

MASTER OF SCIENCE IN ENERGY MANAGEMENT

Challenges and Opportunities for the Oil and Gas Sector in the Arctic
- An Indigenous People Perspective

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ABSTRACT

This Master thesis examines the challenges and opportunities with indigenous people for an oil and gas company in the Arctic. After the Second World War the exploitation of hydrocarbons was intensified in most Arctic regions; especially in Russia. The new prospect for the Barents Sea expressed in Norway's High North Strategy (2006) could make this area the most industrialized in the Arctic. But the Arctic is also a homeland for many different indigenous people with over 40 different languages. And the native people say the North is their homeland. They have lived there for thousands of years. They claim it is their land, and they believe they have a right to say what its future ought to be. The investigation primarily addresses the following research question: *What are the challenges with indigenous people for the oil and gas industry working in the Arctic?* For the purpose of winning insight and building a holistic picture of the complexities with these challenges, I have gathered data from several different disciplines including international law, indigenous culture, society and economy in the Arctic and biology. The major findings from the investigation are that challenges with indigenous people are concerned about the protection of their tradition, customs, distinct way of life and culture. The paper propose several opportunities that an oil and gas company has in order to protect the distinct way of life and reduce adverse impacts from operational discharges, tankers and pipelines.

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1 THE JOURNEY

1.1 History, impacts, and forecasts for the oil and gas industry in the Arctic.

Oil and gas activities have already been established in Arctic region for quite along time. In the last fifty years indigenous people in the Arctic have come in contact with a variety of outsiders. The first contacts however, were the Dutch and Basque whalers in the 16th century. And then the Russians made good business on harvest of sea otters and seals fur starting in the middle of the 18th century, Americans and Britons on harvest of great whales during the 19th century and early 20th century. During the 20th century the Arctic emerged as a locus for world class fisheries as well as a storehouse of non-renewable resources such as oil, gas, coal, and minerals. Especially after the Second World War a lot of things started to happen. The cold war in Europe and Soviet brought anxiety among governments, and the exploration for hydrocarbon was intensified.

In Northern Russia massive effort to exploit non-renewable resources made it necessary to import immigrant populations for the purposes. Chukotka for example experienced “an exodus of hundreds of

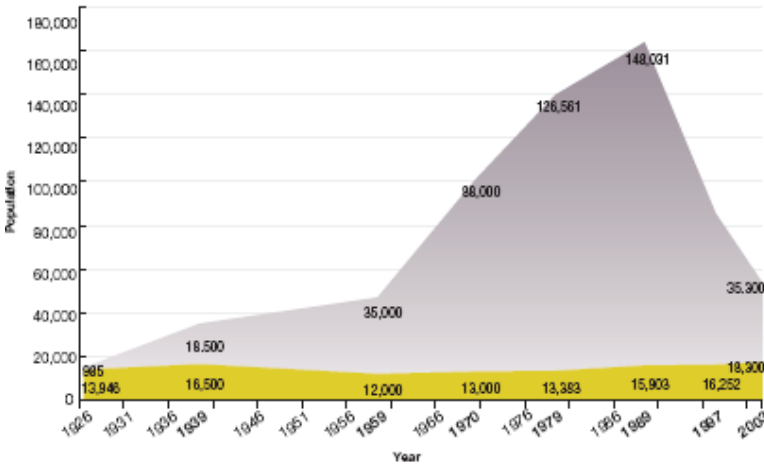


Figure 1: Population of Chukotka 1926 - 2003

The population here grow from (AHDR, 2004). approximately 35,000 in the late 50s to 150,000 in the late 80s – see figure 1. The petroleum and gas sector became and still are especially massive in Northwest Siberia – environmental damages here are severe -, especially in the Yamalo-Nenets and Khanty-Mansii Autonomous Okrugs (AHDR, 2004). Russia has an extensive pipeline system across Western Siberia. The system is approximately 10000 kilometres and has the ability to carry 400 million tonnes of oil every year.

Interest in the oil resources of northern Alaska began with reports in the early 1900s of surface oil seeps along the arctic coast east of Point Barrow. In 1923, the 23-million acre

Naval Petroleum Reserve No. 4 was established in northwestern Alaska to secure a supply of oil for future national security needs, the area was later renamed the National Petroleum Reserve-Alaska. The oil fields at Prudhoe Bay were discovered in 1968. These fields are the largest in North America, and since 1977 12.8 billion barrels of oil have been pumped from 19 producing North Slope fields. In 1975 the construction of the Trans-Alaskan pipeline began. Trans-Alaska Pipeline System was designed and constructed to move oil from the North Slope of Alaska to the northern most ice-free port Valdez, Alaska. The pipeline system is the largest in the world¹.

In Canada there is major exploitation of mineral and petroleum hydrocarbons in the Northwest Territories, Nunavut and Nunavik. Currently there is a new proposal for building The Mackenzie Valley pipeline, a 1.300 kilometres long network over the sensitive Arctic tundra, from Northwest Territory to northeastern Alberta. The first prospect of building the pipelines was originally analyzed in the 1970s with the Mackenzie Valley Pipeline Inquiry by Justice Thomas Berger. During that inquiry Justice Berger heard testimony from diverse groups with an interest in the pipeline. He took the inquiry to 35 communities to every city and town, village and settlement and listened to the evidence of almost one thousand northerners (Berger, 1977). Berger recommended a ten year moratorium on development of the pipeline to deal with issues such as Aboriginal land claims and setting aside of conservation areas. The proposal was effectively shelved. Now a new proposal is worked out by Imperial Oil, but this time with the participation of indigenous people as partners in the project. It will be interesting to see whether the proposal will be accepted this time or not.

All in all these contacts have precipitated a cascade of rapid and accelerating social changes among Arctic's indigenous people (AHDR, 2004). Large-scale resource exploitation has considerable impacts on the local environment and indigenous people in the homeland. Indigenous people who inhabit or use land that borders on exploitation areas, which is common in Alaska, the Canadian North and northern Russia, are exposed by the industry in several ways but the effects are often poorly documented. Health problem due to industrial discharges is a typical effect. (AHDR, 2004). The activities can also lead to forced changes in how people move over the land in fishing, hunting and trapping areas and can diminish the productivity of such traditional activities when land is disturbed (AHDR, 2004). Traditional, subsistence economies particularly based on hunting, fishing, reindeer herding and gathering, suffer disproportionately from the negative ecological consequences of oil and gas activities (Henriksen, 2006). This is due to the far-reaching impact oil and gas exploration could have on indigenous peoples land and territories, such as increased settler population in their land,

displacement of indigenous people, large infrastructure projects, decreased local flora and fauna, contamination of water, soil and air, degradation of valuable land (Henriksen, 2006). Another, not so direct effect is the problem of social disparities in standard of living and social status between employees of the industrial sector and the rest of the population. This psychological impact could have very adverse effects in the long run, including the elimination of traditional knowledge.

1.2 Problem statement

Oil and gas development in most Arctic regions is in its initial stage but it is progressing fast and starting to influence northern communities in both positive and negative ways (AHDR, 2004). The increased attention towards the High North, the Arctic, and the indigenous people, it becomes increasingly important to understand indigenous people lives and communities as well as the vulnerable Arctic environment. Norway's and Russia's plans to develop the Barents Sea and the Kara Sea could make this area the most industrialized in the Arctic. Both on Norwegian and Russian side, enormous oil and gas reserves are discovered. Norwegian Government has recently decided that one of the main objectives in the years to come is to take advantage of these resources. At the same time the Norwegian governments policy is "intended to safeguard the livelihoods, traditions and cultures of indigenous people in the High North" (Strategy for High North, 2006). And private enterprises in Canada are now proposing to build Mackenzie Valley pipeline, a 1300 kilometres infrastructure system from Northwest Territory to north-eastern Alberta. U.S. Geological, Survey has estimated that 25% of undiscovered petroleum reserves are in the Arctic.

Development of Arctic oil and gas resources are, as indicated, a hot topic on the political agenda nowadays. The Arctic has been called our last frontier (Berger, 1977): "We look upon the North as our last frontier. It is natural for us to think of developing it, subduing the land and extracting the resources. Our whole inclination is to think of expanding our industrial machine to the limit of our frontier to fuel our industries and heat our homes." But the Arctic is also a homeland for many different indigenous people with over 40 different languages. And the native people say the North is their homeland. They have lived there for thousands of years. They claim it is their land, and they believe they have a right to say what its future ought to be (Berger, 1977).

Indigenous peoples have legitimate reasons for being deeply concerned about planned oil and gas explorations in their territories as developers' interests normally prevail wherever and whenever indigenous peoples' interests and rights clash with development projects

(Henriksen, 2006). To quote Mr. Max Ooft(1995), from the "Organization of Indigenous People in Surinam", he paints a clear picture of the anxiety: *" In the past, indigenous peoples were living peacefully in their homelands, in harmony with nature. Then came 'civilization' ... They conquered the land, we lost our homes, our sacred sites, our agricultural areas, our hunting fields, our fishing waters. They called it development, we called it destruction. They said it would raise living standards, we said it brings humiliation. They earned money, we got poor. They founded big companies, we became cheap labour. They ruined the biodiversity; we lost our sources of traditional medicines. They spoke of equality, we saw discrimination. They said infrastructure, we saw invasion. They thought civilization; we lost our cultures, our language, and our religion. They subjected us to their laws; we saw them claiming our land. They brought illness, weapons, drugs and alcohol, but not equal education and health care. It has been going on for more than 500 years. And it still goes on"*(ILO, 1989:29). .

The Journey (chapter 1) has directed me to propose the following research question:

RQ1: What are the challenges with indigenous people for the oil and gas industry working in the Arctic?

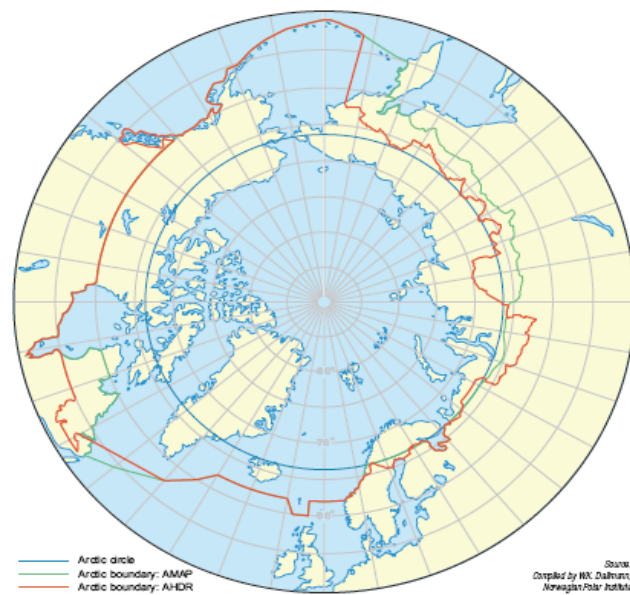
1.3 Definitions

1.3.1 Arctic region

There is nothing intuitively obvious about the idea of treating the Arctic as a distinct region. Arctic consists largely of segments of nation states whose political centres of gravity lie, for the most part, far to the south. This observation presents us the problem of determining what specific parts of these States to include in a region designated as the Arctic or the circumpolar North.

It is possible to determine the extent of the Arctic region by the use of biophysical criteria. The method, however, do not recommend any cultural, economic, or political terms, which are a significant necessity when approaching an indigenous people perspective, like I'm doing in my thesis. The definition I will use here is the one developed by the Arctic Human Development Report (2004). It is based on the one applied by the Arctic Monitoring and Assessment Programme (2002), for reasons having to do mainly with the location of jurisdictional or administrative boundaries. The AHDR definition of Arctic differs, however,

from the AMAP Arctic in some respects. All of Alaska, Canada North of 60°N together with northern Quebec and Labrador, all of Greenland, the Faroe Islands, and Iceland, and the northernmost counties of Norway, Sweden and Finland. Concerning Russia, the area included by the AHDR encompasses the Murmansk Oblast, the Nenets, Yamalo-Nenets, Taimyr, and Chukotka autonomus okrugs, Vorkuta City in the Komi Republic, Norilsk and Igsrka in Krasnoyarsky Kray, and those parts of the Sakha Republic whose boundaries lies closest to the Arctic Cricle – se the **Figure 2: The Arctic boundary (AHDR, 2004).** picture - (AHDR, 2004:18).



1.3.2 Indigenous people

There is no generally agreed universal legal definition of the term “indigenous people”. The United Nations uses a description formulated by an expert, the so-called Cobo-definition, as a guiding principle when identifying indigenous people. Mr. José Martínez Cobo (1987), formulated a working definition while conducting research on discrimination against indigenous peoples: *“Indigenous communities, peoples and nations are those which, having a historical continuity with pre-invasion and pre-colonial societies that developed on their territories, consider themselves distinct from other sectors of the societies now prevailing in those territories, or parts of them. They form at present non-dominant sectors of society and are determined to preserve, develop and transmit to future generations their ancestral territories, and their ethnic identity, as the basis of their continued existence as peoples, in accordance with their own cultural patterns, social institutions and legal systems.”* And further he defines: *“On an individual basis, an indigenous person is one who belongs to these populations through self-identification as indigenous (group consciousness) and is recognized and accepted by these populations as one of its members (acceptance by the group)”*.

The International Labour Organization’s Convention No. 169 on Indigenous and Tribal Peoples (1989), contains a statement of coverage defining indigenous peoples and tribal peoples. Article 1.1 defines who the Convention applies to: “a) Tribal peoples in independent countries whose social, cultural and economic conditions distinguish them from other sections of the national



Picture 1: Indigenous peoples from Quebec (AHDR, 2004).

community, and whose status is regulated wholly or partially by their own customs or traditions or by special laws or regulation; b) peoples in independent countries who are regarded as indigenous on account of their descent from the populations which inhabited the country, or a geographical region to which the country belongs, at the time of conquest or colonisation or the establishment of present state boundaries and who, irrespective of their legal status, retain some or all of their own social, economic, cultural and political institutions”. As I understand it, indigenous communities, people and nations are: those who have a historical continuity to their land, consider themselves as distinct from sectors, form non-dominant sectors of society, their culture, society and economy distinguish them from other section of the national community; and they have their own special laws or regulations. Thomas Berger’s report “Northern Frontier, Northern Homeland”, published in 1977 and commonly known as the Berger Report stresses the alternative visions of the Arctic. The alternative perspective refers to the people who have been living in the Arctic since pre-historic times – in Norway we have archaeological traces of settlements in Finnmark County as far back as 9000 years BC (Olsen, 1994). A diverse group of indigenous live in Arctic, ranging from Inuit Athabascans of the North America Arctic, Saami of Fennoscandia and the Kola Peninsula, and approximately 40 small-numbered

Arctic, Saami of Fennoscandia and the Kola Peninsula, and approximately 40 small-numbered

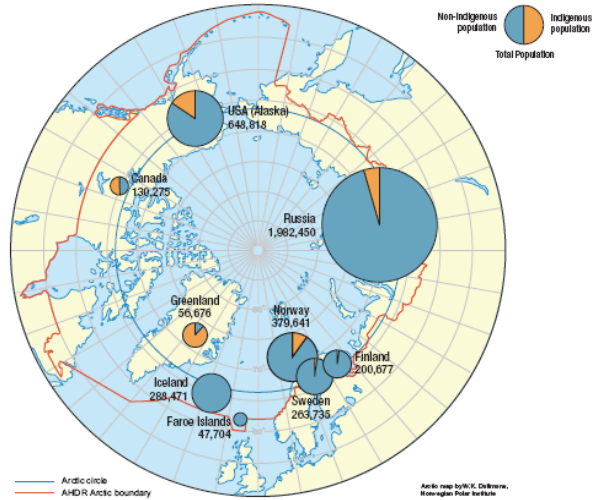


Figure 3: Indigenous and non-indigenous people in the Arctic (AHDR, 2004).

Arctic, Saami of Fennoscandia and the Kola Peninsula, and approximately 40 small-numbered

peoples of the Russian North and Arctic (AHDR, 2004). All these people have their descendents here from pre-historic times, who have found comfortably ways of living in Arctic conditions on the premises of what the nature could offer them. Their closeness to nature has played a great role in the long and evolutionary creations of indigenous people socio-cultural, economic, political and belief-systems (AHDR, 2004).

Today, the indigenous peoples of the Arctic constitute only a fraction of the region's permanent human residents, though they are the majority in some regions. This create huge responsibilities for governments to make clarification of the rights of the indigenous people (AHDR, 2004).

1.4 Overview of chapters

Chapter 2 – Method

The chapter discusses the data collection and analysis methods I have used. Reliability issues regarding data sources are also included. The different research questions that came to me during data collection and structure and stages of my analysis are all described and illustrated. In the end of the chapter I argue and present a model on how I've sewed all my data together into on sense-making-story.

Chapter 3 – Theory

This chapter discusses the theory that I use in order to answer the proposed research question. Chapter 3.1 examines the ILO Convention No. 169 of 1989 on indigenous and tribal people rights. It provides the reader with insight to legal systems regarding indigenous people and oil and gas extraction in their land and territory. Subsequently it increases understanding of the complex challenges with indigenous people.

Chapter 3.2 presents an introduction into indigenous culture, society and economy in the Arctic. It discusses indigenous language, religion, subsistence economies, fisheries and the special relationship between people and the land. The chapter elaborates on the discoveries from the previous chapter and thereby enhancing the understanding of “challenges” further. .

Chapter 3.3 identifies petroleum hydrocarbons impact on Arctic environment. The chapter articulates the impacts discharges, tankers, and pipelines have towards flora and the fauna in marine and terrestrial environment.

Chapter 4 – Analysis

This chapter will present the major findings from each sub-chapter in the theory chapter. These findings are analysed and the challenges discovered from the ILO Convention and from studying indigenous people “distinct way of life”, are shown in a figure. Further the chapter articulates why I made room for petroleum hydrocarbons impact on Arctic environment. The information is used to develop a proposal of opportunities which the oil and gas industry can draw knowledge from in order to manage the challenges and reduce adverse impacts. The opportunities are listed in a table. In the end I propose future research which is needed in order to increase the usability of the opportunities.

2 METHOD

2.1 Data collection

The thesis is based on written literature. It started on the coastal steamer Trollfjord, travelling from Bodø to Hammerfest in the spring of 2006. We had a lecture about indigenous people and High North Oil. Through the lecture the concept Northern Frontier, Northern Homeland was first presented for me. I didn't exactly understand what it meant at that time, but I didn't put much effort into it either, both because we had so many and interesting, lectures. It wasn't until the winter of 2007 when I was striving to find a research question for my masterthesis that I came over the concept again. I wanted to write about the oil in the High North in an indigenous people perspective, so I enriched my horizon about such issues and fortunately I came over it. I think the first time I saw the reference to Thomas R. Bergers report, was while I read the Arctic Human Development Report. The report was titled *Northern Frontier, Northern Homeland: The Report of the Mackenzie Valley Pipeline Inquiry*. I got interest, so I ordered the book from the university in Tromsø.

His report was established as a respond to both pressures from the industry to develop Arctic oil and gas and increasingly vocal opposition from the Dine and the Metis. Mr. Berger received one day in January in 1974, a telephone call from Jean Chrétien, Canada's Minister of Indian Affairs and Northern Development. "Would you be willing to conduct an inquiry into the proposed Mackenzie Valley Pipeline?" he asked him. The inquiry resulted in a controversial best selling book that changed the attitudes of Canadians towards native land claims and altered the future of the North (Berger, 1977).

This book enlightened me about the concept Northern Frontier, Northern Homeland. And in many ways this book was the beginning of my thesis and research question.

The source I have used to gather information about indigenous peoples rights, is the Manual for ILO Convention No. 169 of 1989. The Manual is a product developed by the International Labour Organization to ease the understanding and usability of the Convention. I have used it in order to get an understanding of indigenous people rights basically. In addition I have used the Convention with the objective to discover what indigenous people – basically - are concerned about in relation to oil and gas business in their homeland.

The document was ordered from the University in Tromsø by the library at Bodø University College on a request from me. When the rental time for the book had expired I discovered that a digital Manual was available on the net. So from that time I used the digital Manual instead.

While searching the ILO Convention I realized that I needed more information about Arctic indigenous peoples culture, economy and society. It was only natural for me to use the Arctic Human Development Report (AHDR) from 2004, because I had read it in advance. The AHDR was initiated at the Foreign Ministers meeting in Inari in the fall of 2002 as part of Iceland's Chairmanship programme in the Arctic Council. "*The report represent the first comprehensive attempt to document and compare systematically the welfare of Arctic residents on a circumpolar basis*" (AHDR, 2004). The report is built on the pioneering work of the Arctic Council on environmental issues, it seeks to expand our horizons by spotlighting the social, economic and cultural aspects of the lives of the people in the region.

Through the Arctic Human Development Report (2004) I discovered that indigenous cultural, social and economic conditions are significantly attached to the nature. Indigenous people have a very special relationship to their homeland and everything in it. Their closeness to nature has played a vital part in the long and evolutionary creations of indigenous peoples socio-cultural, economic, political and belief-systems. I discovered that in order to protect indigenous cultures, traditions, and customs which is the objective with the ILO Convention, I needed information and data about how the petroleum industry impacts Arctic environment. I had through reading the AHDR gathered a long list of references, and one of them was to the Arctic Monitoring and Assessment Programme. The report I used, *Arctic Pollution Issues: A state of the Arctic Environment Report*, is the product of six years of cooperation which began in 1991. It was again a request from the ministers of the eight Arctic countries (Canada, Denmark/Greenland, Finland, Iceland, Norway; Sweden, Russia and the United States), to examine the levels of anthropogenic pollutants and to assess their effects in all relevant compartments of the Arctic environment.

Other sources which has helped me is the articles from the Resource Centre for the Rights of Indigenous Peoples' Gáldu Čála, Journal of Indigenous Peoples Rights. The resource centre is a professional independent institution established to increase the knowledge of indigenous peoples and Sami people rights. I have used the Norwegian Governmental High North Strategy for 2006 for the purpose of clarifying forecast for the Barents Sea and indigenous people issues. I have also used the Special Rapporteur of the Sub-commission on Prevention of Discrimination and Protection of Minorities, an UN Document developed by

Martinez Cobo. I have used it for the purpose of elaborating the special relationship between indigenous people. The book of James Anaya entitled *Indigenous People In International Law*, provided me with the history of ILO Conventions and indigenous law in general.

2.1.1 Data collection sources and phases

The different sources used are illustrated under. I have also tried to captures the different phases when the actual sources were used in the research process. The four big boxes with bold frames are the main sources which my research is based on.

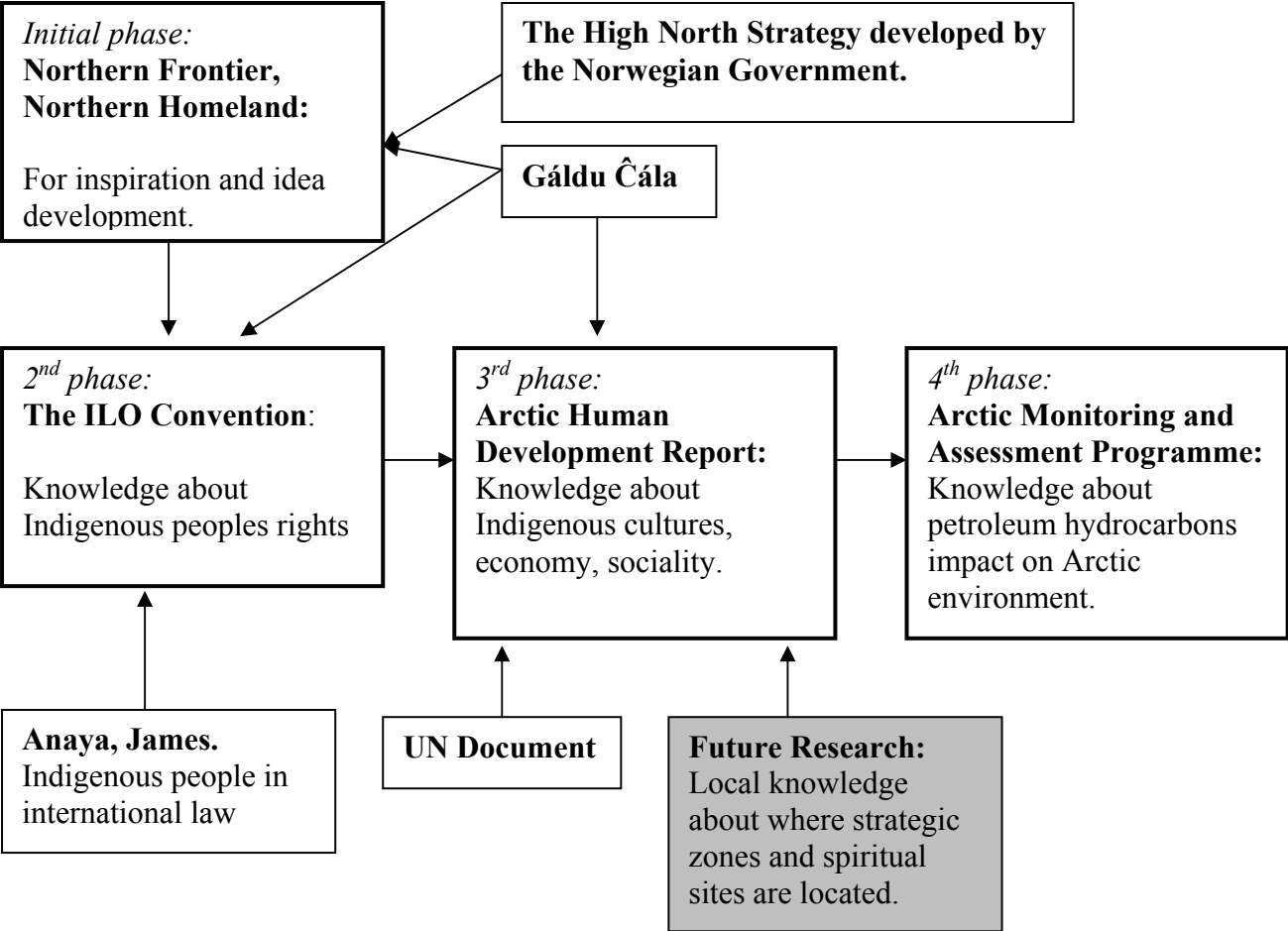


Table 1: Data collection sources and phases

2.1.2 Reliability

All the sources I have used are scientific developed, meaning that they’re worked out at universities and professional institutes by professional scientists who possess the right and

necessary competence; knowledge about scientific methodology, such as data collection methods which are determined to provide true and reliable data, and analysing methods. And knowledge about science in general.

I have not used internet references, articles from newspapers, magazines etc., because they are not classified as scientific works. Such works are often based on the authors own ideas, gossip, and rumours about reality, and are therefore not accurate or have a low truthfulness.

2.2 Data analysis

My analysis has been structured with four stages. In the first stages I collected data from the ILO 169 in order to answer my initial research question. By a comprehensive study of the Manual I discovered several challenges with oil and gas business in the Arctic close to indigenous people. The main challenges were concerned with native people “distinct way of life.” And that represent the major findings at this stage. I then understood that I couldn’t draw anything more out of the Convention, so I moved on with the objective of exploring “their distinct life”; what’s it all about, what characterises it etc. The step from the ILO Convention No. 169 to the Arctic Human Development Report represents stage two of my analysis.

I read the Arctic Human Development Report and gathered information about their distinct way of life. It gave me very detailed knowledge, such as the special relationship between indigenous people and their land and environment. The research question became clearer to me. I had moved from an understanding of “challenges” as a matter of protecting their distinct life, to a matter of protecting spiritual sites, and what I have defined as “Strategic zones”. This step represents stage three of my analysis.

In order to protect spiritual sites and strategic zones, I realized that I needed information about petroleum hydrocarbons impact on Arctic environment. I had gathered lots of references from reading the Arctic Human Development Report (2004), so I knew of the Arctic Monitoring and Assessment Programme, which I’ve described earlier. The report from 1997 had a whole chapter about petroleum hydrocarbons impacts on Arctic environment. This chapter provided me with knowledge about how oil spills could affect different elements in the Arctic environment.

I realized that challenges with indigenous people are concerned about the protection of strategic zones and spiritual sites, and hence protection of “their distinct way of life” which is the objective for ILO 169. Protection of strategic zones and spiritual sites are synonymous

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with protection of environment. Therefore I understood that I needed information about petroleum hydrocarbon impacts on Arctic environment, and subsequently it would help me – I hoped - to recognize opportunities to avoid adverse impacts. Knowledge about such can be found in the Arctic Monitoring and Assessment Programme. I then studied the report with the following research question in my thoughts: How do petroleum hydrocarbons impact strategic zones and spiritual sites?

In the last stage of my analysis I have tried to sew all the knowledge I has gathered about challenges into one holistic story. The “sewing” process was structured the way that I first studied the impacts petroleum hydrocarbons could have on indigenous people distinct way of life, and secondly I tried to discover or recognize opportunities to reduce potential adverse impacts – see model 2.2. The question I had in my thoughts while sewing was: How can facts about petroleum hydrocarbons impacts on Arctic environment, help to recognize opportunities with the protection of indigenous people “distinct way of life?”

2.2.1 The structure of the analysis

Stage 0:

RQ1: What are the challenges with the indigenous people for the oil and gas industry working in the Arctic?

Stage 1:

Data Collection

ILO Convention 169

Analysis: Major Findings

Protection of Indigenous people distinct way of life

Stage 2:

RQ1.1: What implies distinct way of life?

Data Collection

*Arctic Human
Development Report*

Analysis: Major Findings

*Strategic zones: subsistence economies, fisheries.
Spiritual sites: religion, special relationship to land.
Language.*

Stage 3:

RQ1.2: How do petroleum hydrocarbons impact strategic zones and spiritual sites?

Data Collection

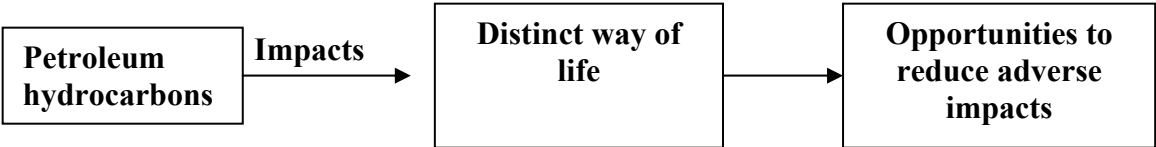
Arctic Monitoring and Assessment Programme

Analysis: Major Findings

Impacts from discharges, tankers and pipelines

Stage 4: Sewing knowledge from the AHDR and AMAP together with the following research question in my thoughts: **How can facts about petroleum hydrocarbons impacts on Arctic environment, help to recognize opportunities with the protection of indigenous people “distinct way of life?”**

Table 2: Structure of analysis



Model 2.2: The “sewing” process.

3 THEORY

3.1 ILO Convention No. 169 of 1989

3.1.1 History and the basics of the Law

The ILO Convention on Indigenous and Tribal Peoples, Convention No. 169 of 1989, is a central feature of international law's contemporary treatment of indigenous peoples' demands. And therefore it's very important and very applicable for corporation involved in operations on indigenous people territories. Convention No. 169 is a revision of the ILO's earlier Convention No. 107 of 1957, and it represents a marked departure in world community policy from the philosophy of integration or assimilation underlying the earlier convention. The shift has been described as a large step from a Convention regarded as anachronistic and destructive in the modern world.

In 1986, the ILO convened a "Meeting of Experts" which included representatives of the World Council for Indigenous Peoples, a loose confederation of indigenous groups from throughout the world. The meeting recommended the revision of Convention No. 107, concluding that "the integrationist language of Convention No. 107 is outdated, and that the application of this principle is destructive in the modern world" (Anaya, 2004). In 1957, when Convention No. 107 was being discussed, it was felt that integration into the dominant national society offered the best chance for these groups to be part of the development process of the countries in which they live. This had, however, resulted in a number of undesirable consequences. It had become a destructive concept, in part at least because of the way it was understood by governments. In practice it had become a concept which meant the extinction of ways of life which are different from that of the dominant society (Anaya, 2004).

Protection of indigenous and tribal peoples is still the main objective but it is based on respect for their cultures, their distinct ways of life, and their tradition and customs. It is also based on the belief that indigenous and tribal peoples have the right to continue to exist with their own identities and the right to determine their own way and pace of development. In order to make this possible, participation becomes fundamental: "In order to control the pace and extent of their development, indigenous and tribal peoples should be fully involved in all relevant processes. Only by participating from the beginning to the end of any initiative – be it policy making, or implementing a project or programme – can they be responsible for it and take an active part in creating their own socio-economic self-sufficiency" (ILO, 1989). Article

7.1 in the Convention elaborates it: “The people concerned shall have the right to decide their own priorities for the process of development as it affects their lives, beliefs, institutions and spiritual well-being and the lands they occupy or otherwise use, and to exercise control, to the extent possible, over their own economic, social and cultural development. In addition, they shall participate in the formulation, implementation and evaluation of plans and programmes for national and regional development which may affect them directly”. This latter requirements is highly relevant now a days in Arctic, with the development of the Barents Sea, Kara Sea and Canada, and it constitutes a major challenge for both governments and corporation to take responsibility and involve the indigenous peoples.

The basic theme of Convention No. 169 is indicated by the convention’s preamble, which recognizes “the aspirations if indigenous peoples to exercise control over their own institutions, ways of life and economic development and to maintain and develop their identities, language and religions, within the framework of the States in which they live”(ILO, 1989:10).

3.1.2 Rights especially applicable for Oil & Gas Sector

The International Labour Organization Convention No. 169 contains a number of provisions related to indigenous lands and resource rights’, hence it’s of great importance in relation to legal questions related to oil and gas operations in indigenous lands and territories. Among the Arctic states, so far only Denmark and Norway have ratified ILO Convention No. 169. However, the relevance of the Convention is not limited to these two countries, as the other Arctic countries cannot ignore this comprehensive set of international minimum standards on indigenous rights (Henriksen, 2006). Further I’ll go on and present the articles in the Convention which are essential for the oil and gas industry and which constitutes huge challenges for companies involved in the Arctic close to indigenous population.

3.1.2.1 Right to Participation

Article 7 is one of the fundamental principles of the Convention and it is established to ensure control over the pace and extent of development on indigenous and tribal peoples land and territories. And therefore it is also of paramount importance in relation to oil and gas operations. And a key understanding with Article 7 is that these groups of peoples should be “*fully involved and their right to participate from the beginning to the end of any initiative*”(ILO, 1989).

The latter sentence written in italic states something very important, namely their right to participate in any activities and initiatives which affects their lives in some way. This article makes it very clear that the indigenous peoples should decide for them selves the pace and extent of development on their land and territory. This represents a shift in philosophy from the earlier Convention 107 and is very important in the modern world. Before the assumption about indigenous peoples reality was that integration or assimilation represented the best alternative for them, and therefore policies were designed to realize exactly that. This old philosophy supported companies to do business on their premises as long as it helped the assimilation process. The governments were satisfied with the fact that indigenous peoples were given an opportunity to have a modern job, and that businesses created spin-offs which supported development-process of indigenous peoples and their land. Modern or a normal job is the strongest sign that someone has been assimilated into the society. This paternalism seems today to have died in many countries, but it is still a strong belief-system in some land. But the Arctic countries (Scandinavia, USA, Canada, and Russia) which are more or less very democratic and modern do not or should not practise paternalism any more. Therefore companies involved in the Arctic now and especially in the nearest future will need to recognize indigenous people rights and Article 7 in the ILO Convention No. 169.

3.1.2.2 Land Rights

In Article 13.1. concerns the *concept of land* : ...”governments shall respect the special importance for the cultures and spiritual values of the peoples concerned of their relationship with the land or territories, or both as applicable, which they occupy or otherwise use, and in particular the collective aspects of this relationship”. This is a legal recognition of indigenous people’s special relationship to their lands, and an acknowledgement of the fact that their lands and resources are core elements of their cultures. This provision is the underlying principle for all the other provisions related to lands and resources. The Committee of Experts on the Application of the Convention and Recommendation of the ILO, which is responsible for the monitoring of how the Convention is being applied in actual practice, has clarified that these provisions also are applicable in relations to oil and gas exploitation activities in indigenous peoples’ lands and territories(Henriksen, 2006).

“The U’wa people in Colombia, would rather commit collective suicide than see their lands desecrated and destroyed by the

exploitation of natural resources. Recently, a multinational petrol company has been granted a concession to undertake prospection of hydrocarbons. The U'wa have appealed to the Colombian Constitutional Court, citing Convention No. 169 and the Colombian Constitution (1991) to protect their land.” (ILO, 1989:29).

Article 14.1. “The rights of ownership and possession of the peoples concerned over the lands which they traditionally occupy shall be recognised”. These are lands where indigenous and tribal peoples have lived over time, and which they’ve used and managed according to their traditional practices. These are the lands of their ancestors, and which they hope to pass on to future generation. It might in some cases include lands which have been recently lost. “... In addition, measures shall be taken in appropriate cases to safeguard the right of the peoples concerned to use lands not exclusively occupied by them, but to which they have traditionally had access for their subsistence and traditional activities. Particular attention shall be paid to the situation of nomadic peoples and shifting cultivators in this respect”. Reindeer herders are included under nomadic peoples.

3.1.2.3 Natural Resources Rights

Article 15.1. of the Convention is of particular importance in the context of oil and gas resources. The rights of the peoples concerned to the natural resources pertaining to their lands shall be specially safeguarded, is an important feature in the Convention which the oil and gas industry has to pay attention to. The article also stresses the rights of indigenous to participate in the use, management and conservation of these resources. This jurisdiction suggests that corporation should establish a dialogue with indigenous peoples, especially with those who are representing them. The dialogue should aim at establishing common terms and agreements with regard to the participation in the use, management and conservation of resources – hydrocarbons, onshore and offshore localities.

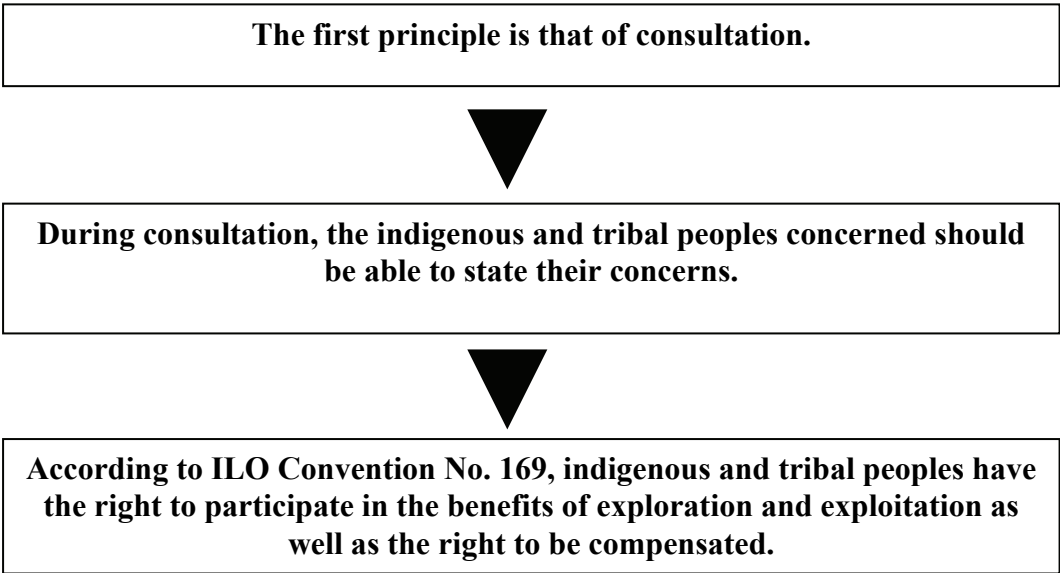
Article 15 (2) regarding mineral or other resources where the ownership is possessed by States, stresses that governments shall establish or maintain procedures through which they shall *consult* these peoples, with a view to ascertaining whether and to what degree their interests would be prejudiced, before undertaking or permitting any programmes for the exploration or exploitation of such resources pertaining to their lands. The peoples concerned shall wherever possible participate in the benefits of such activities, and shall receive fair compensation for any damages which they may sustain as a result of such activities. Though

Challenges and Opportunities For The Oil and Gas Sector In The Arctic – An Indigenous People Perspective

this provision is rather vaguely formulated, it gives the legal basis to indigenous peoples’ demands for a fair share of revenues from resource exploration on their lands and territories.

“In Nigeria, the commercial exploitation of oil in the Niger Delta has had severe ecological and social consequences for the Ogoni people. Oil leaking from pipelines and tanks has polluted rivers, streams and fields, and killed animals and vegetation. Forests have been cut down to make way for roads and pipelines, destroying the subsistence economy of the Ogoni people. Environmental pollution has led to severe health problems such as tuberculosis, and respiratory and stomach diseases. The Ogoni were not consulted and have not received any benefit from the profits made “ (ILO, 1989:39).

The Convention also suggest a model for how a company who wishes to extract mineral or other resources from indigenous and tribal peoples land, should go on and do so in a proper legal and moral way. Below I have drawn the model as it is framed in the Convention.



Model 2: The consultation model (ILO, 1989).

3.1.2.4 Displacement Rights

Displacement is a crucial issue for indigenous and tribal peoples, who have often been subjected to displacement, usually in the name of “progress”. This is often in the case of mines, roads, infrastructure projects and hydroelectric dams.

“In Chile, the Ralco Dam Project, the second of seven hydroelectric projects on the Biobío River, was approved by the environmental office of the Chilean Government in June 1997. This project will affect seven Pehuenche communities, forcing 700 people to move from their ancestral land. When completed, it will flood 9,000 acres of farmland and forests, and will ultimately destroy the culture of the Pehuenche by allowing the massive immigration of workers into their land” (ILO, 1989:42).

Article 16.1: “...the peoples concerned shall not be removed from the lands which they occupy.” The Convention prohibits forced relocation of indigenous peoples. It is clarified that where “the relocation of these peoples is considered necessary as an exceptional measure, such relocation shall take place only with their free and informed consent. Where their consent cannot be obtained, such relocation shall take place only following appropriate procedures established by national laws and regulation, including public inquiries where appropriate, which provide the opportunity for effective representation of the peoples concerned”. With *exceptional measure* the law constitutes that it should include only measures that could be unavoidable; natural and health hazards, e.g. flooding, epidemics, earthquakes, war famines etc. With regard to oil and gas operations it is not possible to justify forced relocation of indigenous peoples as a “necessary exceptional measure”. *Free and informed consent* means that the indigenous and tribal peoples understand fully the meaning and consequences of the displacement and that they accept and agree to it. If they do not agree, then the Convention outlines the following procedural steps to be taken when relocation is necessary:

1) Possible public inquiry: Indigenous and tribal peoples have the opportunity to express their concerns through an “appropriate procedure”. This might be a public hearing or investigation, but there may also be other ways best suited to a particular solution;

2) Right to return: Indigenous and tribal peoples have the right to return to their lands as soon as the reason for which they had to leave is no longer valid. For example, in the case of a war, or natural disaster, they can go back to their lands when it is over;

3) Resettlement and rehabilitation: If indigenous and tribal peoples cannot return to their lands, for example because they have been flooded, there must be a plan for the resettlement and rehabilitation of the displaced people;

4) Lands of equal quality: When indigenous and tribal peoples are resettled, they must be provided with lands of quality equal to, and with the same (or better) legal title as the lands they have lost. Therefore, if a person had agricultural lands, s/he should be provided with the same kind of land. If s/he had title to these lands, s/he should also have legal title to the lands that have been provided as a substitute. If indigenous and tribal peoples so wish, they can accept other forms of payment for their lost lands;

5) Compensation: Indigenous and tribal peoples have the right to receive full compensation for any loss or injury the relocation has caused, e.g. loss of house or property, adverse health impacts due to change of climate, etc.

3.1.2.5 Employment Rights

The Convention is concerned about large-scale resource extractions because they often tend to occupy large areas and subsequently destroy the livelihood of that area traditionally owned by indigenous and tribal peoples. Article 20.1 is a requirement that governments shall adopt special measures to ensure the effective protection with regard to recruitment and conditions of employment of workers belonging to these peoples – indigenous and tribal. This shall be done in co-operation with the people and within the framework of national law and regulation. An example of hazard behaviour is mentioned in the Convention, this event took place in Paraguay in the 50's. Its not an example directly connected to oil and gas but the example is still illustrating, in the term of how corporations should not act in a territory close to indigenous peoples. In this horrible story the large-scale cattle ranching squeezed out the native inhabitants and destroyed traditional hunting sites and animals as such – because the cattle's literally eat all the food in the area. The Enxet (Tribal peoples in this area) had no other choice but to become cheap labourers for businesses and farmers, and to take loan from moneylenders under unserious conditions.

If existing national law enforcement isn't an adequate protection instrument the Convention emphasizes the need to adopt special measures for the protection of indigenous and tribal workers. The objective in article 20.2. is to prevent any discrimination against indigenous and tribal workers and to ensure that they are treated the same as all other workers. Government shall do everything possible, in particular as regards admission to employment - including skilled employment, as well as measures for promotion and advancement - , equal remuneration, medical and social assistance, and the right to association with employer's organizations.

Article 20 (3) is established for the protection of indigenous and tribal persons with regard to discrimination. It undertakes that workers shall not be discriminated against when looking and applying for work – which include anything from manual labour to higher positions - , work of equal value should be paid the same, they should not work under exploitative conditions – especially important when working as seasonal, casual or migrant workers - , they have the right to form or join associations, they should be informed of workers rights and how to seek assistance, and they should receive medical and social service.

Article 20 (4) stresses the importance of establishing adequate labour inspection services to ensure that working conditions for the indigenous and tribal peoples are met.

So far only 2 of the 8 Arctic countries have ratified the ILO Convention 169 of 1989. Those countries are Norway (ratified in 1990) and Denmark in 1996. Nor Russia, U.S., Canada, Finland, Iceland, or Sweden has ratified it, which is very bad. Totally 14 countries in the World has ratified it.

3.2 Indigenous Culture, Society and Economy

3.2.1 Language

In the Arctic there exist more than 40 different indigenous languages*, many of them are being threatened by extinction every day and some are constantly changing. Some languages lose speakers dramatically, including many of the Saami dialects, Yukagir, Aleut and several Athabaskan languages in Alaska and Canada. Some languages are however in relatively good shape, including northern Saami, Tundra Nenets, Sakha, Chukchi, St. Lawrence Island Yupik, central and eastern Canadian and Greenlandic Inuktitut, Chpewyan, Dogrib, and Slavey (AHDR, 2004). The main reason for these differences relates to demography. In geographical areas where the population is relatively large the language is in much better shape than in areas with small populations. The largest languages are Sakha (358,500), Komi (242,500), Inuit (74,500), Karelian (62,500), Nenets (28,500), Saami group (26,100), and the smallest are Eyak (1), Kerek (2), Tagish (2), Holikachuk (12), and Hän (15) (AHDR, 2004). It is strange to think that only one person speaks Eyak, but this is how the situation has evolved.

Demographical conditions is however not the only reason for these differences. Governmental policies has played a role for instance. Some policies have been hostile to the preservation of indigenous languages. For example in Russian pre-perestroika time. But in Greenland, Danish Government policies represent the longest history of language preservation. The Greenland Home Rule was introduced in 1979 and it fostered the stabilization of the Greenlandic language, basically through changing the official education language to Greenlandic, and by establishing phonemic orthography which made it easier to write in Greenlandic.

Contact between indigenous and outside languages in the Arctic has been going on for centuries. This has lead to the development of mixed languages, such as Cooper Island Aleut. But the main influence which have unfortunately lead to a one-sided language, comes from schools and governmental agencies. Many of the Arctic communities became bilingual.

3.2.2 Religion

Shamanism has been described as the stereotypical Arctic religion (AHDR, 2004). Shamanism is based on a variety of local practises with a limited number of common elements, it is not a unified systems of beliefs.

* For a complete list of all the languages see page 53 in The Arctic Human Development Report from 2004.

The Shaman which existed in every Arctic communities until recently, was a person who had religious functionalities and who was able to communicate with and control spirits. Shamans were often engaged in healing, and other activities aimed at improving the communal and individual well-being.

Animism is the belief that all natural phenomena, including human beings, animals, and plants, but also rocks, lakes, mountains, weather, and so on, share the soul or spirit that energizes them (AHDR, 2004). A core element in this religion is that not only humans are capable of making independent actions. A small rock is just as important as a whole mountain, and the smallest creatures is able to kill a large enemy, are believed.

More importantly in the context of oil and gas development are the sacred sites were indigenous societies “manage souls”. Ritual care taking of animal souls is of most importance since the killing and consumption of them provide the basic sustenance of circumpolar north. The bear has received special attention from Arctic residents. Religious beliefs and practices in the Arctic have always been tied to the land and other aspects of the visible and invisible landscape and “sacred sites” are of particular importance for many Arctic residents.

Sacred sites is often located in areas of particular importance for the indigenous peoples. This could be highly efficient hunting grounds, in regions with rich biodiversity, along migration routes, in areas populated with rare species, and in areas with unique landscape (AHDR, 2004).

Today the most parts of the Arctic religions are affiliated with some form of Christianity. The adoption of Christianity rarely, if ever, resulted in the simple replacement of one religious system by another. Instead, old and new beliefs were reintegrated within a new system that was both Christian and local (AHDR, 2004).

3.2.3 Subsistence activities

Biological resources are harvested in small-scale subsistence activities. Indigenous population use their traditional practises when fishing, herding, hunting, and trapping, as well as gathering fruit, mushrooms and wild eggs. These activities form a significant part of the dietary intake of households and communities in some parts of the Arctic. In Alaska the annual production generally varies between 69,5 and 301,8 kg per capita. Canadian Arctic annual production of edible weight varies between 84 and 284 kg per capita. In Greenland the daily quantity consumed is estimated to 0.33 kg per person on average, and the daily production per person vary between 1.21 to 3,50 kg (AHDR, 2004). These activities are of cultural and economical importance. The harvesting is important for its contribution to food

production and consumption, and food from the land represent one of few substitutes to imports into the Arctic. But it is also important for its contribution to the meaning of life, because traditional (or customary) activities create links both between past and the present and between people living together (AHDR, 2004).

3.2.4 Fisheries remain a backbone of the economy

Fisheries are the backbone of the economy in almost all coastal and island areas in the Arctic. In the Faroe Island, the harvest of whales and other fisheries are the most important industry, and it comprises a fifth of gross domestic product. Greenland is the second largest exporter of shrimps in the world, but fisheries are also very important. Around Iceland, warm and cold water currents come together, making the maritime environment particularly good for the fish. In Greenland and Iceland, the production of the primary sector is largely based on fisheries. In northern Norway, Alaska and northern Russia, coastal fisheries contribute to the economy in a significant scale. In Norway, every coastal town or village has its own fishing port. Fishing in lakes and rivers are practised everywhere in the Arctic, and is significant to local economies (AHDR, 2004).

3.2.5 Special relationship

Indigenous peoples have a very special relationship to their homeland. It is where they live, and have lived for generations. In many cases, their traditional knowledge and oral histories are connected to the land, which may be sacred, or have spiritual meaning (ILO, 1989). *“In North America, some mountains are sacred to indigenous peoples, e.g. Mount Graham to the Apache, Big Mountain to the Dineh, the Black Hills to the Lakota, Bear Butte to the Southern Cheyenne, etc. Sometimes it is the streams and rivers which are sacred, as in Fiji, or to the Paez in Colombia; or trees, for instance to the Dogon and Bambara in West Africa”*.

Indigenous people have, as I've mentioned already, a very special relationship to their land, territory and natural resources, and it represent the core essence in their society (Cobo, 1987). Mr. José Martínez Cobo (1987) elaborates on the relationship: *“It is essential to know and understand the deeply spiritual special relationship between indigenous peoples and their land as basic to their existence as such and to all their beliefs, customs, traditions and culture”*. As he explicitly expresses, there is a spiritual relationship between them and their land as well. They do not feel complete as human beings without the nature and the nature are neither complete without them (AHDR, 2004). This is a commonly agreed vision by many

philosophers concerned with ecosophy, I could mention the Dutch, Middle Ages philosopher Mr. Spinoza Baruch and our own loving and still living (95 years) Arne Næss.

In Mr. José Martinez Cobo's (1987): "*Study of the Problem of Discrimination against Indigenous Populations*", he made observation which can help us understand how indigenous feel about their homeland: "*For indigenous peoples the land is not merely a possession and a means of production. Their land is not a commodity which can be acquired, but a material element to be enjoyed freely*". As I see it, indigenous people give the nature and all its features a value in its own (intrinsic value); the opposite of instrumental value. Oil and gas are resources which can be used to boost revenues and economic growth, hence its instrumental value; we use oil and gas as an instrument in order to get income and growth. An automobile is also of instrumental value because it enables us to travel over far distances relatively quick. The homeland perspective or indigenous people feel the opposite for their land, they give it intrinsic value. It is difficult to define intrinsic value, therefore I have said what it is not.

3.4 Petroleum hydrocarbons impact on Arctic environment

The oil and gas industry represents the heaviest industrial complexes on this planet, and is proudly design by human beings. It is difficult to paint a picture with words that could describe the vast size of oil and gas installation in an adequate way. If you haven't been offshore and seen it with your own eyes, or at onshore localities, example wise Snehvitt, you can't really imagine it. However, I will try to visualize it, by describing the main feature of the industry and exemplify them.



The industry is characterized by huge installation, both offshore and onshore there is a **Picture 2: Oil rig in Norway (Kindingstad & Hagemann (2002)).**

necessity to build large rigs and infrastructure. In Norway there're more than 17 permanent rigs, each equipped with large infrastructures on the seabed, far reaching networks of oil and gas pipelines, transport terminals and LNG fabrication localities. These two latter mentioned features demands vast geographical areas, take Snehvitt for instance, the LNG fabrication located on Melkøy is actual bigger than the island itself. These vast constructions have massive impacts on the landscape, environment and cultures. The impacts will be presented in this chapter.

3.3.1 Source and Levels

The main environmental concern about hydrocarbon pollution stems from the exploration and transport of oil and gas resources. (AMAP, 1997).

3.3.1.1 Discharge of drill cuttings causes environmental damage

Drilling muds are used to lubricate the drillbit, to control pressure in the well, to support and seal the walls of the bore hole, and to carry drill cuttings to the surface. The drill cuttings are normally dumped directly in the water surrounding oil rigs, or it is carried to land and dumped

there. The cuttings sink and is quickly settled, and in waters with low circulation they can create large accumulation around an oil rig.

The muds can differ from water based which spreads more widely than oil based muds in the offshore environment. Certain location makes the use of environmental threatening oils unavoidable. Until the 1980s diesel oil was used which had directly severe impacts, but it has been replaced – to some unknown degree – especially in the offshore drilling with more friendly low aromatic mineral oils.

On the Norwegian shelf north of 62°N there has been conducted research on the maritime fauna surrounding oil fields. The studies have shown that the impacts are local and are restricted to the vicinity of the discharges. It has been observed that the impacts of *water based* muds have and biological effect in an area of about 15 square kilometres around the drilling site. Similar studies have been done in the Beaufort sea, and there has been observed that water based fluids alter the abundance of several types of bottom animals, but again only limited to local areas (AMAP, 1997).

Land based wells use similar drilling muds as offshore drilling activities, but the disposal process or method differs. The muds are often dumped into a sump which contaminates the groundwater, vegetation, soil and biota within an area of a few hundred meters, but the containment varies widely (AMAP, 1997). In Russia the muds are often just dumped directly into the landscape, rather than in specially constructed dumps. As a result, the environmental damages are significantly increased.

Strict regulation and the use of improved waste management technology are essential to limit the environmental consequences of drill muds and cuttings (AMAP, 1997).

3.3.1.2 “Produced” Water, Accidental Spills

The water that comes out along with the oil and gas from the wells is a major source for pollution from hydrocarbons. On the Norwegian shelf this accounts for 76% of the operational and accidental pollution. Before discharging “produced” water it should be treated according to regulatory guidelines. In the North Sea and for the United States this limits should not exceed 72 milligrams per litre for any one-day period or 40 milligrams per litre on average over 30 days.

Blow-outs, spills, and leakage during production and transport of petroleum represent the largest oil pollution threat to the Arctic environment. Pipeline ruptures and leaks, such as those in Usinsk, Russia in 1994, and the Exxon Valdez accident in Alaska in 1989, are examples of hazardous disasters. The Exxon Valdez spilled 35000 tonnes of oil and the

Utsinsk is estimated to have spilled between 37-44000 tonnes of oil into rivers and lakes. The total leakage from the pipelines into the environment is estimated to 103000 to 126000 tonnes of oil (AMAP, 1997).

On the Norwegian shelf the situation is much better. The spills here are small to insignificant. In 1994, 365 accidental spills were reported, together this only accounted for 55 tonnes of oil. Nevertheless, it is these rare, difficult to predict large spills that become environmental calamities.

Statistics from oil spills outside the Arctic region has determined the probability rate of spills. The probability of one or more spill equal to or more than 1000 barrels are between 58-99 percent. Spills larger than 10000 barrels are estimated to occur with a rate from 24 to 92 percent. And these significant spills come most likely from pipeline ruptures, followed by tankers and platforms.

However, these theoretical risk calculation are not designed for Arctic condition. They do not take into account the special features that the Arctic represents, such as ice and icebergs surrounding the bottom of an installation etc., which can damage the lower parts of any installation. In addition the spills in the Arctic can differ from those in lower latitudes, because there will be difficulties in recovery of oil spills and in drilling relief wells (AMAP, 1997).

3.3.1.3 Tanker Spills

Oil spills from transporters are the main oil-related threat to the environment. This is because the amounts released are normally vast in size. However the size, the damages are often restricted to local areas, typically near the ports where the accident normally happens. These accidents contribute actually only to a small percentage of the overall input of oil into sea. But due to the severe potential it represent the media pays significant attention to it. A tanker is initially a huge machine, and since oil is a floating fluid, the tanker can carry enormous amounts of it. It is very efficient and feasible to transport oil in tankers in an economically perspectives, unfortunately this “luck” makes the potential damages vast and severe. Something the grounding of the Exxon Valdez tanker off the coast of Alaska in 1989 and Braer near the Shetland Islands in 1993 showed.

3.3.1.4 Pipelines contribution to oil pollution

Russia's extensive 10000 kilometres network across Western Siberia has the ability to carry 400 million tonnes of oil every year. Extremely many of these are in bad shape and ruptures happens frequently. In the period from 1991-93 there was 103 reported large scale failures at oil and gas infrastructure in the Russian Federation, many of them in Arctic and subarctic areas (AMAP, 1997). The picture shows the vast distribution of pipelines in Russia and reported ruptures in 2000-02.

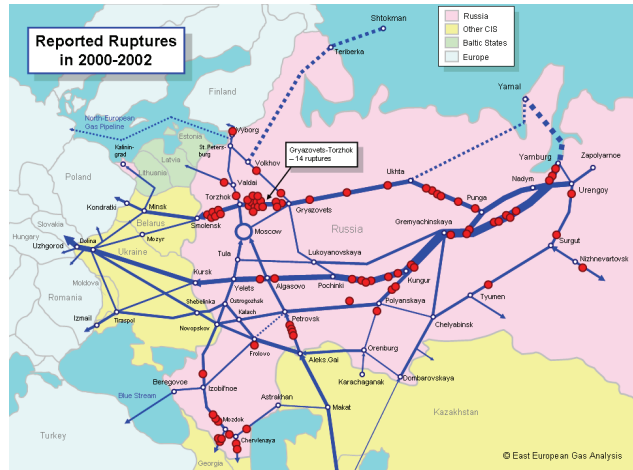


Figure 4: Reported ruptures on Russian gas Infrastructure in 2000-2002 (Source unknown).

In the United States, the situation with the Trans-Alaskan pipeline is much safer. These networks stretches from the field in Prudhoe Bay to Port Valdez in southern Alaska, and from Mackenzie River to Alberta. The maximum amounts which can occur is said to be 2226 cubic metres, this is due to the automated shutdown of pump station and valves.

3.3.1.5 Natural oil seepage

Globally this source contribute between 0.02 and 2 million tonnes of oil per year to the environment. There are no estimates for the Arctic, but there is expected to be on a higher level than the average in the world. The Mackenzie River in Canada's Arctic contributes with the largest quantities of hydrocarbons to the Beaufort Sea. Oil seeps are also located in eight areas of the U.S. Arctic, seven of which are along the latter mentioned Sea. Oil seeps are also located in our be-loving Spitsbergen in the Barents Sea (AMAP, 1997).

3.3.1.6 Polycyclic Aromatic Hydrocarbons

Spilled petroleum is the largest single source of PAHs, and crude oil contain up to 10 percent while coal and shale oils can be as high as 15 percent. When oil is spilled they can have acutely toxic effects due to the high concentration I've just mentioned. However, even low concentration of PAHs is very threatening to the environment and can cause mutation and cancer (AMAP, 1997).



Picture 3: Mutation¹

3.3.1.7 Natural Gas

Natural gas contains Methane which is a greenhouse gas and contributes to climate change and is therefore of bigger concern than other sources of pollution. Methane is a global concern while most other oil and gas related pollution is local. Methane is released into the atmosphere by gas drilling, leaky pipelines and by venting and flaring activities on oil and gas rigs. These sources represent the fourth largest source of methane to the atmosphere.

3.3.1.8 Air, oceans, and rivers communicate hydrocarbons

Beside the sources in the Arctic that contribute to pollution here, the Arctic is also being polluted through industrial areas further south. Our car driving contributes of course also. Hydrocarbons are transported through mother earth vanes, namely rivers and oceans and also through the air. Estimation has shown that atmospheric transport adds approximately 40000 tonnes of hydrocarbons to the Arctic marine environment and about 40000 tonnes to the terrestrial environment (AMAP, 1997). Together that is more than twice the levels of the Exxon Valdez accident.

3.3.2 Levels and oil spills in coastal and marine environment

Hydrocarbons can be detected in seawater throughout the Arctic. The highest concentration beside pollution in harbours, occur just off river mouths. Especially in Russian rivers are the levels high, much higher than in North American Arctic.

The most severe cases of pollution occur in areas with intensive industrial and military activity. For example in Murmansk the conditions are completely severe and hazardous. The condition here exceeds maximum permissible concentration with a factor of 150 – in surface waters. Also along the Norwegian Arctic coast the levels of hydrocarbons are higher than in other Norwegian harbours. In Hammerfest the highest concentration was found, 7000 milligrams per kilogram.

There exists a paradox here. Because really large spills can have small impacts on the environment, but in contrast a small spill can have severe consequences. This is due to the location of the actual spill. If the spill happens far out in the open sea the impacts are limited. Because nature will eventually blend the oil with water and spread it out over a vast area. On the other hand if a small spill happens close to the coast or in the vicinity of large bird colonies the impacts will be severe. Therefore transport and dispersal of oil becomes an important factor when trying to understand the risk involved in Arctic oil and gas business.

3.3.2.1 Effects on Animal Varies

Some animals are better protected and can survive oil exposure better than others. Zooplankton take up components of the oil but the toxic effects appear to be short lived. Fish eggs and larvae on the other hand very vulnerable. This is due to their location in surface water where the dissolved oil often occurs and because their more sensitive to oil toxicity than adult fish. Adult fishes have the advantage that they can swim away from oil and can therefore avoid the worst consequences.

Birds on the other hand has fur which is a major disadvantage when exposed to oil, and they have become symbols of the environmental threat posed by oil. Oil takes away their natural insulation and the temperature in their bodies drop drastically. The birds also ingest oil when helplessly trying to clean their feathers – like the pore little fellow in the picture. The oil toxins often disables the birds to reproduce and soiling of eggs kill the developing young.

Seabirds are particularly vulnerable because huge population of a single Arctic breeding colony often gathers in one place. One spill in the vicinity of such a colony could therefore, severely harm the world population. It is noticeable to see that there aren't any relations between the size of the spill and the amounts of birds killed or harmed. The enormous *Amaco Cadiz* released 250.000 tonnes of oil off the coast of Brittany, France, but only about 4500 birds were killed, whereas 35000 tonnes of oil from the *Exxon Valdez* probably killed a half million birds. Also in Norway, off the coast of Finnmark, an inconspicuous spill killed between 10000 and 20000 birds (AMAP, 1997).



Picture 4: Bird covered in oil (Source unknown).

3.3.2.2 Sea Mammals

Again are those who suffer the most animals who relies on fur for insulation and to keep afloat. In Arctic such animals are the sea otter, polar bear. But also the seals and the walrus could suffer if the oil hinders them when they swim, and the oil is very dangerous for their eyes. Whales seems to be unharmed by contact with oil, that is maybe due their smooth skin which oil does not stick to, and their ability to simply swim away (AMAP, 1997).

3.3.2.3 Land and Rocks

“Shorelines and shallow subtidal communities are the prime focus of concern during most coastal spills” (AMAP, 1997). The impacts vary greatly depending on whether the landscape has a nature that allows the sea and water to wash the oil away. Straight, rocky headlands for example, might be cleaned after less than one year. But if the spill happens in more sensitive areas, where sediments retain contaminated for a long time. “The most sensitive areas are estuarine salt marshes where oil can remain for decades”(AMAP, 1997).

Investigation from the *Exxon Valdez* accident showed that immediately impacts on the four main organisms – sea weed, barnacles, mussels, and periwinkles – survived the spill. But after a year the density in that area had decreased, after another year the situation were stable and healthy; or in a state typical of pre-spill communities (AMAP, 1997).

Organisms have a complex behaviour and there individuality is significant. Some organisms – barnacles – can pretty much avoid drying out during low tide, and that can be their lifesaver when spills happen. Some organisms are mobile and their mobility enables them to escape away to deeper waters for example. This seems entirely brilliant, but the reality is far from. Animals feed on this organisms and they can thereby get stuck in the oil while chasing the mobile organisms. After the *Amaco Cadiz* accident, it took over eight years for the amphipod population along *some* of Brittany’s shores to return to normal. The small crustacean and other scavenging amphipods plays a key role in the Arctic, hence spills here can have more severe impacts than in warmer waters.



Picture 5 : Organism covered in oil (AMAP, 2002).

Macroalgae which are highly presence in the Arctic, live just below the shore line on rocky shores and might be protected by their mucoid surface (AMAP, 1997). But when a bunker with 1000 tonnes of oil was spilled in the Arctic coast of Norway in 1981, all macroalgae died in heavily oiled areas. In lighter oily areas the macroalgae showed retarded growth the next spring.

3.3.2.4 Sand and mud retain oil and increase biological damage

Sand and mud’s are like a sponge, it sucks the oil down in the shore sediment. The impacts can be severe and cause instability in structure of the biological community for a decade after

the accident. The diesel oil spill in Spitsbergen were still present one and a half metre down in the sediment two years after the accident.

3.3.2.5 The undersea

A unique feature of the Arctic marine environment is the wildlife of animals and plants under the multi-year ice. Oil spilled under the ice will remain until the ice melts as mentioned before, the exposure prolongs therefore and animals and plants have to be neighbours with the toxic substances for a long time.

3.3.3 Oil in terrestrial and freshwater environment

Leakage from pipelines can make local levels of hydrocarbons extremely high. After spills from a pipeline (Vosey), levels in dry soil were as high as 15 percent, the soil was located in a spot close to the pipeline. Long-term monitoring of Russian rivers, show high levels of hydrocarbons in areas with oil and gas exploration and production.

3.3.3.1 Soils, plants, and snow determine how oil spreads on land

Oil spills on land will in general be more local than offshore. The contaminated area depends on the topography, whether the ground slopes or not, which type of soil and plants that exist in there. Different vegetation has different absorbing abilities. For example mosses are very efficient in absorbing oil, and also waterlogged soil. Dry and frozen soil above the permafrost - which is very common in the Arctic - has a lot of cracks which could lead oil far down into deeper soil layers and transport it horizontally. Hot leaking oil from pipelines often form channels in the snow and thereby transporting the oil far away, making the impacts relatively large. The production pipeline that leaked produced water and oil near Prudhoe Bay in 1989, were spread over a half hectare of Arctic coastal tundra, inundating small lakes and ponds. After one year the levels of oil in the soil had decreased by 80 percent, but after this initial drop the decomposition period slowed down considerably (AMAP, 1997).

3.3.3.2 Oil will destroy plant cover

Oil spills will damage all actively growing plants tissues in wetlands. The ones who have shallow roots are most sensitive, because oil will probably reach them. Sedges are known to recover, but mosses can be completely eliminated.

Arctic conditions with low temperatures makes the environment significantly more vulnerable, because plant cover is much thinner than in warmer areas. Also the flora grows

slower due to the cold and the lack of nutrients. In the Arctic, the toxic components from oil spills are expected to remain in the soil for 30 years. All in all this reduces the chance for vegetation to recover. Applying fertilizer and tilling the soil helps the recovery process.

Spills on terrestrial animals is not well documented and represent a knowledge gap, but it's probably not healthy for them. Analogies can be drawn from the marine animals, and we can expect that animals with fur-insulation will suffer. In St. Lawrence River a major spill killed a number of muskrats.

3.3.3.3 Russian wetlands are fucked up

In Russia, discharges from oil and gas operations are dumped directly into the landscape. In Western Siberia the amount of concentration are vast. When it rains in this areas the pollution is transported with the rain water far away in all direction. As a consequence almost every river and lake in northwest Siberia exceeds the maximum permissible concentration.

3.3.3.4 Oil in streams and lakes

Fish was earlier said in this paper to be quite unharmed by oil spills, but again we witness the close dependent relationship in earth's ecosystem. Zooplankton, which are the main source for food for a freshwater fish are in most cases killed by oil spills. And isn't recovered for after several years. The result. Fish dies. If however the fish survive it is clearly taint, and they becomes dangerous to eat. In streams the oil is communicated over a wider area and total abundance and specie diversity is known to decrease. Birds for instance – ducks, geese, herons, – are always the first to go because of their furry uniform. After the *Exxon Valdez* accident, bald eagles died after eating oil-contaminated birds and sea-otters. Again the ecosystem shows us that everything is interrelated.

3.3.4 Levels and effects of polycyclic aromatic hydrocarbons

Polycyclic aromatic hydrocarbons do not dissolve well in water and instead tend to associate with other particles. But when present in the ocean it gets blended and mixed, just like cream added into a tomato soup. In cities PAHs are mainly present in the air, and it is the main component in air pollution. In cities on the Kola Peninsula the situation is especially critical.

PAHs in the upper surface of water and in the atmosphere is degraded by the sun. In the Arctic this process is slower than in lower latitudes due to low temperatures and low light.

3.3.4.1 Seawater and sediments are clearly contaminated with PAHs.

Five localities are especially contaminated by PAHs in the Arctic. Our own bellowing Barents Sea, the Spitsbergen and harbours in northern Norway are three of the unfortunately affected areas. The Beaufort Sea and Tuktoyaktuk Harbour in the Northwest Territories in Canada are also victims. The source from where PAHs comes from differs in the different areas. In Alaskan sediments point to hydrocarbons, combustion sources in the Barents Sea, a mixture of the two in the Beaufort Sea and in the Russian marine environment, coal particles and sediments in Spitsbergen (AMAP, 1997).

4 ANALYSIS

4.1 Short summary of previous chapters

4.1.1 International Labour Organization Convention No. 169 of 1989

Article 7 in the Convention states their right to participate from the beginning to the end of any initiative, in order to secure that they can continue to exist with their own identities and determine their own way and pace of development. Article 13 concerning land rights are a very important article which is established to secure that indigenous people cultural and spiritual values are being respected. These values are closely related to the land, due to the special relationship that exists among indigenous peoples and their homeland. The article states that when this relationship has a collective nature it has to be respected in particular. The challenge here is to recognize and locate these spiritual and cultural values. What are they and how do they relate to indigenous people land and territory. Article 14 states that indigenous people are the owners of the land which they have occupied, or more correctly their ancestors occupied along time ago. This paper did not discuss the history of where and when indigenous people came to their land, regardless of the importance the history constitutes in the process of clarifying the rights in this article. For a brief introduction about the earliest known migration, see Thomas Berger's Report (1977), *Northern Frontier, Northern Homeland*. Article 15 is very important for oil and gas companies, and it concerns the natural resources in the homeland. The main content of this article is indigenous peoples right to participate in the use, management and conservation of the natural resources. To establish a dialogue between companies and the people concern is vital in this matter. In region where the natural resource are owned by the State – for example on the Norwegian shelf –, indigenous people shall be consulted before any programmes are permitted, with regards to exploration or exploitation of such resources pertaining to their lands. The article also illustrates a model for how a company who wishes to extract resources should go on and consult the peoples concerned. Article 16 states that indigenous peoples should not be displaced or relocated in the progress of developing oil and gas infrastructure. Relocation should only take place with their free and informed consent.

4.1.2 The Arctic Human Development Report

In chapter 3.3 – Indigenous culture, economy and society - I studied indigenous peoples language, religion, subsistence economies, fishing economies etc. There exist more than 40 different indigenous languages in the Arctic. The state they are in throughout the circumpolar North varies significantly. Many are characterized by a dramatic loss of speakers, while others seems to be in relatively good shape (AHDR, 2004).

Religion in the Arctic is a mixture of old and new belief systems. I find it very interesting and important for the protection of indigenous people to understand that there exist sacred sites. A sacred site is a place in the environment where “souls are managed”. These places are normally located in areas of particular importance for the indigenous people. This could be on highly efficient fishing grounds, in regions with rich biodiversity, along migration routes, in areas populated with rare species, and in areas with unique landscape (AHDR, 2004).

Subsistence economies are of dual importance to indigenous people. Traditional activities such as fishing, herding, hunting, trapping, gathering of plant, fruits, mushrooms and eggs are a vital part of the dietary intake of households and communities, especially in some parts of the Arctic. But the harvesting is also important for its contribution to the meaning of life (AHDR, 2004).

Fisheries are of particular importance for many Arctic coastal region and indigenous peoples. In Norway, Russia, Greenland and Alaska, coastal fishing is the backbone in the economy. But also fishing in lakes and river are of high importance for indigenous people, and it is practised all over the Arctic.

In the end of chapter 3.3 I have gathered numerous of quotes which articulate the special relationship that exists between indigenous people and their homeland/Arctic environment. The elements in the homeland have often sacred or spiritual meaning, and traditional knowledge and oral histories are in many cases connected to the land. This section provides the reader with an understanding that indigenous peoples “see” the nature in a whole different way than western societies do. This constitutes a major challenges for oil and gas companies working in the Arctic.

4.2 The challenge with indigenous people

The ILO Convention is a suitable place to begin for a company who wish to do business in the Arctic in a responsible and legal way. The Convention articulate many challenges with regard to indigenous people, and commitment to it should secure that oil business is manage and

done accordingly. The challenges with indigenous people for the oil and gas industry are stated in the Convention, and they are: right to determine their own futures; right to participation in the use, management and conservation of natural resources; right to not be displaced; and the right to work under serious condition. These challenges are concerned about one common interest, as I see it. All rights in ILO Convention No. 169 of 1989 are established and design for the protection of indigenous people cultures, their distinct way of life, and their traditions and customs (ILO, 1989). These are the main interest of the Convention and therefore they also represent the interests of Arctic indigenous people.

With the objective to protect indigenous people interests it becomes inevitable to understand what exactly we should protect. And that is indigenous peoples cultures, distinct way of life, traditions and customs in an Arctic context. It is logical to further examine their cultures, distinct way of life, tradition and customs in the quest of discovering challenges regarding indigenous peoples. I have done so in chapter 3.3 – Indigenous culture, society and economy -and I have tried to articulate what they are – language, religion, subsistence economies, fisheries, and special relationship -, and I also summarised them in this chapter. The table under show the challenges regarding indigenous people which I've discovered through studying the ILO Convention No. 169 and the Arctic Human Development Report. The whole Manual for the Convention No. 169 is concerned about one common challenge –as I see it -, and that is the protection of indigenous people distinct life, customs, tradition and culture; that's a huge challenge. In the box to the right under "AHDR" I describe in more detail what the protection of indigenous people cultures, traditions, customs and distinct way of life actually implies; namely protection of language, religion, subsistence economies, fisheries and special relationship.

	ILO 169	AHDR
Challenges	Respect and protect <i>indigenous peoples cultures, traditions, customs and distinct way of life</i>	Respect and protect: <ul style="list-style-type: none"> • <i>Language</i> • <i>Religion(Spiritual site)</i> • <i>Special relationship (Spiritual sites)</i> • <i>Subsistence economy (Strategic zones)</i> • <i>Fisheries (strategic zones)</i>

Table 3: The Challenges with indigenous peoples

Further in my analysis I will concentrate the attention toward these main interests. I will use the evidences and testimony gathered from the Arctic Human Development Report about indigenous people distinct way of life, traditions and cultures, and data from Arctic Monitoring and Assessment Programme about petroleum hydrocarbons impact on Arctic environmental, with the objective to discover opportunities which can help to protect indigenous peoples interests. Sewing these two bases of knowledge together, I believe, can provide us with a product which gives us a holistically understanding of the situation. That is the aim of my thesis.

4.3 Opportunities

In this section I will, first and foremost, argue why I made room in my thesis for one chapter about the environmental impacts of the petroleum hydrocarbons. Secondly I will articulate and illustrate how such knowledge can be useful in order to protect indigenous people religion, subsistence economies, fisheries and distinct way of life in general.

4.3.1 The Arctic Monitoring and Assessment Programme

What I basically discovered in chapter 3.2 and 3.3 was that challenges with indigenous peoples are mainly occupied with the idea of protecting culture, economy and society. More

specific these challenges involve the protection of their language, religion, subsistence economies, fisheries and their special relationship to their homeland – I merge all these challenges into one group which I call “distinct way of life” -. And the particular important aspect of their “distinct way of life”, as I see it, is that everything is related together. The components which together constitute the concept “distinct way of life” are not distinct components, but woven together. Subsistence economies, fisheries are all depending on the rent that nature give, these rents are especially high or present in spiritual sites and strategic zones which the indigenous people worship. The special relationship is a product of their dependency of vital needs (food and clothes etc.) and the land. The land offers them everything they need, and subsequently providing them with a life, so the land or the nature becomes life, and in broadest sense, everything. No wonder they worship it. And the different indigenous language in the Arctic is the media which father and son (and mother and daughter) uses in order to communicate the special relationship between their cultures, economy, society and the homeland. And that is basically how they live their life and survives as indigenous peoples.

Therefore I understood that in order to protect indigenous people distinct way of life, I had to understand how the oil and gas industry impacts the environment; because protection of distinct way of life actually means to protect the environment and nature/homeland surrounding their distinct way of life. Knowledge about petroleum hydrocarbons impact on the Arctic environment/homeland can provide us with a better understanding about how oil and gas companies affects indigenous people “distinct way of life” in the Arctic. If we know how the oil and gas industry affect the “distinct way of life” we can try to avoid the adverse impacts it brings, and hence, protect indigenous people as it is required in the ILO Convention. Therefore I used one chapter more (chapter 3.4) to envisage how petroleum hydrocarbons impacts the Arctic environment.

The next step is to sew together the challenges that I’ve illustrated in table 4.2 with the knowledge I gained from the Arctic Monitoring and Assessment Programme. The objective is to come up with an understanding about how an oil and gas company can go on and fulfil the criteria of the Convention - protect indigenous people distinct way of life – and at the same time do their core business. For that matter I wish to come up with some tangible, practical suggestion on how this is possible.

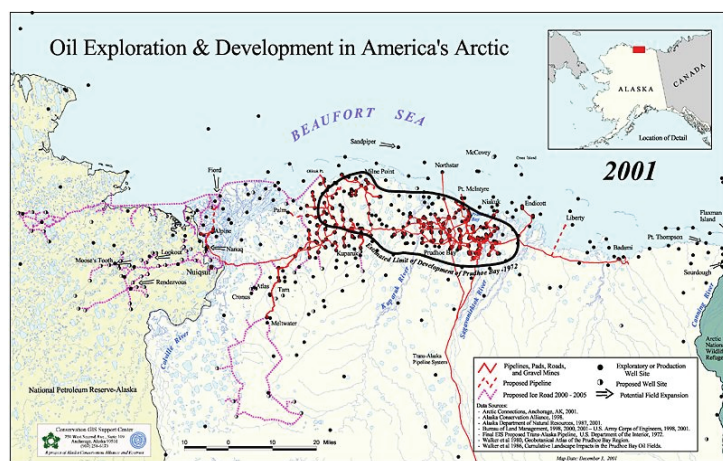
4.3.2 Opportunities with protecting strategic zones and spiritual sites

Subsistence activities involve fishing, herding, hunting, trapping, and gathering. These activities are highly dependent on a sustainable and healthy nature; from sea- and freshwater, to earth and soil, plants, vegetation, air, and the whole biological diversity in the nature, etc. Therefore in order to protect indigenous people distinct way of life, it is important to hinder that their subsistence economies are being polluted and destroyed. Let us now use the knowledge gathered from the Arctic Monitoring and Assessment Programme, with the aim of reducing adverse impacts on indigenous people “distinct way of life”.

For methodological purpose I will first define a concept which I call “strategic zone”. A strategic zone is a place, site or locality in the Arctic homeland where the subsistence economies are especially practised. It is a place where the economy is “blooming” or is very “fruitful” one might say. This could be fish rich waters – coast of the sea, lake, river -, efficient hunting grounds, areas with rich biodiversity and others (...).

4.3.2.1 Regarding discharges

Discharges from oil and gas drilling have to be carefully handled. Discharges and muds from the drilling must also be carefully placed and secured, and produced waters should be treated according to regulatory guidelines. For security matters, the muds should be dumped in special containers or storing facilities where they are not polluting the area surrounding it. Today muds are often dumped into a sump which contaminates the groundwater, vegetation, soil and biota within an area of a few hundred meters, but the containment varies widely



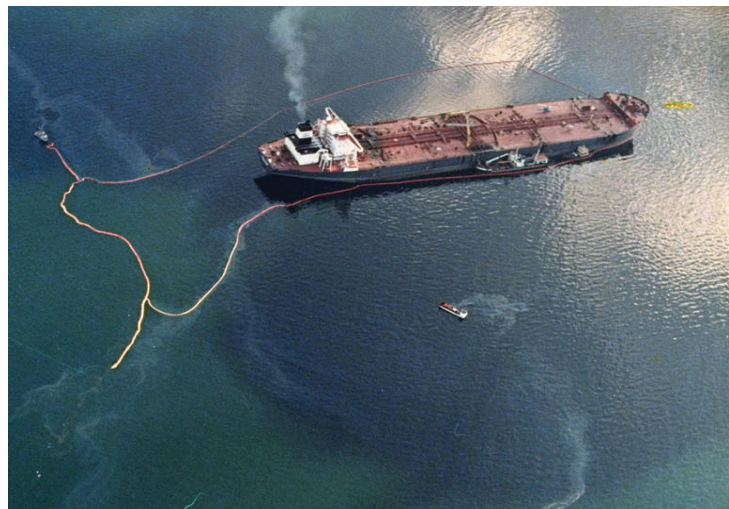
(AMAP, 1997). Location of the **Figure 5: Wells drilled at Prudhoe Bay, Alaska¹** dumping site should therefore be in an area which is of no or small value for indigenous peoples whose using the land. The location where the well is drilled is also important, both onshore and offshore. It is important onshore to not locate the well near or in a strategic zone or/and spiritual site. This is because the presence of the industry in such an area create physical disturbance for traditional activities. Wells have local effect on the environment and will pollute the sediments in the soil. Onshore the drilling muds used are often more

environmental threatening than the lighter, water based muds used offshore. Therefore it is very important that onshore wells are located far away from strategic zones and spiritual sites. The picture above show the vast distribution of wells drilled at Prudhoe Bay in Alaska. When all the mud, produced water, and discharges from these wells are accumulated we can only imagine the vast and severe adverse impacts it might have.

Offshore the impacts are more far reaching than onshore, due to the high mobility of circulating waters. Discharges are circulated and carried over wider distances than onshore discharges, but they are still determined to have local effects. As we saw earlier the biological effects of water based muds cover an area of 15 square kilometres around the drilling site. Therefore carefully planning the bore holes and constantly striving to decrease their size and improve the use of already existing holes are very important, and discharges from offshore activities should be carried to land and stored safely in an area of no or of insignificant value to the indigenous people.

4.3.2.2 Regarding tanker spills

Furthermore I will analyse the impacts of petroleum hydrocarbons spilled from tanker could have on strategic zones and spiritual sites. Spilled petroleum is the largest single source of polycyclic aromatic hydrocarbons (PAH). Crude oil contain up to 10 percent making the impacts of



spills severe and acutely. Even low concentration of PAHs is very threatening to the environment and can cause mutation and cancer. To hinder spills are therefore of significant importance, but it is difficult to predict when it happens. What we however can do is to prevent it from happening in the most sensitive areas - strategic zones and spiritual sites -.

Contamination of fishing localities will bring miseries because fishing is the backbone in many arctic economies (AHDR, 2004). Especially in Greenland, Iceland, Faroe Islands, northern Norway and Russia, and Canada the fishing activities are important. The main environmental threat towards fisheries in the seas comes from tanker spills. These are normally vast in size, but the size doesn't always matters as we have seen in a previous

chapter. Accidents typically happen near ports when tankers are loading and unloading crude oil, and also due to the coastal topography, which has a complex structure with a lot of obstacles – noticeable and unnoticeable islands etc. which the tanker can run in to -.

Birds are known to be trapped by indigenous people and eggs are gathered. Birds have a fluffy fur uniform which the oil really sticks to and destroy their natural insulation. In addition the birds ingest the oil when trying to clean their feathers, which toxins them and disables them to reproduce and tainting their eggs. Seabirds are particularly vulnerable because huge population often gathers together to breed. This represents a major challenge and the paradox of oil spills applies here. An enormous spill doesn't necessary harm the wildlife in a larger degree than a small spill. The negative impact of oil spills, as I see it, is almost alone determined on *where* it happens. If it happens in an area with much wildlife – birds colonies, fish rich areas etc – the impacts will be vast and severe. For example the Exxon Valdez accident; approximately 35,000 tonnes of crude oil killed more or less than a half million birds. On the contrary, the 250,000 tonnes spill, the Amaco Cadiz accident, killed 4500 birds. The Exxon Valdez accident constitute only 14 percent of the Amaco Cadiz accident, but the negative impacts on birds alone was 1100 times worst than the Amaco accident. Why did the tanker travel through such vulnerable area?

The increased attention towards the High North will probably result in large oil and gas projects in the Barents and the Kara Seas. An increased attention to Arctic oil resources inevitably will lead to an increase in the use of the Northern Sea Route.



Figure 6: The Northern Sea Route

The route joins the straits from the Barents and the Kara Seas in the west to the Bering straits in the east. The route was first opened for international shipping in 1987 and is by far the most active route in Arctic waters. An increased traffic here will initially, increase the risk of accidents significantly, but there also lies an uncertainty upon us when approaching the Arctic as a new oil and gas arena. And that is concerned with oil spills in these icy waters. Normally oil spills are dispersed in the water with the help of wind and waves, but ice can effectively limit this natural cleaning process. The undersurface ice can be very rough, with

large pockets in which oil can remain for as long the ice stays solid. Oil encapsulated in ice bergs can travel long distances and make it impossible to recognize and recover. The oil will not be released until the ice melts and since the oil has a dark colour it absorbs heat and decrease the melting process with approximately 2 weeks (AMAP, 1997). The alarming fact is that oil released in the spring can be very damaging to wildlife. Biological activity is high and the open water available for birds and marine mammals are relatively low. The chance of animals coming in contact with the greasy oil therefore relatively high, and this is an argument for cleaning up winter oil spills before spring comes.

Oil spilled under landfast ice will not move at all and represent major threats. Oil spills associated with the multi-year pack ice can travel more than about 150 kilometres per month in the winter. Today we have a lack of equipment to clean ice-infested areas, which increases the threat from oil spills in Arctic. Spilled oil will be transported in the entire Arctic Ocean because it will follow the large-scale drift patterns of the pack ice. Example wise will oil spills in the Beaufort Sea circulate through the whole Beaufort Gyre* for five or more years, and spills in the Kara and Laptev Sea could circulate and escape the Arctic through the Barents Sea within one

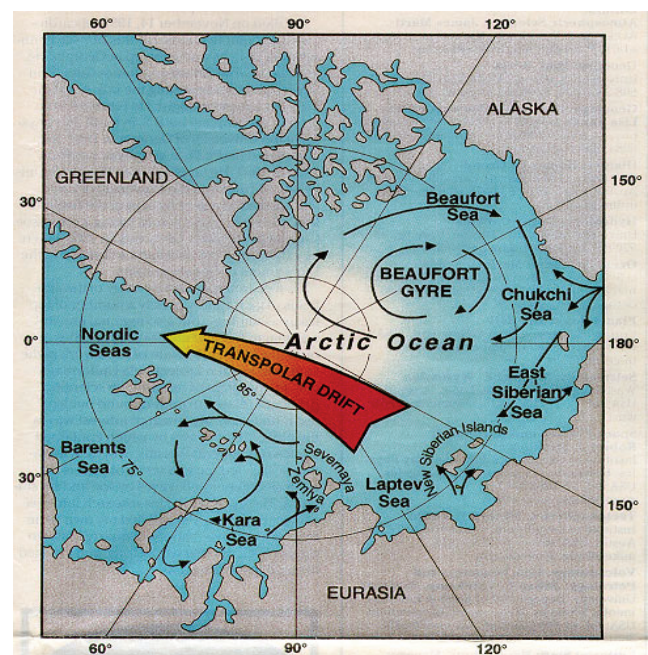


Figure 7: The Beaufort Gyre (AMAP, 2002).

or two years. And in worst scenario the oil ends up in a strategic zones or/and spiritual site.

An increased traffic through the northern Sea Route represents a major environmental and technological challenge and risk, but it is also a major challenge and a threat to indigenous peoples; because it increases the risk of large spills close to indigenous strategic zones and/or spiritual sites. Therefore it becomes important to plan and locate ports and routes with the objective of minimizing the risk towards indigenous people. Ports should be located far away from efficient fish water, seabird colonies and strategic zones as such.

* The Beaufort Gyre is a large clockwise gyre extending over the entire Canadian Basin. It circulates slowly between the pole and the Canadian Archipelago. In this way, water is exported both to Baffin Bay and to the Transpolar Drift which runs east to west across the Eurasian Basin from Siberian coast out through the western Fram Strait.

This applies also for the determination of the actual shipping route between A and B. A problem which is not so easy, maybe impossible to control, is the role of the pack ice. Oil

spilled in areas where there is pack ice can relatively quickly travel along with the ice, making the clean up process very demanding.

Pack ice can travel 150 kilometres each month in the winter season. In the Barents Sea the pack ice travel between the Kara and the Laptev Sea for normally two years, before it escapes the Arctic region (AMAP, 1997). If this happens we can't control the impacts. It doesn't matter



that the tankers' port is carefully selected **Picture 7: Pack ice (AMAP, 2002)** and the route is determined when the oil can sail it's own sea, and in worst scenario it ends up near a strategic zone or a spiritual site. In addition we lack equipment to clean ice-infested areas. This represents a major technological challenge and environmental risk for oil and gas activities in the Barents Sea. However, effort must be made to clean up any winter oil spills before the spring comes.

4.3.2.3 Regarding pipelines

Strategic zones and spiritual sites, such as efficient lakes and rivers, trapping-, gathering-, herding-areas, and migration routs, are most commonly located onshore in terrestrial environments. These places could be exposed by the industry through infrastructure projects, such as oil and gas pipelines. Leakage from pipelines can make local levels of hydrocarbons extremely high (15 percent), such is the situation in Western Siberia. Oil spills on land



Picture 8: Trans-Alaskan Pipeline (AMAP, 1997).

will in general be more local than offshore, due to the mobility differences. The topography, flora and soil are important features when estimating environmental impacts from oil spills. If the pipeline is located on a top or high in the terrain, the spills could slide down and be spread relatively wide, and expose the nature to an unnecessarily degree. Different vegetation has different absorbing abilities; for instance mosses are very efficient in absorbing oil, and so is also waterlogged soil. As an effect of this the mosses can be completely eliminated. Dry and frozen soil above the permafrost has a lot of cracks which could lead oil far down into deeper soil layers and transport it horizontally. Hot leaking oil from pipeline often forms channels in the snow and thereby transporting the oil far away to unknown distances. If the oil ends up in a river it will be utterly transported and could contaminate the whole river.

This could represent a threat for indigenous people cultural and spiritual values. If the leakage from a pipeline onshore is located close to an efficient fish leak or river for example the impacts could be severe. Earlier in this paper we saw that fish tend to be quite unharmed by oil spills, but the zooplanktons which the fish feeds on are killed, and subsequently the fish also dies. The fish who, however, survives are clearly contaminated and taint, and not edible for animals or human. The opportunity here is to build the infrastructure in an area where the potential impacts are minimized. In the process of doing so it is important to understand that the topography and the structure of the landscape play a vital role. A pipeline located high in the terrain with snow surrounding it expose a risk and an uncertainty. Leakage from this pipeline will follow the slope of the hill and make corridors in the snow, transporting the oil relatively far away to unknown distances. An in worst case the spills end up in or near a strategic zone or/and in a spiritual site. By carefully recognizing where the pipelines could potentially expose a minimum of threats and risks towards indigenous people “distinct way of life”, and securing infrastructure with automated shutdown of pump station and valves – like the Trans-Alaskan pipeline is - we can reduce the adverse impact of the oil and gas industry.

4.3.2.4 Protecting indigenous language

The challenge regarding the language is preservation. Indigenous languages are being constantly threatened by the globalization process. Contact with indigenous and outside languages in the Arctic – business contact and others - has been going on for a long time, and is threatening the native languages. In some areas the situation is more critical than in others. Schools and government agencies influence the languages the most. Oil and gas companies can help the protection of indigenous languages through financial gifts which should especially be directed towards schools and universities. It is very important to preserve the

languages because without them old tradition and knowledge can be lost. Companies working close to indigenous people should have some employees who speak the native language, it enables them to understand indigenous people preferences better and easier.

4.3.3 Summary opportunities

I include one chapter about petroleum hydrocarbons impacts on Arctic environment because I believe it can help us to understand how we can plan oil projects more wisely. I have argued in this chapter that there exists several opportunities with the planning process in order to protect indigenous people distinct way of life. In the marine and coastal arena it is crucial to recognize the most vulnerable zones, because of the oil spill paradox - inconspicuous oil spills can have severe impacts and vast oil spills can have relatively insignificant impacts. Discharges floating in the surface surrounding rigs and discharges settled on the bottom must be removed and stored safely. Ports and routes must be carefully planned in order to reduce the impacts when a vast accident happens. The role of the pack ice and its drift patterns has to be considered. In the terrestrial environment the topography is a key element when planning oil projects. Under I have listed the different opportunities oil and gas company has towards the challenges with indigenous.

Opportunities	Petroleum Hydrocarbons Impacts on “Distinct way of Life”.
<ul style="list-style-type: none"> • Switch from oil based muds to water based (low aromatic mineral oils). • Narrower bore holes • Better use of already existing holes • Floating and settled discharges around rigs offshore should be removed. • Discharges should be stored in special containers. • Discharges should not be stored in an area near or in a strategic zone or/and spiritual site. 	Discharges from drilling
<ul style="list-style-type: none"> • Ports should not be located near or in a strategic zone or/and spiritual site. • Routes should be carefully planned with a responsible distance away from strategic zones or/and spiritual sites. • The paradox of oil spills must be considered. • Te role of the pack ice has to be considered. • The role of the Beaufort Gyre. • Winter oil spills must be cleaned before spring. 	Tankers
<ul style="list-style-type: none"> • Constructed with a responsible distance to strategic zones or/and spiritual sites. • The role of the topography has to be considered. • The use of automated shutdown of pump station and valves. 	Pipelines

Table 4: Opportunities with the challenges of indigenous people

4.4 Future research

What the oil and gas sector need to be particularly informed about when doing business in the Arctic, is that land is being worshiped and has particular value for the people concerned. Large-scale resource extraction impacts the homeland seriously, it is therefore important in the mission of protecting indigenous “distinct way of life”, to know the specific impacts oil and gas activities have on the specific elements in the Arctic environment/homeland. Because then we can focus on reducing potential adverse impacts. That has been the objective in my thesis. Subsequently it becomes inevitably to know where these sites and zones inside the homeland are located.

Information about where strategic zones and spiritual sites are located in the different Arctic regions should be gathered through consultation with indigenous people – which is required by the ILO Convention No. 169 before activities are planned and initiated. Probably there exists some data on the topic, I will however, warn those who’s planning to use existing literature about where these places are located, because the Arctic is nowadays changing with a rapidly pace; ice is melting which is eliminating traditional routes, creating new fishing waters etc. The best way to gain knowledge about strategic zones and spiritual sites is to conduct long interviews with indigenous peoples (representative and others) all over the Arctic. The discoveries of such areas should be set aside and conserved by governments. A company can limit the scope to consult only indigenous people from the specific region they are extracting resources in.

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¹ Energy Information Administration (EIA): <http://www.eia.doe.gov/emeu/cabs/>

² Google pictures

³http://www.inforain.org/Northslope/anwr_2.htm