of petroleum and seismic activities*).

Fiskeri- og havbruksnæringens landsforening

FHL, Postbox 5471 Majorstuen, 0305 Oslo, firmapost@fhl.no, www.fhl.no

The FHL can be seen as a superstructure for all seafood business in Norway. While the two fishery associations mentioned above focus on interests of the fishermen first of all, the FHL includes the secondary seafood industry. These are all the fish farming companies, fish processing or seaweed industry.

Denomega Nutrition Oils, which has its main office in Sarpsborg, also has one production site in Leknes and will be taken as an example of the fish production industry. Denomega produces tasteless oil from raw cod-liver oil, which is used as an omega 3 fatty acids resource for the food industry. Denomega in Leknes purchases its raw materials from cod-liver mills in Mortsund (*Lofoten*), Svolvær, Senja and Sorøya. Except for Sorøya (*Goliat*), all these areas have been petroleum-free until now. The fish-oil production depends on healthy cod stocks and a clean environment, because on the one hand, it is a complex process to remove harmful substances, which accumulate in cod liver, and on the other hand, omega 3 fatty acids are sold to improve human health. Denomega ought to have a great interest in clean waters. Surprisingly, Denomega has no opinion on petroleum development in Lofoten. Potential dangers from the petroleum industry are well known, especially after the oil spill in the Gulf of Mexico, but Denomega in Leknes until now sees no reason to participate in the debate (Helgesen, 2010).

The FHL has an identifiable opinion on petroleum development in Lofoten. Although they do not directly say, that they are against petroleum activity in Lofoten, they underline the importance of a clean environment in Lofoten and that the fishing industry will be Norway's future economical basis, after the petroleum era.

Like the two associations of fishermen, the FHL is a hierarchical organization and their view on nature is tolerant. They are an important and definitive stakeholder in the debate and they speak for the whole seafood sector in Lofoten.

6.5 Research institutes

In chapter 6.1, I mentioned that research institutes are mouthpieces for nature. Therefore institutes like the Norwegian Polar Institute, the Institute for Marine Science in Norway, Akvaplan-niva (*Tromsø*) or the Norwegian Meteorological Institute have to be seen as stakeholders in Lofoten. But such institutes are not usual stakeholders. Primarily, they will not uphold their interests, but contribute to gather more knowledge of the marine and terrestrial environment in Lofoten to guarantee the best possible and sustainable management of the area. Therefore, they are consultants rather than stakeholders. All these institutes contribute to the Specialist Forum, which produced the management plan for the sea off Lofoten and the Barents Sea. The Specialist Forum can be classified between individual and egalitarian but they regard nature as tolerant or even ephemeral according to Thompson's categories.

6.6 Manufacturing and engineering

When talking about the manufacturing and engineering industry in Lofoten, shipyards have to be mentioned first. Big shipyards, like Skarvik AS in Svolvær can maintain a lot of different ship types, like trawlers, passenger, merchant or marine ships. Petroleum industry in the region would mean that big shipyards like Skarvik AS could access new customer markets. Skarvik AS is one of ten companies, which established the new company Hålogaland Olje & Energi AS based in Harstad (Valberg, 2010). The idea behind the co-operation is to create more power for the ten companies, both as stakeholders in the debate and in the new petroleum market in North Norway.

However, it is a different case for smaller shipyards like Ballstad slip AS and J. Wangswik AS in Ballstad on Vestvågøya. Their clients are mainly coastal fishers and private clients with recreation crafts. In other words, their business is totally connected to coastal fishery and friluftsliv (*recreation*) in Lofoten. Negative effects of petroleum activities in Lofoten will not only threaten these two stakeholder groups but also such small shipyards.

It is therefore difficult to show a single position of the manufacturing and engineering industry in Lofoten in the oil debate. All these companies are mainly individualists and do not have the power to be a definitive stakeholder. They need co-operations like the Hålogaland Olje & Energi AS to get a voice. In such co-operations, individualists turn into egalitarians, so everyone can get their share of the market. Businesses that depend on coastal fishery and tourism, need their stakeholders or social movements like the Folkeaksjon oljefritt Lofoten, Vesterålen and Senja to get some power and a voice. Due to the variety of businesses, a single view on nature is cannot be found, but I would describe it as seeing nature as somewhere between benign and tolerant.

6.7 Oil and gas cluster

Lo-Ve Petro, Strandgata 1 8400 Sortland, +47 76 20 00 70, www.lovepetro.no

The oil and gas cluster is one of the most powerful stakeholder groups in Lofoten. Beside a huge number of international petroleum companies who are interested in the area of Lofoten, the companies Statoil, North Energy, Norske Shell and Eni Norge are the most prominent ones in the oil debate. In addition to their presence in Norwegian mass media or in local public meetings, the four petroleum companies are also working together with LoVe Petro. LoVe Petro is a company based in Sortland (*Vesterålen*), which can be seen as a community of economic interests and as the speaker for the local oil and gas cluster in Lofoten and Vesterålen. Instead of presenting a selection of companies, I will now focus on LoVe Petro.

LoVe Petro is an organization, which speaks for all the companies in Lofoten and Vesterålen with an economic interest in petroleum activity in the area. LoVe Petro is led by the former mayor of the municipality of Hadsel (*Vesterålen*) Ørjan Robertsen and has around 200 members today (LoVe Petro, 2009). Together with the four petroleum companies mentioned, LoVe Petro is also working together with the county municipality of Nordland and the Lofoten and Vesterålen regional councils.

Although the structure and origin of LoVe Petro is totally different compared to Folkeaksjonen Lofoten, Vesterålen og Senja, it can be seen as the counterpart to the social movement. LoVe Petro's aim is to deliver correct and expert information about petroleum activity for the inhabitants, enterprises and public authorities in Lofoten and Vesterålen. They are working for the establishment of a petroleum industry with a maximum benefit for the local community and for the best possible condition for the integration of local enterprises in the oil cluster. To reach this goal, they invite e.g. authorities of the big petroleum companies to visit local enterprises or meetings. Their efforts in Public Relations should not be underestimated, either. Advertisements can be found in the local newspapers and every year LoVe Petro publishes a magazine, which is distributed to all households in Lofoten and Vesterålen and to all readers of *Aftenposten*, one of Norway's biggest newspapers, as a supplement. The last issue in 2010 had 20 pages and focused on the positive side effects of petroleum activities for the local community and enterprises. These effects are primarily new tax revenues¹⁴, around 2000 new jobs and therefore a possible population growth (Pedersen, 2010). Beside the information the magazine, which is called "Nye muligheter" (*New possibilities*) provides, it serves of course as promotion of petroleum activity in Lofoten and Vesterålen. The magazine is obviously financed by the oil and gas cluster, because the last issue includes 15 advertisements on 8 of 20 pages for Statoil, Goliat (Statoil and Eni Norge), Petro-Canada, North Energy, NorLense, IKM Subsea AS, Norsk Industri, Talisman Energy, Industr Energi, Linjebygg Offshore (LBO), RWE, NHO Nordland, Halliburton, ConocoPhillips and Norsk Shell (LoVe Petro, 2010).

Although the petroleum companies are organized in LoVe Petro, they have to be seen as individualists, who see nature as benign. LoVe Petro is a very powerful local stakeholder in Lofoten and the mouthpiece of the oil and gas cluster, which includes local, national and international petroleum or petroleum-related companies with an interest in the region. Without doubt one important source of this power is the financial power of the oil and gas cluster.

¹⁴ according to the plans of Statoil, Lofoten an Vesterålen can assume yearly tax revenues up to 170 million NOK; Pedersen, H. (14. October 2010). Svært gledelig. *Sortlands Avis* , p. 11.

For the sake of completeness, I have to mention the OLF-Oljeindustriens Landsforening (*The Norwegian Oil Industry Association*) and LO-Landsorganisasjonen i Norge (*Norwegian Confederation of Trade*), two organizations that are also part of the debate and driving forces on the national level of an establishment of the petroleum industry in Lofoten.

6.8 NGOs and social movements

Environmental NGOs have been playing important role in debates on petroleum activities for several decades now. One of the well-known cases is the planned dumping of the Brent Spar oil storage facility by Shell in 1994/1995. Due to the occupation of the Brent Spar by Greenpeace activists, the following immense media attention and the boycotting of Shell fuel stations, Shell reversed its decision to dump the platform, and finally dumping of oil facilities was banned through the OSPAR decision 95/1 and later 98/3 (Greenpeace International, 2007).

In the debate on possible petroleum activities, international NGOs like Greenpeace and WWF also take part. But beside these international NGOs, Norwegian NGOs and a local social movement are also involved in the debate. In the following, three of the Norwegian organizations will be studied in more detail.

Miljøstiftelsen Bellona

Bellona Oslo, Boks 2141 Grünerløkka, 0505 Oslo, info@bellona.no, <http://www.bellona.org>

Bellona is an independent foundation based in Oslo. Bellona was founded in 1986 and has been led since then by co-founder Fredric Hauge. The foundation is working for a better ecological understanding, prevention of environmental pollution and reduction of causes for the manmade climate change. Bellona represents the Norwegian environmental movement in the EEB (*European Environmental Bureau*), SEU (*Russian Socio-Ecological Union*) and the UNEP (*United Nation Environment Programme*). Therefore, Bellona has

offices in Brussels, St. Petersburg, Murmansk and Washington DC as well (Steenbuch Mathismoen, 2010).

According to the presence in Norwegian mass media, Bellona is one of the most active stakeholders in the debate on environmental concerns. Over and over again Bellona points on the big risk of an oil spill off the coast of Lofoten and its wide-ranging consequences. Not a week goes by without an article in one of the big Norwegian newspapers like *Aftenposten*, an interview in TV or new articles on their website. Bellona also uses social media platforms like Facebook (*1748 members*) or Twitter (*2173 followers*) on a large scale (Facebook, 2010a; Twitter, 2010a). During interviews people who had had the chance to listen to speeches of Frederic Hauge, told me that they were impressed by his conclusive arguments during meetings concerning the debate in Lofoten (Anonymous(1), 2010). Bellona with its leader Frederic Hauge, is a powerful institution and accepted by other stakeholders. This is also due to the fact that Bellona cooperates with the Norwegian industry more than other NGOs like Greenpeace or WWF. Started as an egalitarian organization, their view on nature is ephemeral but Bellona has hierarchical tendencies and their view on is shifting to a view of nature as tolerant, especially due to the increasing cooperation with the Norwegian industry.

Natur og Ungdom

Natur og Ungdom, Postboks 4783 Sofienberg, 0506 Oslo, info@nu.no, <http://www.nu.no>

Natur og Ungdom (*Nature and Youth*) an environmental organization for young people up to the age of 25 in Norway, has more than 7000 members and 80 local associations. Frederic Hauge, the leader of Bellona, was also a member of Natur og Ungdom (Natur og Ungdom, 2010). Led by Ola Skaalvik Elvevold, Natur og Ungdom is the only environmental youth organization in Norway today and focuses on national and local cases. Natur og Ungdom is present in the traditional Norwegian mass media but more popular on social media platforms, especially Facebook, which is enormously popular with Norwegian young people. On Facebook, they have more than 3700 members and around 2200

followers on Twitter (Facebook, 2010b; Twitter, 2010b). With regard to petroleum activities, Natur og Ungdom is against exploration in the North, meaning the Lofoten-Barents Sea area and for an establishment of sustainable industries. Especially in the area in Lofoten, they organize events for young people, like “Rock mot olje” (*Rock against oil*) to sensitize the young to their concerns (Loe, 2009). To get more power in the debate, Natur og Ungdom worked together with Bellona during the hearing phase of the management plan. According to cultural theory, I would describe their organization as egalitarian and their view of nature mainly ephemeral with tendencies towards nature being tolerant to some extent.

Folkeaksjonen – oljefritt Lofoten, Vesterålen og Senja

Folkeaksjonen – oljefritt Lofoten, Vesterålen og Senja, Risaksla 25, 8372 Gravdal, post@folkeaksjonen.no, <http://www.folkeaksjonen.no>

The social movement Folkeaksjonen – oljefritt Lofoten, Vesterålen og Senja is a Lofoten-based organization with the goal of a petroleum free marine area in Lofoten, Vesterålen and the island of Senja. It was founded in 2009 and is based on former local movements in that area. The main office is located in Kabelvåg and there are several local associations, also outside the area of investigation. According to Bjørn Kjensli (2010), who was my interview partner and the interim leader at that time, Folkeaksjonen is an organization, which wants to exert influence (*påvirkningsagent*) on the decision on petroleum activities in Lofoten, Vesterålen and Senja. Folkeaksjon means social movement and, as the name suggests, it is a platform for individuals who have strong concerns about petroleum activities in Lofoten, Vesterålen and Senja, which gives individuals the power and legitimacy to spread their opinion through a bigger organization. Without Folkeaksjonen, all these “small unique stakeholders” would just be powerless demanding stakeholders. During my interviews in Lofoten, I met several people who experienced their powerlessness in public discussions. One of them worked as an oil worker on several platforms in the North Sea and wanted to present pictures about what zero emission of produced water means in reality. In two such discussions, it was impossible for him to reach his goal. With his membership of Folkeaksjonen he gets the

power and legitimacy he missed before (Anonymous(2), 2010). Another interviewee, who is a member of the social movement, is planning to build an eco-village near Gravdal in Lofoten. The idea of such a village, which will e.g. not use fossil fuels, contrasts sharply with possible petroleum activities in Lofoten (Anonymous(3), 2010).

The participation in the social movement in Lofoten is important for many individual people from many different areas. In total, Folkeaksjonen has around 3700 members in Norway and ca. 2000 of them live in Lofoten, Vesterålen and Senja. According to a 10%-rule in Norway, which means that one member of e movement or a political party is mostly connected with about 10 active sympathizers, it can be assumed that the social movement has around 40000 active sympathizers (Kjensli, 2010). While Folkeaksjonen is giving power and legitimacy to its members, the movement itself gains more power and legitimacy through close collaboration with environmental NGOs and Norwegian political parties who are against petroleum development in Lofoten, Vesterålen and Senja(Kjensli, 2010). Moreover the mass media is important and Gaute Wahl, the leader, has been interviewed in local and national newspapers many times. While Folkeaksjonen has only 600 followers on Twitter, it is extremely popular on Facebook with more than 6000 members (Facebook, 2010c; Twitter, 2010c).

Other than the environmental organizations the social movement in Lofoten does not only focus on nature but also on the coastal culture and related issues like tourism and fishery. Due to the many different people who are organized in the movement, Folkeaksjonen takes advantage of deep knowledge, which makes them an important stakeholder in the debate and to a voice for all those participants who are against petroleum development in Lofoten. According to the findings from the interview and the mass media, I assume that Folkeaksjonen can be described as almost egalitarian and that they see nature and culture as ephemeral.

6.9 Administration

6.9.1 Municipalities

The 6 municipalities in Lofoten are organized in the so-called “Lofotrådet” which can be seen as an intermunicipal regional council. In connection with possible petroleum activities off Lofoten, the Lofotråd mainly works for more self-determination. That means that the municipalities in Lofoten want to be involved in decisions e.g. concerning the allocation of funds from petroleum activity.

Moreover, the Lofotråd claims an analysis of consequences according to the Norwegian Petroleum Act § 3-1, which especially includes positive and negative side effects for the local community and local economies and nature. Geir Wulff-Nielsen, the mayor of the Municipality of Moskenes, whom I interviewed in July 2010, attaches great importance to the fact that the Lofotråd does not see an analysis of consequences as an opening process for petroleum activity, but as a way of improving knowledge. This note is necessary, because such an analysis was almost always identical to an opening process (Kjensli, 2010). Terry Torsteinsen, the vice-mayor of the municipality of Røst, also sees such a risk and presented a new recommendation during the hearing phase of the management plan. He argued that enhancing knowledge should be separated from an analysis of consequences (Torsteinsen, 2010). This shows that there exist different opinions in the municipalities in Lofoten. But until now, the Lofotråd said, a decision for or against petroleum activities has not been taken. (Lofotrådet, 2010).

Vågan kommune, Storgata 29, 8305 Svolvær, +47 75 42 00 00, postmottak@vagan.kommune.no,
www.vagan.kommune.no

Vestvågøy kommune, Storgata 37, 8376 Leknes, +47 76 05 60 00, postmottak@vestvagoy.kommune.no,
www.vestvagoy.kommune.no

Flakstad kommune, Rådhuset, 8380 Ramberg, +47 76 05 22 01, postmottak@moskenes.kommune.no,
www.flakstad.kommune.no

Moskenes kommune, Rådhuset, 8390 Reine, +47 76 05 31 00, postmottak@moskenes.kommune.no,
www.moskenes.kommune.no

Værøy kommune, Rådhuset, 8063 Værøy, +47 75 42 06 00, postmottak@varoy.kommune.no,
www.varoy.kommune.no

Røst kommune, Rådhuset, 8064 Røst, +47 76 05 05 00, postkasse@rost.kommune.no,
www.rost.kommune.no

6.9.2 Nordland county municipality

Nordland, +47 75 65 000, post@nfk.no, www.nfk.no

The Nordland county municipality is a kind of policy adviser for the municipalities in Lofoten. On the one hand, the county municipality creates guidelines to implement governmental directives through the municipalities, and on the other hand, the county municipality functions as a spokesman for the municipalities on the governmental level. The Nordland county municipality therefore has a relatively objective view on the petroleum debate. Of course there are advantages for regional development in petroleum activities but also downsides. The county municipality is responsible for the regional development plan in Lofoten and is therefore focusing on aspects like infrastructure, education, economy, community and environment. According to Jørn Sørvig (2010), the leader of the economy and development department in Nordland, positive and negative effects on all these aspects have to be analyzed carefully before a possible opening of the area for petroleum activity.

6.9.3 Government and parliament

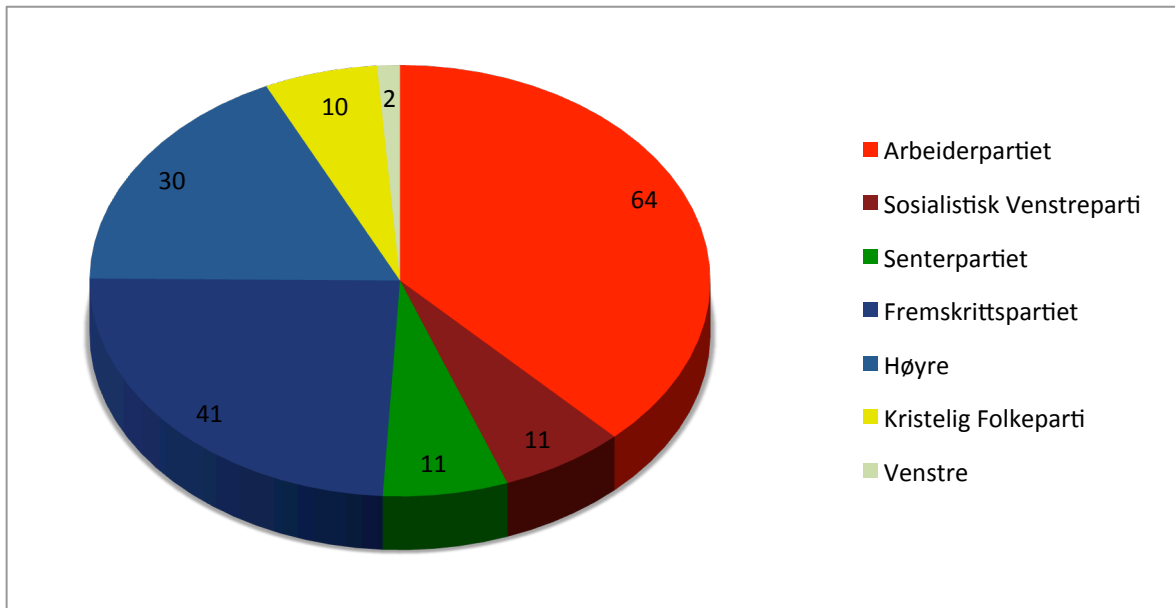


Figure 26 Distribution of seats in the Norwegian Parliament in the period 2009-2013(Stortinget, 2010)

In the beginning of 2011, the Norwegian Parliament (*see figure 32*) will decide on the new *Management Plan of the Marine Environment of the Barents Sea and the Sea Areas off the Lofoten Islands*, which will be presented by the government, consisting of the parties Arbeiderpartiet (Ap), Sosialistisk Venstrepartiet (SV) and Senterpartiet (Sp). The first management plan from 2006 has protected the areas Nordland VI and VII among others until now, which means that any petroleum activity is forbidden. During the election campaign in 2009, the two smaller parties SV and Sp clearly state their position against petroleum development in this area, while AP of Prime Minister Jens Stoltenberg did not have a clear position. The Kristelig Folkeparti (*Christian Democratic Party*) and Venstre (*Social Liberal Party*) also expressed their disapproval of petroleum activities off Lofoten. Only the Fremskrittsparti (*Progress Party*) and Høyre (*Liberal Conservative Party*) are in favor of it. The decision of parliament on the new Management Plan is therefore mainly dependent on Ap.

Within the government, it is the Ministries of the Environment, Petroleum and Energy, Fisheries and Coastal Affairs, Trade and Industry and of Culture that mainly deal with the

petroleum debate in Lofoten. They are supported by the corresponding government agencies, Norwegian Directorate for Nature Management, Norwegian Petroleum Directorate, Norwegian Directorate of Fisheries, Norwegian Directorate of the Coast, Norwegian Maritime Directorate and the Norwegian Directorate for Cultural Heritage.

Norwegian Labor Party

Det Norske Arbeiderpartiet, Ap (Norwegian Labor Party), www.arbeiderpartiet.no

The Norwegian Labor Party was founded in 1887 on 21st of August and is therefore one of the oldest parties in Norway. Ap can be seen as a social democratic party today. In the last election, Ap got 35,4% of the votes and 64 seats in parliament. The party is therefore the largest political group of the legislation period 2009-2013. Important positions of the Ap concerning the oil debate in Lofoten are the Prime Minister (*Jens Stoltenberg*), the Ministry of Culture (*Anniken Huitfeldt*), the Ministry of Fishery and Coastal Affairs (*Lisbeth Berg-Hansen*) and the Ministry of Trade and Industry (*Trond Giske*).

Within the party, there are great differences of opinion concerning an opening of the area for petroleum activity and an analysis of the consequences. Toms Ap proposes a compromise, which states that Lofoten (*Nordland VI*) should be kept closed while Nordland VII and Troms II should be opened for an analysis (Aftenbladet, 2010). Oslo Ap goes one step further and wants to protect the whole marine area of Lofoten and Vesterålen. The youth organization of Ap, AUF (*Arbeidernes ungdomsfylking (Workers' Youth League)*), is against petroleum activities off Lofoten as well (Dagens Næringsliv, 2010). It remains to be seen how Ap will enter into the negotiations with its two coalition partners, who are against petroleum activities in the area of investigation.

Socialist Left Party

Sosialistisk Venstreparti, SV (Socialist Left Party), www.sv.no

The Socialist Left Party is a left-wing party and was established on the 16th March 1975. SV got 6.2% of the votes and 11 seats in the last parliamentary election and is the fourth largest party. The party's affiliations are ecosocialism and euroscepticism (Parties and Elections in Europe, 2009). As part of the government, SV owned the Ministry of Environment and is therefore strongly involved in the debate on petroleum activities in Lofoten. The Ministry of Environment is the main partner on the governmental level for all stakeholders involved in the oil debate in Lofoten.

During the campaign for the parliamentary elections in 2009, SV made it clear that the party is against an opening of the sea off Lofoten for petroleum development. This viewpoint was again confirmed on a meeting of SV county leaders of North Norway from 18. – 19. September 2010 in Bodø (Anonymous(4), 2010). Members of SV are also often present on events against oil in Lofoten. The question is, which power SV has to uphold their interests in the red-green coalition. According to newspaper reports, the tread of abandoning the government could be an option (Jacobsen, 2010).

Center Party

Senterpartiet, Sp (Center Party), www.senterpartiet.no

The Center Party is the third member of the present governmental coalition and the “green part” in the red-green government. In this context, green does not mean ecological. Based on the former Farmer's Party, which was founded in 1920, the Center Party today stands for social liberalism, agrarism and euroscepticism (Parties and Elections in Europe, 2009). The party also got 6.2% of the votes during the last election and has 11 seats in Parliament, too. The party leadership of the Center Party is against an analysis of consequences and an opening of the Lofoten Sea for petroleum activity, especially after the oil spill in the Gulf of Mexico (Navarsete, 2010). But there is disagreement in the party on this point and the pressure from the party's base is growing. The Center Youth, the youth organization of the Center Party, wants e.g. more knowledge of positive consequences of petroleum activity in Lofoten. This means that more

knowledge is needed to take a decision (Troms Senterungdom, 2010). Concerning the oil debate it is worth to mention that Sp owns the Ministry of Petroleum and Energy (Terje Riis-Johansen). In July 2010 it was reported that Terje Riis-Johansen is personally opposed to petroleum activity in Lofoten, a fact, which does not make the internal debate easier, nor the debate in the government and parliament (NRK Nyheter, 2010).

6.10 Stakeholder environment

In the last subchapters, I presented the definitive stakeholders in the petroleum debate in Lofoten, which I discovered during my research in Lofoten through interviews and the mass media. This list of stakeholders does not claim to be representative but tries to represent reality as much as possible. What can be said about the stakeholder environment in Lofoten? Nature and culture should be regarded as stakeholders. Nevertheless, they cannot speak for themselves and need human support. But other stakeholders in Lofoten like fishermen, small tourism businesses, farmers or small shipyards also have to be supported by corresponding umbrella organizations. Only the big petroleum companies like Statoil, Eni Norge, Norh energy or Norsk Shell are powerful enough to have a voice of their own. Their financial strength is also helpful for organizations like LoVe Petro. Due to the power of the petroleum cluster, an imbalance in the triad of ecology, society and economy in favor of the petro-economic sector can be expected. This should be considered in a sustainable integrated coastal zone management.

But the stakeholders and stakeholder groups mentioned in the last subchapters are not separated from each other in the stakeholder environment. They are all connected with each other, and for coastal managers in Lofoten it is absolutely necessary to know all these connections and dependencies. To make this system tangible, I created a sketch illustrating the connections and dependencies. For clarity, not all connections and dependencies are shown but the most important ones.

The whole stakeholder environment is based first on geology. The geology of Lofoten creates the basic condition for all human and non-human activities on land and in the ocean. Geology is not a stakeholder, because positive or negative effects of human action are not visible by human standards. The only stakeholder, which is directly connected to the geology of Lofoten is the petroleum industry. The next element is the climate, which influences activities in Lofoten. Although climate can be affected by human action on a global and regional scale, it cannot be part of the direct stakeholder environment in Lofoten, because those effects are difficult to identify. The next two parts are the marine and terrestrial environment, which are based on climate and geology in Lofoten. Principally, the whole system would be complete now, if one sees human beings just as part of the natural environment. But one has to separate human beings from the natural environment to some extent to understand the system.

Beginning with the terrestrial environment, it is mainly agriculture in Lofoten, which is based on its resources. Agriculture in Lofoten has thousands of years of history and therefore also contributes to the cultural heritage. Tourism and friluftsliv are also partly based on the terrestrial environment and moreover tourism is partly based on the agro-cultural heritage. While the terrestrial environment is only the basis for a few stakeholders, more stakeholders in Lofoten are connected direct or indirectly with the marine environment. Tourism, friluftsliv, fishery, fish farming, marine processing industry and parts of the petroleum industry are directly connected to the marine environment. Special local features and products like rorbuer, fishing villages and stockfish are related to fishery and also constitute an important part of the cultural heritage of Lofoten. Furthermore, the manufacturing industry, marine processing industry and fish farming are connected to fishery. The manufacturing industry is not only connected to fishery, but also to the marine processing industry, fish farming and petroleum industry. A small part of the manufacturing industry, like small shipyards, also contributes to the marine cultural heritage, which is an important basis for tourism, too.

Within this construction of stakeholder block, displacements can always occur. The sketch shall also demonstrate that the loss or destruction of one stakeholder block has

consequences for other stakeholder blocks. The deeper the destroyed or changed block is located in the construction, the more blocks are affected, positively and/or negatively.

Stakeholders like the Norwegian Government, the Nordland County Municipality, the Lofotråd, NGOs, the social movement and research institutes are shown as floating above the stakeholder construction so that they can influence it through different actions with the goal to stabilize it. The focus of stabilization is thereby different from stakeholder to stakeholder.

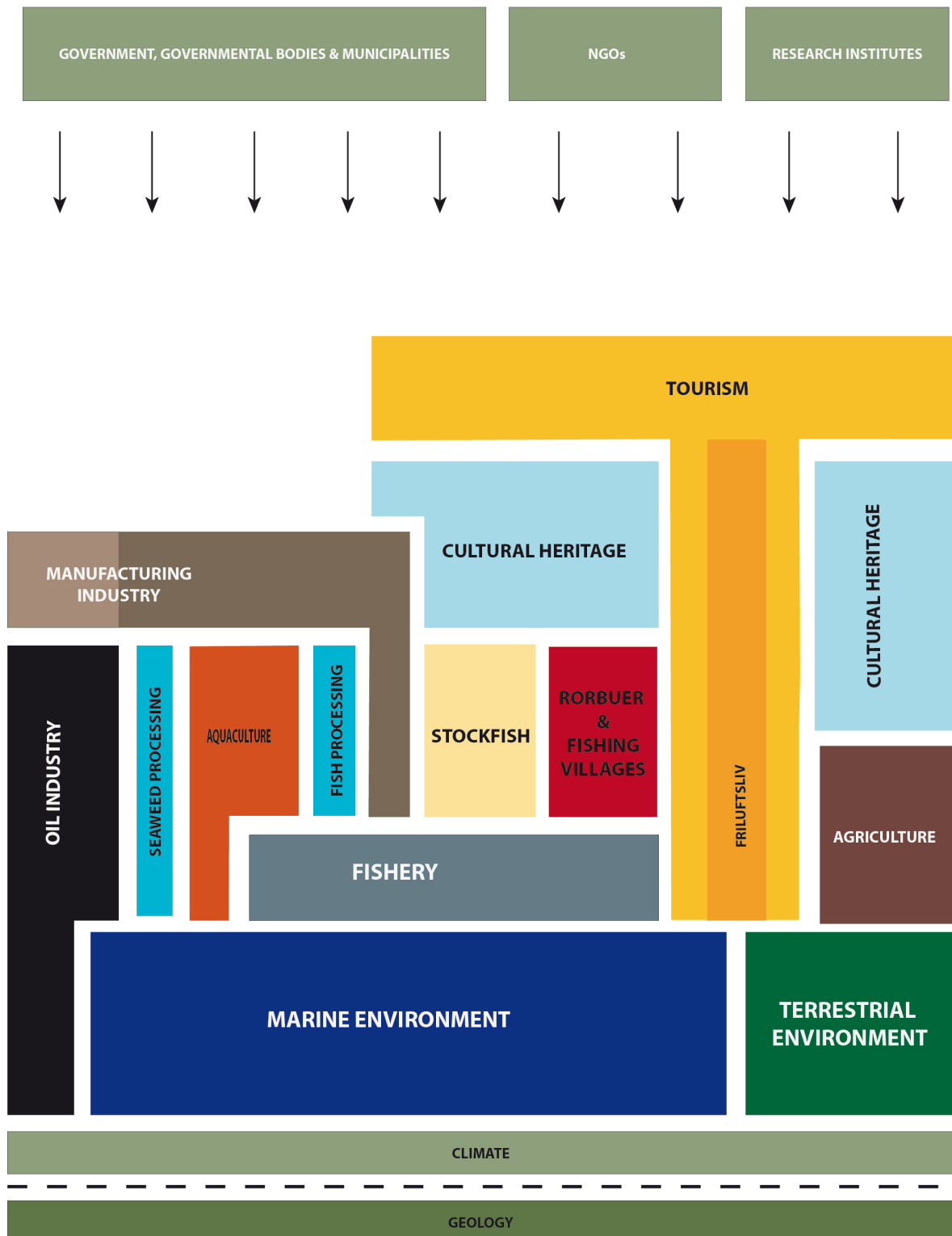


Figure 27 Stakeholder environment in Lofoten

7. Discussion

The aim of the thesis is to give an insight into the stakeholder environment of Lofoten as part of a future integrated coastal zone management. So far, the paper has given an overview over coastal zone management in Norway, has presented the natural and social world and has given an impression of the stakeholders in Lofoten concerning possible petroleum activity. In the following subchapters, I want to discuss some findings and obscurities from the previous chapters.

7.1 The analysis of stakeholders

Power

During the interviews and the writing on stakeholders, I got the feeling that power is the most important attribute in stakeholder theory. Nature, culture, fishermen, small manufacturing businesses or the common people – all of them have an opinion in the oil debate but are just dependent stakeholders without power. And without power it is nearly impossible to get heard. Those stakeholders are forced to create or enter groups to get more power and influence and especially in the case of nature and culture it is necessary that groups raise their voice for them. But is power comparable? At this point, future studies on the power of stakeholders are needed to answer this question, because power can take various forms. In the center of the power system, you can find the government/parliament, which has legitimate power, because it will decide on petroleum activity in the end. Beside the government, you can find e.g. stakeholders with financial or utilitarian power, like Statoil AS, who want to influence the government/parliament and people by offering new jobs and tax incomes. In my opinion Stakeholders like the Folkeaksjon oljefritt Lofoten, Vesterålen and Senja have more emotional power or social power, as Etzioni (1964, p. 59 in: Mitchell et al., 1997) calls it, because they want to influence through e.g. predicting a loss of nature and culture. Although Mitchell et al. (1997) mention different kinds of power, these are not implemented in the stakeholder

typology (*see also figure 3*). What stakeholder theory needs, is such an implementation of a theory on stakeholder power to analyze the power struggle in such debates as the one in Lofoten.

Cultural theory

If one uses cultural theory in ICZM, one always runs the risk of creating the stakeholder environment from stereotypes instead of reality. Often, the stakeholders themselves make it difficult to see reality. The case of the fishermen in Lofoten will exemplify my point. Almost all of them are against petroleum activities including seismic activity. The first assumption is that they have this opinion because they view nature as ephemeral and without the strength to repair the harm done to the fish stocks. But first of all, fish has a monetary value and not an ecological value for them. When profit rules, stakeholders, according to cultural theory, are often individualists and do not think that they have to take care of the conditions of nature because nature is forgiving and able to recover. But why then are the fishermen against petroleum activity? The answer lies in between. Nature in the fishermen's view is more or less tolerant and the degree of tolerance depends on the extent of the threat. But are they hierarchists? Yes, they are. Although the fishermen are almost egalitarians during the Lofotfisket, when every fisherman gets his share, this is only the case amongst the fishermen. Whales and seals are seen as competitors and are subordinated. Many fishermen demand higher quotas for whale and seal hunting to keep their stock as small as possible and save the fish stocks and their monetary value. As shown in this example, it is absolutely necessary to start an analysis with the help of cultural theory from different perspectives to reflect the reality and not our prejudices. But what are the benefits of cultural theory? It can still give outside observers a picture of the stakeholders' view on nature and their way of life. But the two systems of grid/group and myths of nature are too inflexible to reflect reality. One should not use cultural theory as a static system of nature and society, but as a dynamic one with interchangeable categories. Moreover stakeholders can change their role with time, which means that an analysis is just a snapshot of reality. This also applies to stakeholder theory.

7.2 Argumentation and contradiction

During my interviews in Lofoten, I observed some contradictions in the argumentation of my interviewees or other stakeholders. By contradictions I mean, that argumentation and the actual action do not fit. In order to understand the real position of the stakeholders it is important for coastal zone managers to be able to realize such contradictions. To illustrate this problem, I want to give two examples.

Government

The Norwegian Government is still divided on the topic of petroleum activity in Lofoten. Ap has no real position, SV and Sp are more or less against petroleum activity off Lofoten and even the Minister of Petroleum and Energy wants the area to be kept closed. Their arguments are most of all the high value of nature and coastal culture and that today's protection against oil pollution is not sufficient to work well enough in Lofoten in the case of an accident. Again, we have a high value of Lofoten and insufficient oil protection. These are good reasons against an opening of the area for petroleum activities, but are these really the reasons?

The oil debate in Lofoten is not only discussed in Norwegian mass media. German newspapers like Die Zeit or broadcasting companies like Deutsche Welle also report about it. Lofoten is not only an archipelago in North Norway, it is also a brand, known in many parts of the world. Therefore, the decision on Lofoten in 2011 by government and parliament will not only be judged by the Norwegian people and mass media, but also by foreign people and international mass media. If the government goes for petroleum-free Lofoten, it also sends an image of an environment-friendly Norway out in to the world. During the interview with Geir Wulff-Nielsen (2010), the mayor of Moskenes, we talked about this possible motivation of the government. The actual spreading of oil fields southwest of Lofoten backs this hypothesis. The Norne oil field in Nordland II is only 220 km southwest of Røst and three new blocks in Nordland III, which are only 70 km southwest of Røst, are advertised for bids during the 21st allocation round in 2011.

According to the IMR (Dahl, 2010), these blocks are located in an area of strong currents and spilled oil will reach Lofoten very fast. An increasing coastal oil transport off Lofoten also can threaten the area. One could proceed from the assumption that protecting nature and culture in Lofoten from petroleum activities is not the first motivation, but the green image of the government and Norway. First of all, what the government says seems to be just greenwashing, because if one really wants to protect Lofoten, one also has to keep the border areas of Nordland II and III closed, as well as whole Nordland VI and VII .

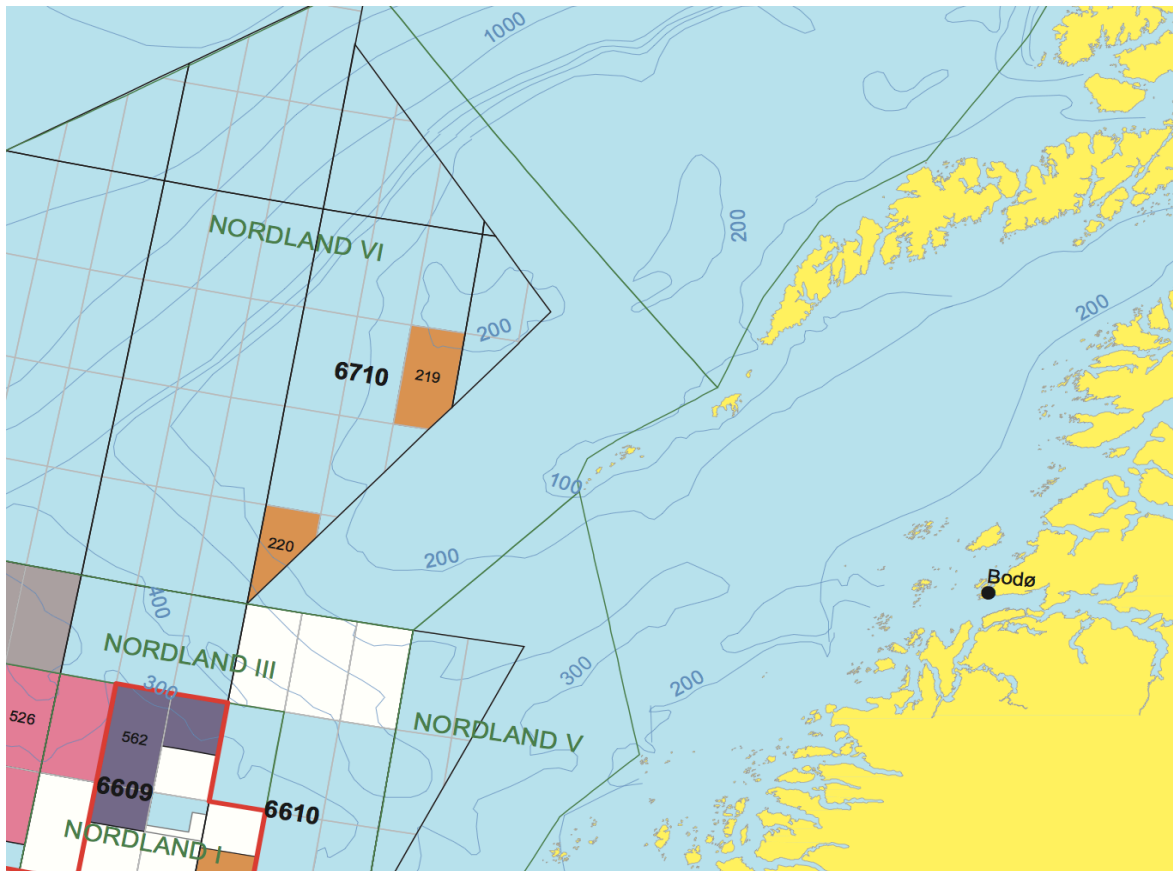


Figure 28 Oil fields off Lofoten (NPD 2010)

Tourists

Although tourists cannot be seen as definitive stakeholders in Lofoten, coastal zone managers have to have an idea of their opinions. Tourists often cannot understand the motivation of parts of the politicians and the oil and gas cluster, why they want to drill for oil and gas in such a beautiful and unique place, Lofoten. This was often the feedback I

got from tourists who came e.g. from Germany, France or Italy. On the other hand lots of them came by car or camper, stayed along the road and had bought most of their food in their home country. Those tourists drive 6000 – 10 000 kilometers to get to Lofoten and back, and the only money they spend in Lofoten is for fuel. Is this not a contradiction? Yes, of course! If one wants to keep such a place like Lofoten petroleum-free, one has to start with oneself. This includes more eco-friendly travelling and spending money at the destination to strengthen it and make it more independent from petrodollars.

7.3 The future of ICZM

The debate in Lofoten shows that the theory behind coastal zone management in Norway is insufficient. What we have in Lofoten today, is a combination of two divided systems, the management plan and a coastal planning within the Planning and Building Act. While the management plan includes the marine area and excludes the coasts and fjords, the Planning and Building Act includes the area to the baseline, which is also the maritime border of the coastal zone, according to the present definition in Norway.

With the findings from the two previous chapters, it becomes obvious that petroleum activities off the coast of Lofoten could have positive and negative consequences for the coastal zone. The problem is that offshore petroleum production and the connecting transport by ship are outside the coastal zone and therefore outside coastal zone management. But how can one handle consequences and conflicts for and between stakeholders, if the party that causes the conflicts, is not part of the management?

In Lofoten, where the continental shelf is so narrow that offshore facilities for petroleum production would be situated close to the coastline, a new definition of the coastal zone is needed, which considers the interconnection of offshore and onshore interests to a greater extent than today. While the Management Plan for the Barents Sea and Lofoten from 2006 is still a marine management plan, the basic report for the renewed management plan includes some coastal zone issues like coastal fishery and tourism in a small extend. This can be seen as a small step towards an integrated coastal zone

management plan in Lofoten. The need for such a plan is absolutely clear against the background of the interwoven stakeholder environment in Lofoten.

7.4 Media

Mass media, as shown in chapter 6, are important for many stakeholders, especially for environmental organizations and social movements. For such stakeholders with social power and less utilitarian power, the mass media is a booster of their power. Mobilizing the people and informing them are important topics on the agenda of stakeholders with social power. The classic way is to provide this information through newspapers and broadcasting. National and local newspapers write about the debate several times per week and NRK also reports in irregular intervals. As long as the newspapers and broadcasting are neutral towards the oil debate, they should not be seen as stakeholders on their own. On the other hand, newspapers like *Fiskeribladet Fiskaren*, which is a mouthpiece of the fishery sector, are not neutral and have to be seen as stakeholders or part of them.

Beside the classic media, the internet with its social media platforms like Facebook and Twitter become more and more interesting for all stakeholders and especially for those with social power. The biggest advantage of Facebook and Twitter is the possibility of interaction between the stakeholders and their supporters and opponents. While newspapers and broadcasting are more or less a one-way information system, the social media platforms of the web 2.0 are interactive. In August 2010, 2.3 million Norwegians had a Facebook account, which are approximately 50% of population (Synlighet.no, 2010). Through functions like “status update” on Facebook or “tweets” on Twitter, information is spread with a snowball effect and reaches hundreds and thousands of people. Coastal zone managers should not ignore the power of such platforms.

Stakeholders with utilitarian power like petroleum stakeholders also use all kinds of mass media to present their attitudes through interviews. But because of their comfortable

financially resources, advertisements in print media and television are often used to present their image to the people. This is a big difference to financial weak stakeholders.

The interviews with the people in Lofoten reinforced my belief that the mass media is their main source of information. The internet is the number one source of knowledge. Beside Facebook and Twitter, the websites of the different stakeholders are consulted. Among the newspapers, local ones like Lofotposten and Våganvisa are very popular followed by national ones like Aftenposten and VG (Anonymous(5), 2010). Most of the people I talked to, feel well informed.

Today the mass media is the most important actor in spreading news and information. Especially with the development of social media platforms, the internet has become very important and is probably the main place of interaction in the petroleum debate in Lofoten. Through the mass media, such debates are transformed from local to national debates and to international ones, too.

7.5 Interviews

The interviews I carried out in June and July 2010 in Lofoten are the main source of primary data for this thesis. Due to the characteristics of a qualitative study, the interviews were relatively open and not pressed into a catalogue of questions. It was striking that the location and recording of the interview had an effect on the quality and quantity of information. Interviews, which were carried out at the office of the interviewee were rich in information but had a lack of quality sometimes and often a lack of emotion. The use of the voice recorder intensified this effect. The interviews were rather presentations of the interviewees than an interactive talk with the interviewer. I observed the best interaction between the interviewee and me, when the interviewee felt comfortable, the talk took place spontaneously and no voice recorder was used. Comfortable places were cafés, bars, in the streets or at home. Such took a long time, often several hours, but the qualitative data were rich and the information was by far more detailed than the information you get from “official” interviews and the mass

media. Especially in a qualitative study the type and manner of an interview is of great importance, first for the number and quality of data and in the end for the analysis itself.

8. Conclusion

The main aim of this master thesis was to analyze stakeholders in Lofoten within possible petroleum activities, and give an overview of the stakeholder environment and the natural, cultural and economic circumstances in Lofoten. The first question an author has to ask itself at the end is, if all questioned have been answered. Chapter 5 makes it clear that Lofoten is an archipelago with huge values of maritime and terrestrial nature, coastal culture and economy. With the focus on possible petroleum activities, several groups of stakeholders could be located. The problem was to concentrate on the main groups to keep the stakeholder environment manageable without forgetting smaller but maybe important stakeholders. At the end the final stakeholder environment I presented, is subjective. A group of several authors with different background in environmental, social and economic science could be helpful to make the final result more transparent.

I have identified nine main stakeholder groups with several sub-groups in this study. These stakeholder groups can more or less be seen as definitive stakeholders. Expectant or even latent stakeholders were not directly mentioned, because they are often organized in the larger groups I have mentioned, to get a voice in the process. During the analysis I discovered the motivation and attitude of the stakeholders, too. When people debate on offshore petroleum activities, the first assumption is that there will be serious conflicts between the petroleum cluster (*socio-economy*) and the environment (*nature*). But the stakeholder groups who are skeptical about or even against an opening of Lofoten for petroleum activities are not only arguing for the environment, but also for the coastal culture and the local economy. The risk of a loss of knowledge gathered over thousands of years and a weakening of the coastal culture is obvious. Nearly all the economies in Lofoten are connected to the natural and cultural heritage and could be harmed by industrialization and possible accidents. It is important to save this knowledge and culture also for the time after possible petroleum activities in Lofoten.

While stakeholder theory was very helpful to build the stakeholder environment of definitive stakeholders, cultural theory cannot be used to separate prominent

stakeholders from insignificant ones. But cultural theory helps to analyze their motivation and attitude. Together, stakeholder theory and cultural theory provide a useful theoretical background for a stakeholder analysis in coastal zone management. The result is a better picture how the stakeholder environment does look like.

8.1 Suggestions for further studies

The master thesis looks at the issue of stakeholder analysis in the coastal zone of Lofoten against the background of possible offshore petroleum activities. This can be helpful to other students in the field of environmental planning or resource management, which are parts of ICZM. The complex situation in Lofoten and its analysis can help to see other similar coastal regions around the world in a different light. The work can also serve as stimulation for related studies in Norway like the iKyst project or studies of government agencies.

The thesis addresses the whole stakeholder environment in Lofoten. Further studies of mine can concentrate on one of these stakeholders to analyze him thoroughly. Other possible studies can look at conflicts between two stakeholders and discuss several solutions. An implementation of quantitative studies can also be useful in addition to qualitative studies to illustrate findings by numbers.

But one thing is certain: A final decision on petroleum activities in Lofoten needs more studies on this complex region.

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Appendix

Interview with Bjørn Kjensli, Folkeaksjonen oljefritt Lofoten, Vesterålen og Senja

Hvilken rolle har Folkeaksjonen – oljefritt Lofoten, Vesterålen og Senja i olje debatten?

Vi er jo en påvirkningsagent. Vi har ingen annen rolle enn som påvirkningsagent.

Og denne påvirkningen den skjer jo flere veier. Vi beviste folk rund olje slik at de kan tar stilling enten for eller mot olje. Selvfølgelig kan de tar stilling mot olje, men det kan jo også hende, at vi framproduserer holdninger eller synspunkter som gjør, at de blir ja-tilhengere pga vi argumenterer på eller vi nærmer oss problemer.

Hvis demokratiet fungerer gjennom folkespåvirkning, så er vi en påvirkningsagent.

Vi samarbeider med en rekke andre interesseorganisasjoner som alle driver påvirkning og gjennom at vi samarbeider, så blir vi sterkere. Og hvis vi hadde vært en enkel folkeaksjon fra Lofoten/Vesterålen/Senja - selv om vi jobber mye regionalt- så er vår stemme en nasjonal stemme gjennom miljøorganisasjonene, som bruker oss og peker på folkeaksjonen for at de trenger alibier.

Nasjonale miljøorganisasjoner kjemper mot olje i Nord (Lofoten/Vesterålen) - så blir alibien deres folkeaksjonen. Så har vi en bra dialog med de. Og hvis da miljøorganisasjonene har påvirkningsmakt på jorden og på politikere, så har vi makt.

Vi har ingen sånn demokratisk makt bortsett fra, at hvis flere vi er og flere legge merke til oss, desto mer innflytelse har vi.

De vi vet er, at mange av de politiske partiene, i hvert fall alle partiene som er imot oljeboring, de har vi en jevnlig dialog med – de kommer litt på besøk og blir oppdatert og slike ting. Med de har vi en løpende dialog.

Slik sett har vi makt gjennom vi holder regjeringen og stortinget orientert om aksjonene.

Medlemmer fra regjeringen og stortinget som er mot olje sier, at det er nyttig, at det finnes en folkeaksjon mot olje her. Det er jo vanskelig for dem å argumentere mot olje hvis ingen her hadde stodd opp.

Slik sett, så har vi makt.

Men vi har ikke så mange medlemmer, det er ca. 3700 i hele Norge. Litt over 50% av de bor på Lofoten/Vesterålen. Det er ikke så mange. På den andre siden, så har vi en organisert medlemskap, så er de ikke så mange uansett. Heller de politiske partiene selv har så mange medlemmer i de samme områdene. Folkeaksjonen er mye større enn de medlemstallene av de fleste partiene her på Lofoten/Vesterålen her.

Men det gjelder en 10% regel, når det gjelder medlemsavgift her i Norge. Hvis en organisasjon har 10.000 medlemmer, så har den cirka 100.000 sympatiserere. Det er det som gjelder i Norge. Det mener, at det finnes cirka 40.000 som sympatiserer aktiv med oss. Det varierer litt i det, om det er behagelig å være medlem i sånn en organisasjon.

Det er for lite for en folkelige bevegelse. Dette er i utgangspunktet en regional sak.

Folkeaksjonen har jo ønsket, at det skal være en regional sak. Vi tar ikke stilling til forholdene i Nordsjøen og Barentshavet, selv om vi har synspunkter angående disse emner. Vår mandat er å verne kystområde Lofoten/Vesterålen/Senja mot oljeboringen. Vi mener, at interessenkonflikten her er veldig stor. Økologien

er såpass sensitivt her, naturenverdien eksepsjonell, og det finnes et særlig biologisk mangfoldet. Så er det området her som man egentlig bør verne.

Hvis man synes, at man ikke må verne verdifulle steder, så kan man jo også sette boringen i gang hvor som helst. Et retorisk forslag kan dermed være, om man ikke kunne begynne å lete etter olje under Frogner-Parken i Oslo, ikke sant? Det er jo også et kjempefint område. Det bruker jeg også som eksempel, om man sier, at det dreier seg om økonomiske verdier. Man setter midt i Frogner-Parken også ingen store bokomplekser, selv om man kan tjene penger med det. Det finnes ting i samfunnet som er av andre enn økonomiske verdier.

Da kommer det også an på, om det er et sted av verdi. Da må man veie opp. Hva vi liker å gjøre oppmerksom på, er de verdiene som er mye større enn de økonomiske verdiene. Spesielt da de økonomiske verdiene har en så kort perspektiv.

Plutselig er det hele historien over og hele området kan bli ødelagt. Som for eksempel en del av de store industrianlagene som er bygd opp etter den andre verdenskrigen som jernverket i Mo i Rana eller de smelteverkene i Ådal, Sundal eller på Vestlandet – hvor man har en sterk industrialisering på et bygdt område. Så går det 30-40 årene og så er det slutt og miljøet og naturen er irreversibel ødelagt. Da ligger det bare som en industriørken. Og det er det vi er rett for her i Lofoten. At 30-40 år med olje- og gasvirksomheter her i Lofoten kan ødelegge alt irreversibel for ettertiden. Og kretsen kan bli utvidet ikke bare på naturen og den enestående biologi, men også til fisk. Mange sysselsettinger og bosetninger er knyttet til fiskeri. Og vi kan ikke være sikkert på, at vi har nok å fiske til etter boringen er sett i gang.

Hvis fiskerien er konkurrert ut og industrien kommer, så er det ikke klar, at vi har så mye å fiske etterpå og da er det nesten ingen argument mer å bo i Lofoten. Den andre grunnen, hvorfor folk kommer til å bosette seg her er jo at naturen er litt eksotisk. At de store naturverdiene ligger rett foran døra her. Det er det hva som gi arealet et sånt stort forskjell til andre landsdelene, hvor fiskerne er ute for måneder og ikke kunne komme tilbake hver uke, da de er for langt ute. Om det finnes noen dårlig vær på havet, så kommer man tilbake og driver med sosial samfunn, for eksempel familie og fotball og kjør ute igjen etter været har skiftet. Det er en del fleksibiliteten og friheten som ligger i dette område, spesielt for fisker. Det har jo kvalitet, selv om man ikke gjør så mye kapital som i andre yrker.

Men du spurte også om makt. Gjennom vi har organisert oss, så har vi også skaffet fram økonomiske ressurser fra medlemmer og fra andre støtter som fra de offentlige, som gjør, at vi hele tida kan være en offentlig stemme. Og kan organisere ulike seminarer, møter og kan diskutere dette her. Vi har også mer makt i forhold til pressen. Det er jo mye lettere for en organisasjon med over 3000 medlemmer til å bli tolket som en stemme enn for en enkel privatperson, som argumenterer mot olje. Vi har makt selv om vi har ikke noen formell makt.

Folk kommer til å delta - basert på en følelsesmessig engagement knyttet til noen man setter pris på eller hvor man er rett for. Det finnes helt ulike motiver til å delta. Men de som kommer sammen i folkeaksjonen, får en visst rasjonalitet bak følelser. De kan lære noen, slik at de kan være med i den offentlige debatten. Fisker for eksempel, som frykter å tape yrket. Vi prøver oss å ta utgangspunktet i fiskerikonflikten. Diskusjonen dreier seg ikke bare om områdene utenfor landet i havet, men også om hele samfunnet som rammes om de settes i gang med oljeboringen. Det er kjent fra Sørnorge, at fiskerne taper i denne konflikten. Og med fiskerne også de lokale bedriftene som jobber med fiskbearbeiding. Økologisk sett angår oljeboringen en av de største områdene for noen av fiske og sildestammer som gyter i området; de kommer ikke bare til å lyde under en uhell, men også under vanlige oljeleting eller boringen. Det ødelegger hele økologien og reduserer de økonomiske fiskebestandene.

At mange selskaper ønsker å lete etter olje i Lofoten/Vesterålen er ikke bare grunnet penger, de forhåper seg fremtid med letingen. Det dreier seg om en teknisk børssak, om reserveerstattningsraten. New York børsen og Oslo børs spiller hovedrollen. Det gjelder hvor mye oljereservene de enkle selskapene har tilgang til. Hvis man har tilgang til mer enn det som ble utvinnet i området i år, så ligger man større enn 1 og så er man interessant for børsen og aksjenkurs går opp. Når man leter etter nye og nye områder så

dreier det seg om å skaffe seg mer og mer olje- eller gassreserver, som gjør, at man blir oppgangsaktør på børsen.

Det er børslogikken som ligger bak. Derfor blir det så viktig å få nye områder.

Arealkonflikten på sjøen, konsekvenser på land, forurensing, ødeleggelser eller sterke forstyrrelser i økologisystemet og så klimaendringer (at en ytterligere letingen kommer til å forsinke fremskritt i fornybare energivinning).

Aktørene i naturresurseforvaltning er:

- Naturen på land har ikke en stemme og er ikke organisert. Kommer du på havet så finnes det en forvaltningsplan for Barentshavet, naturbasert forvaltning. Da har naturen plutselig fått en stemme. På landet blir det først aktiv ved en konkret utbygging og innlandføring. Miljøorganisasjonene er de eneste som hever stemmer for naturen på landet.
- Et problem om man kommersielliserer naturen (som f.e. via reiseliv) er, at det er ikke autentisk lenger. Det oppstår en konflikt mellom etniske kulturer und turisme. Samene i finnmark f.e. holder butikkene åpene for turister hele sommeren. Og det er jo ikke naturlig, at butikkene er åpene fra kl 0-24, selv om det er midsommer. Om det er fint vær, så ville samene egentlig sier – "Fantastisk la oss gå ut for å fiske. Vi må gjøre all de ting som må gjøres før vinteren kommer." Men de kan ikke det. De har jo butikk, og turister banker på dører døgnet rund. Da er det autentiske borte.

Der hvor vi lever og bor, da må vi sørge for, at man kan ha sånne bra betingelser, at vi kan være da over tid. Man har en annen oppfatning av steder, om en kultur bruke uttrykket "heim" eller ikke. Samene er jo ikke naturvennlig i forhold til Finnmarksvidda for eksempel. Da hvor de bor, der er det nedkjørt og ser helt jævnlig ut. Det samme er det med fangstmenn fra Svalbard, de var jo ikke miljøvennlig. De forsøpplet jo alt i område, som de bodde i. Og hvor man hadde forsøpplet området, da flyttet man enkelt sagt bort fra og fant et nytt. Det samme var det i Canada og Alaska.

Hvis Lofoten hadde fått verdensarv, så hadde naturen og kulturen fått en aktiv stemme. Momentant har kulturen ingen stemme i debatten. Vi i folkeaksjonen ønsker at verdensarven kommer fortest mulig. Det hadde betyrt mye for Lofoten.

Det ville også være kunnskapsrik med Lofoten som verdensarv. Folk som ønsker utdanning kunne da få den i spesielle rettinger som reiseliv, kultur, næringskultur og fysiske bygningskultur. Man må jo holde seg til denne konsepten med verdensarven, og det krever kunnskaper på dette feltet.

Forvaltningsplanen for Lofoten og Barentshavet er relatert bare til havområdet ikke til landet. Plan- og bygningsloven gjelder for hele handelsdistrikten – det regulerer hele aktiviteten der. For å verne kulturminner og naturområdene på landet.

Den nye forvaltningsplanen kommer nærmere landet, men den gjelder ikke innenfor buktene eller fjordene. Begge områdene er avhengig av hverandre; det er vanskelig å hantere – overlapping mellom plan- og bygningsloven og forvaltningsplanen.

Kystsonenplanlegging ville være viktig, men "falt til nå mellom to stoler".

Det er klar, at det ikke er mulig å få en kystsonenforvaltning uten konflikter. Konfliktpotensialen "landet" eies av flere personer. Ved havet finnes dette problemet ikke. Havet kan brukes av hver, så lang det ikke blir misbrukt eller brukt for egen fordel.

Ulike grupperinger i Lofoten:

Ja-sida

- Største gruppen er de som er trygdet; de har fått med seg, at velferdigheten er knyttet til olje; de er rett for, at om oljeindustrien går tilbake, går også velferdigheten av staten tilbake og omtrent; de mener, at olje er kjempebra og betrakter problematikken ikke differensiert nok.
- Tilhører av politiske partiene og lojale mot partiene som har en vekstfilosofi. Økonomisk vekst er det viktigste uansett hvor veksten kommer fra. De er for oljeboring.
- Politikerskiktet (ordførere, toneangivende politikere) som håper, at olje gir en skatteinntekt til sitt samfunn. Kommunene har for lite penger, så forventer de penger. Det tror det kunne være en ny inntektskilde. Dessuten forhåper de seg nye næringer, som skipsverfter.
- Og næringer forhåper seg å ekspandere. Men det var jo egentlig ingen grunn for, at de ikke ekspanderte før. Det fantes jo oljeleting i Barentshavet hele tida. Hvorfor ekspanderte de ikke før, for å kunne delta i denne økonomien? Da er man jo ikke konkurransedyktig. Andre bedrifter har jobbet med denne saken over 45 år fra andre steder. Hvorfor skulle de slutte med å forsyne oljeselskapene med utstyr, bare da de nå vil begynne å lete etter olje i et annet område? Hvis det ikke kommer til å bli politisk styrt, så vil de små bedriftene her i område ikke få noen oppdrag fra noen selskap. Det finnes 4-5 store firmaer som vanligvis jobber med oljeselskapene. Under- underleverandører, som bedrifter i Lofoten ville være, kunne bare jobbe i dette område, om de tilbyr det, som er kostnadsgunstig. De som er nederst i systemet forhåper seg mest av sånne virksomheter. Men de må vanligvis faststille, at de ikke kunne tjene noen penger med det, fordi de er ikke konkurransedyktig. Så må de avveie, om det svarer seg. Og om de synes, at det ikke lønnes, så står noen annet bedrift inn i køen for å få denne jobben og prøve seg på nytt. Man kommer som underleverandør aldri til å få sjanse å bli en hovedleverandør.
- Det finnes noen regionale politikere eller næringsaktører som har noen geopolitisk tilnærming: Vi må skaffe resursser og utnytter naturen. Europa trenger energi og vi må la de andre land deltar.

Nei-sida kan mer om olje enn ja-sida. Om man står på den kontra-sida så er man nødd til å lære seg opp og å få seg kunnskaper. På ja-sida trenger man ikke gjøre noen annet enn å si ja. Vi som er mot kan veldig mye mer enn ja-sida kan. Nei-sida passer på det som skjer omkring og tilpasser standpunkter til det. Ja-sida forandrer ingen standpunkter uansett hva som skjer. Oljekatastrofen i Mexikogolfen har ikke ført til noen endring i tankene. "Det gjelder jo ikke Norge. Dermed er det ikke noen, vi må bryr oss om."

Nordland V og VI ville har største konsekvensene for Lofoten. Da ville miljørisikoen være størst, akkurat da ligger de viktigste områdene for fisk og reiseliv. Alt hva som skjer skulle jo være basert på en kunnskapsmessig og verdimeessig tilnærming. Og da planlegger de virkelig å sette letingen i gang i dette naturområdene som er mest sensitiv og mest risikorik! Det kan jo ikke har noen med realiteten å gjøre!

Historisk har Lofoten og Vesterålen inndelt havet for ulike fisker: juksafisker, linefisker, garnfisker. Man har avveit interessene for ulike aktørene. Bruksvakten har passet på, at det fungerer i 150 år. Det var en god måte for organiseringen av arealet.

Egentlig må det også i dag være sånn – med en forvaltning som passer på, at alle aktørene får plass. I dag finnes det for eksempel i tillegg reiseliv – så må reiseliv finne en plass. Og oljeindustrien. Da må man lete etter områdene, som er mindre sensitive. Sånn kunne man har fått en slags sammeneksistens. I arealer, hvor oljeboringen er sett i gang måtte man faststille, at seien, for eksempel, er forsvunnet og ble funnet foran Shetland-øyene.

I visse områdene i Sørnorge er det også enklere enn her opp i nord. Så fantes det alltid store båter, da fiskere alltid har vært havfiskere. Da fiskene grunnet oljeindustrien "flyttet" til lenger ut i havet, da var det mulig for fiskerne å følge, selv om det var litt dyrere og langvarigere. Men her, hvor det finnes massevis av små kystfartøyene, hvor fiskerne er vant til å jobbe inn i fjordene og kystsonen, da er det ikke mulig å kjøre langt ut.

Og om man sier, det gikk jo bra i Nordsjøen og i Norskhavet, da må man svar, at det fantes bare derfor ingen oljeindustri-fiskeri-konflikt, fordi da fantes ikke det samme fiskekulturet som på Lofoten/Vesterålen. Og i de små områdene hvor det fantes den, så tapte alltid fiskerier.

Her fisker man jo intensivt fra ca. 15 januar til 15. april og i sommeren.
Om olje kommer, så ønsker vi, at havbruk og reiseliv også er en del av dette forvaltningsfeltet.

Når Statoil ønsker ting, da møter de regjeringa. For eksempel møter de 10 minutter Jens Stoltenberg og forklarer hva det dreier seg om. Deretter sier Stoltenberg til regjeringen, hva som skal gjøres og det blir gjort. De andre folk har jo ikke engang vært inn i debatten. De gjør jo akkurat det, hva også andre selskapene hverden rundt gjør. De er jo like korrupte her som alle andre.

Opprinnelig ønsket jo Norge med å bygge opp Statoil en selskap med egen teknologi og kunnskap som beskyttelse mot de store internasjonale oljeselskapene. Man bygde opp Statoil som politisk og strategisk viktig aktør. Da privatiserte man Statoil, og selskapen fikk en tredjedel av oljeforekomsten som startkapital. Staten har gått fra å være en politisk og økonomisk aktør. Statoil blitt en internasjonal selskap. Det ble privatisert og er i børsen som en aktieselskap. Det var et feil å privatisere Statoil. Dermed skiftet man mål.

1994 fikk vi US-bestemmelser gjennom US-avtale. Alle tinge måtte være internasjonalt. Etter 1994 hadde stortinget og regjeringen ikke kunnet styre noen aktivitet mer. Så hadde jo hele Finnmark krevet om noen innlandføring. Etter at man delprivatiserte Statoil hadde man en internasjonal selskap, som var ute etter økonomisk vekst og gikk på børs.

Omtrent 2000 fusjonerte mange selskapene.

Største aktørene:

- Statoil med sine lakaie.
- Fiskerinæring
- Reiseliv er delt. Destinasjon Lofoten med storparten av hotellene er mot. Tre-fire aktørene, noen store hotellkjeder i Svolvær, har noen avtaler med oljeselskapene og må dermed være for olje. Dermed saboterer de noen møter. Det fantes spørsmål, om at de fire selskapene skulle har mulighet til å bestemme hovedlinjen av Destinasjon Lofoten. Men hvorfor skulle fire av 100 selskapene bestemme, hva som skal gjøres. Det er jo helt urimelig. Det er jo udemokratisk og usolidarisk.
- Bellona lever av næringslivet og har klart å matche en folk med flere kunnskaper. Bellona er som en egen divisjon. Tar miljøansvar og har ganske stor makt.
- Det finnes et rekke av selskaper som vil profilere seg med en miljøvennlig image.
- Natur ungdom har ingen status, de er idealistisk. Er flinke i å fange media med å gjøre overraskende ting. Har en offentlig stemme og offentlig påvirkning. De er ikke inn i arbeidslivet, slik at de er ikke aktør i denne måten.

Resultaten av forvaltningsplanen L/V sier, at det finnes så mye sårbare natur (Nordland VI, VII og Troms II), at man skulle bevare den fra oljevirkksomheten.

Praksis i Norge er å være helt forsiktig, ellers rammer det en selv igjen litt senere. Hvis et område skal vernes, så må det jo være dette område her.

Og om folk argumenterer, at det finnes ikke noen fare av oljeboringen, så spør jeg, hvorfor leter de ikke etter olje i Skagarak, hvis det er virkelig slik? Sannsynligheten, at det finnes olje i dette område er stor, men arealet ble ikke åpnet. Det dreier seg om verdien av eiendommer som ligger rund kysten i dette område. De ville tape i verdi, det er grunn for, at ingen kommer til å lete der.

Problemet er, at økonomien ville ikke se kultur- og naturverdien her.

Og man vet jo ikke engang, om det virkelig finnes olje utenfor Lofoten/Vesterålen. Det er jo bare spekulasjon. Men man vet om det sensible område her, om naturen, fiskeri og kulturen.

Hvem skal vinne oljedebatten?

Jeg tror vi vinner denne kampen her.

Det er ikke så mange områdene i verden, hvor industrialismen har seilt forbi, som her på Lofoten/Vesterålen. Vi hadde ikke noen krig her, ikke noen plyndring av naturressurser og ikke noen industrialiseringen med store naturinngrep og ødeleggelser. Hvorfor ble Nordnorge det ikke berørt av noen store forandringer i produktene (f.ex. fisk) over 1000 år, mens det fantes i resten av verden gigantiske

forandringer. Det finnes ikke mange slike områdene i verden, som denne kulturen her. Andre kulturer som er like uberørt er ikke så avansert utviklet som Nordnorge.

Her kan man leve et annet liv – selv om man bor i et land men denne sivilisasjonsgraden. Det betyr livskvalitet å bo her. Og dette kunne også betyr at det kunne skaffes nye arbeidsplasser her.

For eksempel: Fisker kan alt om å fiske, men de må lære om produktutvikling og organiseringen, administrasjon og logistikk. Det samme er det med reiseliv. Kunsten kunne også komme hit og utnytte dette område med helt spesiell natur og lys.

Regionale kunnskapen er det som ikke kunne kjøpes og flyttes, om regionen her blir ødelagt.

Om man har industrien i et område, så er det farlig å forlate seg bare på denne typen inntekt. Etter noen år, så er alt ødelagt. Kunnskapen angående fiskeri og kultur er borte. Så er kildene tørke, og så finnes det ingenting mer i dette område.

Hva syns du om ideer som økolandsbyen i Gravdal?

Økolandsbyen synes jeg er en god ide. Men måten, hun prøver å gjennomføre det, er vanskelig. Hun har sterke ønsker hvordan det skal bli og den er utpreget sånn, at demokratien får ikke nok plass. Egentlig er ideologien bak den økolandsbyen en storartet ide. Men gjennomføring skulle forandres litt. Da kunne den også trekke noen folk hit.

Takk skal du ha!

Interview with Morten Helgesen, Denomega

Hva er deres posisjon i oljedebatten?

Vi har ingen spesiell mening angående olje. Vi er ingen gammelt selskap her i Lofoten og har som fokus noen helt annet enn oljeletingen. Oljeboringen har vi ikke diskutert i selskapet. Det stemmer, at det kunne være et problem for oss, om naturområdet blir ødelagt, da vi bruker ressursene fra havet. Vi har valgt et strategi – ikke akkurat for olje og et mulig utslipp for eksempel.

Vi er avhengig av noen samarbeidspartner som produserer som vi kaller råtran. De tar tranen ut av torskeleveren. Og det må gjøres ganske fort etter at fisken har kommet på land. Vi har fire leverandører vi samarbeider med i dag, som henter inn torsken, tar ut leveren og skyller ut olje etter oppvarmingen, som gjør cirka 50-55% av levervekten.

Vi samarbeider med mindre firmaer i Lofoten (Mortsund), Svolvær, Senja og Sørøya. At vi samarbeider med bedrifter bort fra her har vi gjort, fordi da blir det større tilfang enn bare her foran Lofoten. Dessuten har torsken endret vandringsmønsteret. Før var det inn i Vestfjordene, nå er de mer på yttersida og lenger ute i havet. Så sikrer vi råstoffet. Og skulle det skje en oljekatastrofen, så har vi ulike kilder.

Lofoten er hovedgyte-område for torskene. Om det finnes oljeboringen, kan det jo være en fare for hele bestanden.

Dessuten driver olje mot nord, om det virkelig skjer et ulykke.

Men det tar jo lang tid. Og da må det være et tilfelle, at oljekatastrofen er såpass stor og vinnretningen stemmer, at hele område for fisken blir ødelagt. Men det er riktig. Man ser jo nå i Mexicogulven, at det er ikke lenger mulig å fiske der.

Står deres produkt for en ren produkt uten skadestoffer?

Ja, det gjør det. Vi leverer produkter uten bruk av kjemikalier. Vi tar ut miljøgifter og tungmetaller ut av olje og tar ut smaks/luktestoffer.

Ved vanlig oljeboringen, så har man en daglig utslipp av oljeslammen. Kunne det fører til noen problem for dere, om det finnes mer og mer tungmetaller, som olje må renses fra?

Vi opplevde første problemer med miljøgiftene i 70-tallet, da havørnen kunne ikke få unge grunnet dårlig skalle av eggene. Da fantes det en nesten "nullproduksjon". Så kan man aldri si i forkant, at det ikke finnes noen problem med tungmetaller og dioksiner. Jo høyere innholdet av sånne stoffer er, desto vanskeligere blir det å få de ut igjen og desto dyrere blir det.

Ville det være det beste for deres bedrift, om det ikke finnes noen oljeboringen her?

Selvfølgelig finnes det også en stor sammenheng. Og da er vi nøt til å få olje fra noen sted, fordi vi bruker så vanvittig mye energi, som nesten ingen annet land i verden. Men da må det finnes noen nye ider. Vi er nødt til å finne andre løsninger. Jeg selv synes, at det finnes ikke noen fordeler fra den store industri, og oljeboringen her kan skade oss.

Vi jobber med et annet prosjekt: med å ta ut stearin av fiskeolje. Det har et annet smeltepunkt, som olivenolje, som blir hvit om man setter det i kjøleskapet. Om vi tar stearin ut av olje, så forhindrer det, at aggregattilstanden skifter ved lavere temperaturer. Det kan man brenne i fyrkjelen. Så utnytter vi nesten alt vi får. Momentant er det sånt, at det finnes ikke noen sted å brenne stearinen her, så det ble gjort i Sverige. Stearin blir brakt dit med lastebiler.

Den Omega er ikke ennå en aktør i oljedebatten, er det riktig?

Det stemmer. Men bedriften kunne være en aktør i framtida, om resussene som brukes rammes av en katastrofe.

Hva er din personlig mening, skulle Denomega være en aktør i debatten. Denomega står jo for en bærekraftig industri i område.

Vi er en storforbruker av energi her. Derfor har vi ikke noen mulighet å kjempe mot olje. Men likevel skulle oljeindustrien jobbe med å gjøre alt så sikkert som mulig. Vi jobber dessuten med å redusere strømforbruken.

Men Denomega kunne jo for eksempel bruke bølgekraften for å få energi. Tror du, at det ville være en mulighet i framtiden å utnytte Lofoten/Vesterålen bare med bærekraftig energi?

Vi har gjort oss så utrolig avhengig av fossil brennstoff. Men man skulle aldri si aldri. Men hvordan er det med å utnytte bølgekraft/undervannskraft? Inneholder det ikke også en stor innvirkning av naturen? Jeg synes, at politikerne og myndighetene skulle bestemme, hvordan det fremgår her. Men vi som bedrift eller enkelte mennesker skulle vise veien.

Alle skulle ha som mål å være uavhengig av fossil brennstoff.

Den Omega er en "nystarter" og er mer lite enn stor. Vi begynte for ca 10 år sida. Anlegg på Leknes er fra 1995, fungerer veldig bra, selv om det ikke har masse "fancy utstyr".

Takk for samtalen, det var veldig interessant og ga meg nye opplysninger.