



Stabilizing Mega-projects in the Arctic?

When Trans National Companies meet local communities in Norway, Iceland and Greenland

Trond Nilsen (eds), Hjalti Johannesson, Klaus Georg Hansen and Trine Kvidal

Table of contents

Introduction	s6
Executive summary	s 8
1. A geographical introduction to resource peripheries in the high North	s 14
1.1 Arctic as a frontier region	s 14
1.2 Demography in the Arctic communities	s 15
1.2.1 Norway	s 15
1.2.2 Greenland	s 16
1.2.3 Iceland	s 16
1.3 Regional structure	s 18
1.4 Political system	s 19
1.5 Important sources of income	s 20
1.6 Description of relevant projects in the study	s 21
1.6.1 Aluminium industry	s 21
1.6.2 Oil and gas projects	s 23
1.6.3 Mining industry	s 25
2. The conceptual foundation – dynamics of economic space	
2.1 A geographical approach of the resource economy	s 26
2.2 How can important aspects of resource economy be approached	s 26
2.3 Who are the actors and how can we understand them	s 27
2.4 Corporate Social responsibility	s 28
3. Methodology and data collection	s 29
3.1 Methods	s 29
3.2 Cases and specific methods	s 29
3.3 Implications	s 32
3.4 The importance of understanding more of wider impacts	s 32
4. The encounter between mega-projects and local communities	s 33
4.1 Mega-projects in the Nordic peripheries – what do we know about them	s 33
4.2 The case of Mega projects in Finnmark	s 33
4.2.1 Local firms and Snøhvit & Goliat	s 33
4.2.2 Deliveries from firms	s 37
4.2.3 Local workforce	s 38
4.2.4 Local politics in Finnmark	s 40
4.2.5 Gender	
4.3 The case of Mega-projects in Iceland	s 44

4.3.1	Encounter between mega project and local firms	s 44
4.3.2	Encounter between mega projects and local workforce	s 44
4.3.3	Encounter between Mega-projects and local politics	s 45
4.3.4	Encounter between mega-projects and gender	s 47
4.3.5	Iceland – sum up	s 48
4.4	The case of Mega-projects in Greenland	s 50
4.4.1	Encounter between Mega-projects and local firms	s 50
4.4.2	Encounter between Mega-projects and local workforce	s 51
4.4.3	Encounter between Mega-projects and local politics	s 51
4.4.4	Encounter between Mega-projects and gender	s 51
5.	Sustainable development from a local community perspective?	s 52
5.1	The local – global tension: Trans National Corporations as regional developers?	s 52
5.2	Global capitalism creates new patterns	s 53
5.3	Cases and results	s 55
5.4	Local sustainability and a reasonable development based on resource dependence	s 60
6.	Literature	s62

Introduction

This report highlights the complex relationships between local communities and Mega-projects in the Arctic. Meetings between local communities and transnational corporations can create dialogue, contracts and communications that both parties benefit. However, we often experience the opposite. The way Transnational Corporations exploit resources will not necessarily be to the benefit of the local population, community and region. The main objective in this report is to explore if (i) and (ii) in what way local businesses, local workers, local communities and local politicians make assumptions for value creation in northern peripheries. To investigate the role and position of the local people, businesses and local communities in their efforts to create value in the north, we examine four different dimensions of Arctic industrial developments: (i) Local corporate connections to the global industry. (ii) commuting labour meeting locally based labour, (iii) gender dimension in the communities in the Nordic peripheries, and finally (iv) local authorities and their meeting with international industry.

The increasing demand of energy at a global scale gives the Arctic region new possibilities and challenges. New projects arise both in mining, oil and gas and also aluminium industry. Diversity of the local labour market creates new possibilities in new carriers in these small societies. On the other hand, the traditional ways of living and local culture could be at stake in nordic peripheries facing global companies moving in, extracting resources to benefit owners located far away from the Arctic.

The resource economy is characterized of large companies moving into new areas for shorter or longer period of time. They are mobile, move fast and bring established workers to new sites, even bringing their own sub-contractors. An important dimension of realising energy projects in the Arctic is about covering the mismatch between need for labour and competence in a project, building it after specific requirements within short deadlines, and the available workforce in close proximity to the development project. The encounter between a local community and a giant project like an gas onshore construction, can by all means challenge the established business structure, local governments, infrastructure, out-crowding and the need for balancing the gender situation in these peripheries. Do the global companies overrun and suppress local communities if locals oppose a plan of development? To what degree can local firms involve in huge projects like aluminium-melter in Iceland, or in the construction of Goliat –an offshore oil field in the Barents Sea? What kind of influence do local politicians have on these issues? These questions are all of significant importance in this project. We would like to develop knowledge who can put forward relevant insights of the role and position the locals have in the meeting with TNC`s. When such projects are rolled out in the Arctic, it might seem tempting to local firms to let go of their traditional market and strategise into new markets. The main question in such a context will be to what degree the "newcomers" can take a position in new economic developments in regions in the North. The same situation will come up for politicians, how can they adapt to the new challenges related to the need for infrastructure, areas of land and new housing?

The overall question in this report is to explore the role of the local firms, workers, politicians and social communities in the meeting with global resource economy. Are they blown off court or do they pose a difference? We argue that this is important because the local actors play an important role in developing sustainable communities in the Arctic. Can these actors stabilize global actors when they move into new areas?

In 2012 we recieved funding from Nordic Arctic Co-operation Programme. Based on the different regions involved in this research project, we soon discovered the need for a joint platform where knowledge-status on important effects of resource economy in the Arctic, is put forward. We aim with this temporary report to take advantage of important findings in this field and use it as a joint platform for taking these questions into new regions and new industries.

We focus on three regions in this study. This is Finnmark in Northern Norway, East Iceland and Greenland. Four researchers have contributed in the project, from three institutions in three different countries.

Executive Summary

With transnational companies' expansion to the Arctic in a framework of a non-territorial economy, arises what we call "the geography of opportunity". This means that regions are included in the national systems and challenged at the same time of global economic systems. Regions are not taken for granted and deducted no longer in line with the exact geographical boundaries. In this report we explore the relationship between Mega-projects in Nordic peripheries and the local community these projects are located. We are significant interested in Northern part of Norway (Finnmark), Eastern part of Iceland and Greenland. These are all Nordic peripheries and all communities located in significant part of the Arctic region. This is a region still having market obstacles including high cost production because of the long distance to central markets. In addition the region is more or less sparsely populated and it is situated in a harsh environment. As Nordregio states, most parts of the region have development dynamics that occurs along "frontiers" with a limited infrastructure and with few available workers.

In Finnmark we have seen that the first development project in the Barents Sea have specific identifiable relationships with local and regional economy. It is an arena feature of the Norwegian oil and gas industry that makes the relationships we have described possible. At the same time that the review process at the northern station has some implications that are challenging. Examples of this is a marginalization of local businesses from other areas than oil - and gas arena because that companies are losing manpower and expertise. The northern development sites are attractive through the opening of the Barents Sea, but first and foremost through the sites included in the projects. This also means that the relationships between companies created over many years in the south, is far more important for what happens around development rather than purely local processes. These relationships are formal types. It's about regulated by framework agreements, previous contracts, tender stories and new bid wins. There is no results in the material that the horizontal connections between local and regional businesses is a driving force in the development of the new oil economy in the north. But again, the dynamics of these adaptations are "fly in" to do the job and "fly out" of Hammerfest when the job is done. There are rather few local businesses that are connected. In the first case we see that the licensing terms to a small extent, controlled the connections that have arisen between local and regional businesses and the expansion project. This is about all other processes such as market dynamics, geographical proximity and coincidence. The government's role was largely related to the framework conditions in advance of Snøhvit, and not the rules as such, although we see signs of that one regional political condition was the result of local political pressure.

In terms of the oil construction Goliat, leaded by the Italian company Eni Norwegian branch company, Eni Norge, the project will produce first oil in 2014. As a result of this there are not established final numbers regarding the importance of this project for local firms in Finnmark. We experience some tendencies through collected data and these data are now being analysed. It is important to remember that Goliat still have two years in construction before the development is completed. In order to systematize the various components of construction project delivery areas, we used Eni Norges own sections in the main contract. Moreover, we have added to production drilling, which constitute a very significant portion of the total contract value. We have also taken early detailed design since this work has important guidelines for project implementation. Furthermore, we present a service agreement Eni Norway has put out in the market to show the extent of monitoring active either against individual providers in the development project. Finally, we have included Eni Norges own expenses spent on leadership, management, and various support functions, including the oil spill, to develop the Goliat project according to plan. This item also includes project reserve for unforeseen events. The total development costs at the end of 2012, estimated at 36,7 billion.

The development of Snøhvit was mainly carried out as a result of in-commuting. There were several reasons for that. Development projects in the oil and gas industry is characterized by a mismatch between the development and population size structure of the country. Snøhvit was a major cause of the lack of local and regional labour, another was tight labor nationally and a third that vendors bring with them their people to work out. The latter cause was related to competence (Nilssen, 2012).

While Statoil has the majority of employees live locally, it has been for some contractors is a challenge that a rather high percentage of the activity is based on commuters. The proportion of local residents is increasing even though the total number of employees in firms increases. Most companies say they want to recruit as many as possible locally, but the lack of operators within individual disciplines. Also nationally makes recruitment more difficult (eg. within ISO subjects - insulation, scaffolding and surface). Statoil, which is at the top of the value chain, has gradually succeeded in reducing the need for commuting based labor to a minimum, and have good tuning their jobs for both highly educated with university / college and skilled workers. Several companies said that the recruitment of highly educated doing better than before, but that in today's tight labor market is still challenging for certain types of operators / technicians. We can not find any studies who explicit has given attention to gender in Finnmark related to the development of oil and gas activity.

In Iceland there was much investment taking place during the construction period. This was most apparent in the building industry. There were also found cases of overinvestment and general lack of prudence and caution in other fields than the building industry. Some contractors acted unscrupulously and invested too much. After the project, conditions became more difficult due to lack of available work and, later, with the addition of a poor state of the economy in the credit crisis of 2008 and the devaluation of the Icelandic krona, some people were unable to live up to their obligations. Crowding-out effects were felt in the local economy due to the large factory. It is however unclear how many jobs were cut because of its construction and operation. Jobs in fish processing fell however greatly in number. The fishing industry proved very supportive of the project, indicating that they were not in competition for labour. Instead, there might have been a labour surplus. Service base of the area became stronger as a result of more inhabitants and money.

There was considerable population growth in the central area due to influx of foreign workers who were added to the population registers of the municipalities where their work camps were located. The maximum number in the central area of east Iceland was reached in 2007 but population declined sharply again when the migrant workers moved away after 2007. In the beginning of 2012 net population increase in the research area of east Iceland as a whole was less than 200 persons. However there was a net increase of 1,100 in the central area. Population decrease however continued in the more peripheral areas of east Iceland due to out migration and this is a good indicator of limited geographical scope of impacts. A survey in 2008 showed much commuting between places and the town Reyðarfjörður where the plant is located is the main attraction in this sense. The other main centre of employment is the service- and transportation town Egilsstaðir some 25 km from Reyðarfjörður. In 2008 70% of the staff of the aluminium plant was living in Fjarðabyggð its home municipality but the remainder mostly in the town Egilsstaðir.

Being a member of the European Economic Area (EEA) since 1992 Iceland has adapted to the free movement of persons, goods, services and capital. Change in the level of globalization was apparent when comparing former megaprojects in the country, the ratio of locals versus foreign workers had dropped dramatically and forecasts using former experience were not applicable. Another manifest of globalization was protest against the project on grounds of nature preservation. It became the most heavily protested construction project to date in Iceland's history and foreigners were active in this

battle. The project was widely covered in the news and made it to the cover of National Geographic. Two government levels, the state and the municipalities divide the power between these. Local interests of municipalities can be narrow. They have the planning authority within their boundaries and issue building permits. This applies also to large projects such as power plants, transmission lines and other linear infrastructure and large manufacturing units which tend to impact much larger areas than the respective municipalities. These are sometimes very small geographically with a low population number. An interesting fact is that if a large project is located within the boundaries of a municipality, property taxes are paid solely to that particular municipality. This is the case with the Kárahnjúkar power plant, Iceland's largest, located within the boundaries of the municipality Fljótsdalshreppur with 78 inhabitants (2012). Anticipating more increase in population, municipalities overinvested in facilities and infrastructure related to new residential areas. There was competition between municipalities to attract new residents to their respective areas with the evident result that many houses stood empty together with underused infrastructure in the form of roads, drainage systems and more. From this, the conclusion may be drawn that more consultation between municipalities regarding planning would be desirable. Finally expectations raised by politicians both locally and national were probably too high and should have been more prudent.

Males in a narrow age span coming to work on the projects overshadowed other segments of the population and age- and gender pyramids for the construction years were very strange. Males turned out to be 59% of the population in the central impact area at the peak of the construction in 2007. However the proportion of women in the total workforce of Alcoa-Fjarðaál plant since beginning of production has been relatively high, peaking at 32% in autumn 2007 but has since lowered to around 25% compared to 18-20% in aluminium plants in the capital region. Alcoa-Fjarðaál received in 2008 recognition by the Icelandic Equal Opportunities Council for successful recruiting of women. The gender ratio in Reyðarfjörður (place of the aluminium plant) is around 57% and if this uneven gender balance persists it may be a sign that the community is not developing in as positive way as hoped for and becoming a male oriented community. The plant's work shift pattern of 12 hours has been found not to be particularly well suited for families.

Expectations were high and little was apparently done to damp these down and there is always a certain danger of disappointment if all does not go according to plan. Those responsible for making decisions and planning the constructions must draw up as realistic a picture as possible of changes which could occur and keep expectations within the limits of moderation. At the conclusion of this research, it may be said with certainty that too many backward looks had been brought into play regarding the possible effect of the construction work, i.e. too much attention was given to how previous projects had been organised but in the meantime great changes had taken place, such as increased openness of the economy, i.e. globalization. Conditions in society can change fast and this is true of the period under discussion here. The effect of globalisation had in fact most likely become stronger than people of Iceland realised, e.g. the impact of the European "four freedoms". It is clear that Iceland was no longer an island in every sense of the word. This was certainly true as far as economic effect is concerned. The Icelandic system of governance was not sufficiently prepared for the project and it can probably be seen in other areas of society, that the Icelanders were not equipped to live in an open economic system with its resultant free flow of labour, capital, goods and services. One of the consequences of this was that the participation of foreigners exceeded forecasts and this put a great deal of pressure on official institutions. However, the influx of hundreds of foreign workers caused less social disruption than might have been expected. Strong institutional framework is necessary with sufficient information systems in order to respond swiftly to changing conditions. The government's emphasis on assessing the construction phase is of particular interest and demonstrates

that many have seen it as desirable, i.e. creating construction jobs and related activity. The construction phase can be an attractive period, but it was not so in this case. It was shorter than desirable and there might have been better preparation and time to give the people of the area more time to understand the changes which were on the horizon. Time limits and pressure affect working conditions and risk. Opportunities to plan attractive communities to live in when such projects are undertaken should not be missed and this was partly the case in east Iceland.

In Greenland three cases of mega-projects are and will be examined. The three cases of mega-projects are the aluminium smelter by Alcoa (2006-), the iron mine Isua by London Mining (2008(?)-), and the oil exploration by Cairn Energy (2009(?)-). The characteristics for the local companies in Greenland are that they in general are too small to be able to engage directly and individually in the construction phase at any mega-project. A handful of Danish and other Nordic construction companies have a tradition for being active in Greenland. Some of these companies had large contracts with the Grønlands Tekniske Organisation (GTO) during the 1950s, 1960s and 1970s. They are still active in Greenland. Some of these companies might be able to and might be interested in being involved in the construction phase in some of the mega-projects. Especially during the discussions about the aluminium smelter, the possibility of local companies in Maniitsoq being engaged in mainly logistics, transport, catering, cleaning have been discussed. These local companies have been encouraged to find together and establish a local cooperation in order to be able to get some subcontracting contracts. Unfortunately, it has so far not resulted in any general initiative to merge the many small, local companies. The employers' association, Grønlands Arbejdsgiverforening (GA) and the union for unskilled workers, Sulinermik Inuussutissarsiuqatut Katuffiat (SIK) have been very active especially in relation to the projects by Alcoa and London Mining. GA and SIK have agreed on not fully welcoming the mega-projects. In spite of their seeming unanimity in their reservations, the two organisations have different arguments for not supporting fully the mega-projects.

In the public debate focus has been on the degree of local workers during the operation phase and on wages for the thousands of foreign workers who are expected to become involved in the construction phase. Being such a small society with 57,000 inhabitants in all Greenland and the (now) four municipalities with at most about 20,000 inhabitants each, the local (municipal) level of politics has not had the leading role in the contacts with the companies behind the mega-projects.

The Home Rule authorities have had a leading role in the interaction with the foreign companies with mega-projects. The exclusion of the local political level has several times generated critic from the municipalities to the Home Rule authorities. The three examined mega-projects are typically male dominated activities. That has in itself been a topic in the public discussions. Among the concerns raised are the many foreign male workers in the construction phase – for the smelter as well as for the iron mine several thousand foreign male workers. Here the risk of getting prostitution activities has been pointed at as a concern.

Especially for the aluminium smelter project, the question of gender has been raised. The focus has been on the operation phase, not on the construction phase. Here Alcoa has actively argued that female workers will be welcomed. Alcoa has referred to their smelter in East Iceland which has about x % of female workers on the smelter. In the research on the mega-projects, some of the long-term consequences of the male dominating industrial activities have been discussed. With the male dominated activities many women are not attracted to the area, and many of the women will most probably leave the region. This will have severe negative long-term consequences for the natural reproduction in the local community.

Based on this report, we have made several important lessons from the Arctic industrial activity. Firstly, these three regions are very different. this is described in the first part of the report. it implies that the term arctic periphery or Nordic periphery, does not mean the same thing. For example, there is a great difference between western Finnmark and coastal communities there and those found in Greenland in terms of established infrastructure, service facilities and communications. Secondly, we have learned that these regions are in different phases. where the region of Finnmark has established oil and gas industry, is Greenland in a completely different and earlier phase. The same can be seen from the mining industry and the aluminum industry: here Greenland and Iceland established business, while Finnmark not. Through these differences, we see that these regions can not be compared directly with respect to phases since they are in such a different phase. Nevertheless, we find many of the same challenges when it comes to involvement, participation and involvement of local and regional actors.

This report shows important pros and cons of resource development in the Arctic. We show how people, institutions and firms in Norway, Greenland and Iceland are affected by the resource economy. Through the existing data we have collected and the analysis which is done on this basis, we have pointed out important aspects of such a development for humans living in Greenland, Iceland and Northern Norway. As such we have a rich material to build further research upon and provide new insights about the sustainability in these processes for people, firms and communities in Nordic peripheries.

The need for understanding these processes in the future will increase in the light of the global demand of natural resources. In this context, this project can illuminate important effects of such a global economic race on people living in these areas. The paramount question is about to be raised: Can people, firms and institutions in the North stabilize the global actors in such a way that traditions are protected and ensured? How does this take place? *It is of significant importance to keep this development under surveillance and monitor global processes where they take place.*

Chapter 1 A geographical introduction to resource peripheries in the high North

1.1 Arctic as a frontier region

In this report we explore the relationship between Mega-projects in Nordic peripheries and the local community these projects are located. We are significantly interested in Northern part of Norway (Finnmark), Eastern part of Iceland and Greenland. These are all Nordic peripheries and all communities located in significant part of the Arctic region. This is a region still having market obstacles including high cost production because of the long distance to central markets. In addition the region is more or less sparsely populated and it is situated in a harsh environment. As Nordregio states, most parts of the region have development dynamics that occurs along “frontiers” with a limited infrastructure and with few available workers.

One of the important findings from recent research on Arctic societies and resource economy, is the rather dramatic change that is going on in the region as a result of several processes that occur on the same time of period. We will in the following text give an introduction of several important trends and challenges that challenge the Arctic as a region, but also give the region and the people living in the region, new opportunities to a diversified labour market and new working possibilities.

Nordregio states in the recent publication of Megatrends, that the Arctic continues the dependency of transfers and the exploitation of natural resources will continue to dominate the Arctic economies (Rasmussen *et al.* 2012). In this it is embedded that the Arctic continues to be a region of huge contrasts when it comes to economic questions; the international corporations, such as TNC`s, support modern large scale, capital intensive production, and the traditional economy exists in small individual groups or families. This project will address the first question of research, but will also touch upon the latter one being able to identify what kind of role the local stabilizers have in these geographical areas.

One tendency in the Arctic is that large industrial companies dominate economic development in the Arctic site of studies. This is both the case in energy-production and in tourist industry, although the latter has the potential to survive and prosper also without TNC`s creating a worldwide market of its products. This implies in several aspects, that future extraction of the vast land-based resources of the Arctic, will increasingly be based on “company-towns” generating a number of jobs for the employees, with limited possibilities for local employees to fulfil positions in these industries.

Like other peripheries in the Northern and western part of the world, the Arctic region suffers from an ongoing development that continues to challenge the region. There are dramatic demographic challenges, giving support to the thesis that the old stay while the young leave (*op.cit.*). This is underlined with a decline in birth rate in the number of people in the active workforce. This will, combined with a general ageing of the population, results in increased old age dependency rates, giving the welfare societies important economic challenges in the future. This development is, neither how, not unilateral. We might find some important exceptions, also in what is called company towns with huge resource companies that extract petroleum in the northern part of Norway.

Another important factor that could be seen as both a challenge and a possibility to the Arctic region, involving the study sites in this report, is the often argued easier ocean access in the high North. This

leads to easier access to transport and resources in the region, it will generate increased shipping, but also new risks will appear of the increased traffic through earlier closed waters. This development can provide inhabitants with better connections to other parts of the world, but the costs may still be a factor with a potential obstacle.

1.2 Demography in the Arctic communities

Every site in this report is unique in its own way. This implies specific characteristics that, more or less, create and shape differences between local communities involved in this study. A basic geographical approach will ask for analysis of, as geographical reports always do, trends, movements, development and dynamics that might, perhaps, could or are going to shape places in new ways. Acknowledging this is the case, we adapt such an approach and in the following we introduce specific characteristics in the different countries, and regions.

We will now introduce the key-developments of demographic trends in the areas of study in this project. This is important to grasp since what is sometimes known as the “knowledge economy” more or less dependent on the enhancement of human skills and talents. In addition we also acknowledge the fact that output of mega-projects depends on the people, firms and institutions that frames such a major development. This implies a view on the regions as constitutive to the development that is created. They are not only “victims” of global investments, but have a position and role in their own development. In such a perspective, ripple effects of industrial project depends on the effort from the actors involved: If the aim is to create regional ripple effects of a construction, this must involve regional actors, doing their best to involve in a global economy. One important issue in this will be the need to investigate what kind of base they behave upon. It is this base we need to understand.

1.2.1 Norway

Norway is a constitutional democracy in northern Europe with a population of 4,9 mill inhabitants. A total of 60,500 children were born in 2008. Since 1973, the number of children born in a single year has only been higher in 1990, 1991 and 1996. Norwegian women give birth to 1.96 children on average. Norway tops fertility rate statistics in Europe; only Icelandic, French and Irish women give birth to more children than Norwegian women. Life expectancy has changed over time, and today Norwegians are living longer than ever before. A girl born in 2008 can expect to live to almost 83 years of age, while a boy can expect to reach just over 78 years of age. Twenty years ago the corresponding figures were 79 and 73 years (SSB 2011).

The average age of the population is 39 years, but this figure varies greatly in different parts of the country. Twenty-six per cent of Norway’s population is under 20 years of age, 61 per cent is between 20-66 years of age and 13 per cent is over 66 years of age.

Immigrants and Norwegian-born to immigrant parents accounted for 9.7 per cent of Norway’s population in 2008, and totalled 460,000 persons from more than 200 countries. All Norwegian municipalities are home to immigrants, but Oslo has the largest proportion of immigrants and Norwegian-born to immigrant parents at 25 per cent of the population.

The implicit differences between the regions in Norway, is just discreetly addressed in the description above. The Norwegian areas of study in this report are to some degrees, an exception when it comes to developments compared to central parts of Norway. Finnmark county is the northernmost part of Norway. This county has only 1,5 % of total inhabitants in Norway and has about 74 442 inhabitants

in 2012. The amount of people living in Finnmark has been falling over the last 15 years. This fall has until recently been adjusted and minimized by three places in the county. As indicated, the fall in population is neither how not common to all parts of Finnmark, but we experience three places where the development is positive. This is the town of Alta, Kirkenes and Hammerfest. Two of those areas are included in this project, Hammerfest with oil and gas activity both near the town and also outside the coast, and Kirkenes with mining business development.

Being remote and far away from central markets, the county of Finnmark is far the less developed part of the country when it comes to infrastructure.

1.2.2 Greenland

The population in Greenland is a relatively young population. The Greenland population is still among the youngest in Norden. The fertility rate has been falling for decades, but it is still around 2, which is among the highest in Norden. Due to better living conditions, the average life expectancy has been growing for both genders. Thus, Greenland is – like the most of the rest of the world – moving towards an elder population.

Another global trend regarding demography which can be seen in Greenland is the ongoing urbanisation process. Also here, Greenland assembles the rest of the world. The step stone process is visible, people are moving from the smallest places to local centres and from there to regional centres, national centres and even to international centres. In spite of being the capital of Greenland, Nuuk is not the final destination for many in Greenland. Some move on to Europe or to North America.

One of the most urgent challenges in this process is the combination of relatively low mobility caused by the infrastructure with no connecting roads between the settlements and towns, combined with a very low population density. Greenland is among the most sparsely populated countries in the world.

1.2.3 Iceland

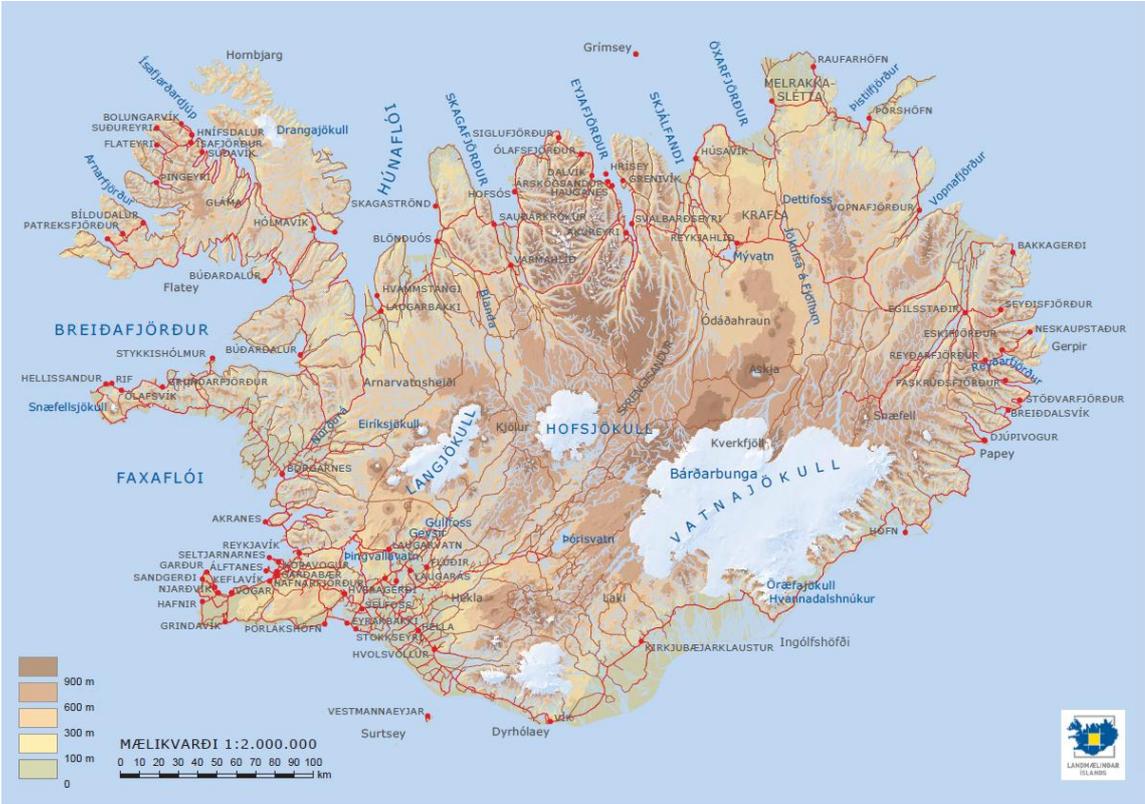
Iceland is located on the NW edge of Europe at approx. 63-66 °N. The country is 103,000 Km² and about 25% is below 200 meters above sea level. Some 65,000 km² are considered wasteland, mainly the highland interior. The size of the exclusive fisheries zone is 758,000 km² and the coastline is 6,088 km. Greenland is closest to Iceland; 287 km, 420 km to the Faroe Islands, Scotland is 798 km away and Norway 970 km.

Air transportation is advanced and a hub and spoke system that has been developed is part of it. Keflavík airport in SW Iceland is a hub connecting many cities in Europe and North America through direct flights. Flying time to London is around 3 hours and 5 hours to New York. The Icelandic company Icelandair has the densest network but many other airlines fly direct to Iceland especially during the tourist season.

The country has relatively rich natural resources including large fish stocks around the country and geothermal and hydropower resources. The primary energy use in 2010 was approximately 750 GJ per capita, among the highest in the world. The predominant reason is the proportion of large industries using electricity, notably the aluminium industry. Around 85% of the primary energy used in Iceland is produced domestically. These energy resources are very important to the future economic development of the country and how to exploit them is one of the key challenges for the future.

As the population density is very low or just above 3 per km² building and maintaining infrastructure is a challenge. The Icelandic road network can be termed extensive, i.e. there has been emphasis on high coverage of the network and the cost of upgrading the Icelandic road network to be comparable with other countries which Iceland compares itself to generally is high. An interesting fact is that there is no all year road connection across the highland interior. Mountainous terrain in the Westfjords, north and the east makes road tunnels an expensive option to secure a year-round road connection. Nearly all scheduled international flight is operated from Keflavik airport 49 km from Reykjavík. Ferries, domestic flight to remote destinations and the bus system are partly financed through the state budget.

Emphasis in this study is on east Iceland, an area characterized of mountainous landscape and narrow fjords. The area lies furthest away from the capital area and can be considered one of Iceland’s remote regions.



Source: Icelandic Geodetic Survey (2012)
 Figure xx. Iceland

The settlement pattern of Iceland is characterized by extensive urbanization in the capital area and rather thinly populated regions in the rest of the country. Reykjavík and adjacent towns together form a capital region of 200,000 inhabitants or 63% of the nation. Approximately 40,000 live in a commuting area of some 45 km driving distance from the capital region and together with the capital region these areas in SW Iceland amount to three quarters of the total inhabitants. Migration to the capital region from other regions has been much for decades but took off around the Second World War. As a result, some regions of the country are thinly populated with unfavorable age and sex distribution, challenging future development and service capacity. The North-Western and North-Eastern parts of the country face most difficulties in this sense. Despite of this Iceland has a high level

of urbanization, there are 61 urban settlements¹ and a total of 298,813 inhabitants² lived in those places in January 2012 (Statistics Iceland, 2012).

Before the credit crisis of 2008 there was a significant population increase, peaking at 2.62% in 2006. A major cause for that was labour immigration, largely related to the construction. In 2009 this turned around and there was due to emigration a population decrease of 0.54% for the first time since the end of the 19th century. Then there was small upwards trend of 0.26% in 2010 and 0.35% in 2011. After 2008 there has been net emigration every year, mostly to Norway, other Scandinavian countries and Poland. Natural population increase has amounted to around 0.9% during the past years. Live expectancy in 2011 was 79.9 years for males and 83.6 years for females.

1.3 Regional structure

Norway has 19 counties on the mainland. In addition we find Svalbard which is an Island in the high North, with its own political and legislative structure. Norway is a rather geographic extended country with over 2000 km from the capital of Oslo to the town of Hammerfest in Finnmark. This implies long distances for people traveling from the north and south, also implying challenges when it comes to commuting.

The economy in Norway is strongly depending in global resource markets. Both fish, oil and gas and industry related to technological instruments, is rather dependent on the development in global markets such as the price of oil, gas or even fish. In addition Norway have a rather huge public sector. This is where the most people in Norway work, either in education, social service or public administration. The capital of Norway is Oslo. This is also where the political and financial centre is at the most intense. When it comes to economy, the eastern part of south Norway no longer contributes strongly to the income of the state. The various ways of counting how GDP is produced, neither how places the economic centrum in Oslo as well. This has to do with the financial institutions that manage the income from industry, fish markets and other service, are all located in Oslo. The most intensive clustering of energy companies lies in Stavanger, Bergen and Krisitansand, on the south-western part of Norway. It is here the income of oil and gas is registered, big oil companies are all located here, even though they have their own branches in other part of Norway – the Southwest seems to hold its position as the major player in the regional distribution between regions when it comes to energy. The Northern part of Norway is a major contributor when it comes to fish export, processing. This part of the Norwegian continental shelf, have for a long period of time been excluded for oil and gas developments. This is related to governmental politics argued to be conflicts between oil industry and fisheries. The last ten years attention is being pulled in the environmental direction, focusing on the effect of climate changes and to what degree extended oil and gas activity will be the correct steps to follow related to such a threat.

The amount of literature trying to understand and explain the strong regional economic differences in Norway is still growing. The common perspective to explain this has been that northern part of Norway over several years have been under-developed, been stuck in traditional ways doing production, has a rich story of herding and fishing and last, but not least, giving the region no other reason to survive than continue to create linkages to the capital of Norway and the growth in public

¹ More than 200 inhabitants

² 93.5% of the nation

systems. This literature has rarely been challenged. The latest development with increased extraction of both oil and gas, and mining activity have been argued to a “alternative” perspective in a way where Northern part of Norway finally is integrated in the global production systems in the energy sector. Proponents for such a view argue that increased contribution to the income of the national state, also challenge the way the different territorial perspectives have been outlined. The opponents argues, being critical to such a global turn-around of the North, that this only contributes to strengthen the already existing patterns in both regional and national economy: This development gives the established industry in the clusters of the knowledge economy, a promising opportunity to increase their share of the market. The fact that this now happens in the North, is given far less attention.

Greenland has had administrative divisions for almost 300 years. For most of the last part of the 20th century, Greenland had about 18 municipalities. In 2009, the latest major merging of municipalities resulted in only four municipalities. In reality, these municipalities can be regarded as regions. Each municipality has a population between 9,000 and 20,000 inhabitants. The new municipalities are gradually getting more responsibility transferred from the central (Self Rule) administration.

In Iceland there are 75 municipalities and their number has gradually been decreasing due to amalgamations in recent years. The role of local authorities has also changed in recent years with new duties taken over from the State, such as the primary schools and social services. There is no regional government level but 8 regions, former constituencies, provide a basis for organizing some of municipalities’ collaborative. These areas have also been used as statistical regions.

1.4 Political system

Norway is a constitutional democracy. Politics in Norway take place in the framework of a parliamentary representative democratic constitutional monarchy. Executive power is exercised by the King's council, the cabinet, led by the Prime Minister of Norway. Legislative power is vested in both the government and the Storting, elected within a multi-party system. The Judiciary is independent of the executive branch and the legislature.

The mainland of Norway is divided into 19 counties. Counties and municipalities have local autonomy, but this autonomy is circumscribed by national control. Counties and municipalities are subject to the oversight of a governor (fylkesmann) appointed by the King in the Council of State. One governor exercises authority in both Oslo and the adjacent county of Akershus. Each county has a directly elected county assembly, led by a mayor, which decides upon matters falling within purview of the counties (upper secondary and vocational education, some culture, transport and social services). There is also a governor (sysselmann) on Svalbard, who is under the Ministry of Foreign Affairs and not the Ministry of Local Government and Regional Development as the other counties.

The counties are divided into 430 municipalities (kommuner, singular kommune). The municipalities are led by directly elected assemblies, which elect a board of aldermen and a mayor. Some municipalities, most notably Oslo, have a parliamentary system of government, where the city council elects a city government that is responsible for executive functions. Some municipalities are also divided into municipal districts or city districts (again, Oslo is one of these) responsible for certain welfare and culture services. These districts are also headed by political assemblies, in some cases elected directly by the citizens. The municipalities deal with a wide range of planning issues and welfare services, and are mostly free to engage in activities which are not explicitly restricted by law.

Lately, the functions of the counties and municipalities have been the subject of debates, and changes may take place in the near future.

Greenland was colonised in 1721 from Denmark-Norway by the missionary Hans Egede. During the following 200 years, Greenland was gradually more efficiently administrated from Denmark. In 1953, a change in the Danish constitution gave Greenland status as a county in the Kingdom of Denmark, but in reality Greenland was still governed from Copenhagen. In 1979 a Home Rule was introduced. The Home Rule was extended in 2009, and it is now sometimes called Self Rule.

With the introduction of the extended Home Rule in 2009 one of the most important changes was the change in the "economic logic" regarding the subsurface. Up till the changes in 2009 the revenues from any extraction of minerals and petroleum would in principle go to Denmark. With the extended Home Rule, revenues are in principal going to Greenland. This change has more than any other of the changes in 2009 created a new political-economic agenda in Greenland. If any mayor future extraction projects should create huge revenues it will potentially give Greenland an economical independency from Denmark, which does not exist today.

Iceland is a constitutional republic with a multi-party system, the head of state being the President, and executive power exercised by the Government. The Parliament³ established in 930 is the world's oldest parliamentary democracy. Members of the parliament are 63.

1.5 Important sources of income

Norway has a major part of the overall income from two marine businesses, fisheries and petroleum. Income from petroleum resources is the largest sources to the Norwegian state economic position, giving Norway a unique possibility to save in foreign funds. The budgetary rule (Norwegian: *handlingsregelen*) is a rule concerning the usage of capital gains from The Government Pension Fund - Global of Norway. The rule was introduced in 2001 by the First cabinet Stoltenberg to ensure that the sovereign wealth fund, with a vast majority of its dealings related to activities in the petroleum industry, would secure sustainable development for the future generations of Norway. The budgetary rule will thereby continue to yield in the future, even when the petroleum resources of the North Sea and other operational areas come to an end.

The rule states that a maximum of 4% of the fund's value should be allocated to the yearly government budget. Disregarding the future petroleum income, the fund will still remain an important budgetary source of revenue. As of today, with the value of the pension fund increasing every year, the rule will secure even better conditions for today's and future generations. A broad majority of the political parties in Norway have agreed to comply with this fixed percentual usage. The rule was partially intended to avoid a state of "Dutch disease".

For Greenland, the yearly block grand from Denmark is still important. During Home Rule (1979-2009) the yearly block grand was negotiated from year to year, and it was raised several times due to Greenland taking over new areas of responsibility. With the extended Home Rule (the Self Rule) from 2009, the principles for the yearly block grand from Denmark changed. Now the yearly block grand is

³ Alþingi

a fixed amount of money. It is no more negotiated, as the amount is now written into the Self Rule law passed by the Danish parliament (Folketinget). It will only be regulated in accordance with the price development in Denmark. Denmark has a slightly lower inflation than Greenland, and that means the value in Greenland of the yearly block grant gradually gets smaller and smaller. Further, it is stated that when Greenland takes over new areas of responsibility from Denmark, it will not be followed by any additional funding from Denmark. In 2012 the yearly block grant from Denmark was x.x billion Danish kroner, which was about xx % of the "BNP" of Greenland.

Looking at the economy generated in Greenland, fishing is the main contributor covering another x % (2011) of the "BNP". Other sources of export income are primarily tourism (x %) (2011) and some other export articles (drinking water etc.) (x %) (2011). From a personal income point of view, x % of the working force has its income from public sources. x % are public employed and x % are living from "overførselsindkomster" such as students' salary and pensions. x % are employed in the private sector. Of these are only about x % of the work force working as full time hunting and small-scale fishing.

Iceland has for a long time been dependent on fish exports. Heavy industry, notably aluminium production making use of hydro power and in recent years also geothermal energy has been increasing. There are however doubts if increase of the aluminium industry is a good strategy and that Icelanders should aim at diversifying their economy by using available energy sources for other purposes. In 2010, fish products and aluminium were almost equally important export products with 39.3% and 39.6% respectively of the total export value (www.statice.is). Aluminium plants have become the national power company's⁴ largest clients and the company wants to diversify by selling energy to other types of industries. Interest of other industries has increased and some projects have materialized while others are being planned. Export via sub-sea cable to Europe has been considered.

In 2008 Iceland became severely hit by banking and currency crisis which had serious impacts on the economy and the state budget. Findings from the study in east Iceland have to be looked at against that background. Due to these special conditions, east Iceland as well as in other parts of Iceland developed differently than was anticipated a few years earlier. This may partly explain issues such as why there were fewer spin off jobs in services than were anticipated, this also brought the housing boom to a sudden halt in east Iceland as in many other places. On the other hand, devaluation of the currency was beneficial for the export industry such as the aluminum industry and the fisheries, and in that way the region was better off than many other regions in the country

1.6 Description of relevant projects in the study

In this part of the report we introduce main characteristic of the projects in the study, what key functions the projects have and need for labour.

1.6.1 Aluminium industry and projects

Like in Norway and in Iceland, Greenland also has hydropower potentials of interest to power demanding industries like aluminium smelters. In Greenland, though, the first specific plans for an aluminium smelter project started as late as in 2006. That year Alcoa that has been active in Iceland

⁴ Landsvirkjun

for decades approached the authorities in Greenland indicating that Alcoa could be interested in placing a new aluminium smelter somewhere in central west Greenland in the area between Nuuk and Sisimiut. The process has been through several different stages of public hearings, political negotiations with Alcoa and public debates pro and con. The final political approval is expected to be given by the Greenland parliament (Inatsisartut) in 2012 or in 2013. This final decision has been postponed several times.

Aluminum industry and projects (Alcoa Fjarðaál East Iceland)

One may wonder why Iceland has been chosen as a location for aluminum smelting. The main reason is that aluminium production is very energy intensive, and that it has been relatively inexpensive in Iceland. Making aluminium involves separating alumina (aluminium oxide) into its component parts; aluminium metal and oxygen by electrolytic reduction. This is a continuous process where alumina is being dissolved in cryolite bath material (sodium aluminium fluoride) in large electrolytic pots and with oxidation of carbon anodes. The bath is kept in molten state by the resistance to the passage of a powerful electric current. The pots are connected electrically in series to form a so called “potline”. Pot temperatures are between 920° and 980°C and the molten aluminium is regularly removed for casting of diverse types. The Alcoa Fjarðaál plant has 336 pots producing around 350,000 tonnes per year. The raw material alumina is transported largely from Australia and Brazil in bulk ships and in 2010 over 680,000 tonnes were used (Alcoa Fjarðaál 2011). The production is transported in container ships mostly to the European market.

The megaprojects in east Iceland commenced when contracts on Kárahnjúkar hydro power plant and Alcoa Fjarðaál aluminium plant in East Iceland were signed 15 March 2003. This was the single largest construction project in Iceland to date. The Kárahnjúkar project involved harnessing two glacial rivers originating in Vatnajökull glacier and several smaller rivers in the eastern part of the highland in one power station⁵. The Kárahnjúkar project which began production in 2007 and was finalized in 2008 is capable of delivering some 690 MW / 4,600 Gwh of electricity.

The other part of the megaproject, Alcoa Fjarðaál aluminium plant reached full capacity of 350,000 tonnes annual production in 2008. The staff is around 500 and a total of around 800 persons including subcontractors in diverse functions at the site of the plant. The highly automated Kárahnjúkar plant however only needs 11 persons to operate⁶.

Since at least the 1970's there had been plans to harness the energy of the glacial rivers in East Iceland for industry and create local jobs. When the project finally materialized in 2003 there were high hopes among locals. The region's population and economy had been in a relative decline for a long time with limited diversity of jobs and dependency, especially on the fisheries, which had been rationalized and needing ever less manpower. The age and sex distribution of the region showed signs of out-migration, with relatively fewer young adults and women.

During the construction period in central East Iceland witnessed changes with much economic activity and investment in the projects as well as the housing sector and other infrastructure construction. Increased globalization, compared to previous hydro projects and aluminum plants in Iceland became apparent. In the EIA of the Kárahnjúkar project (Eyþórsson et. al., 2001) it was anticipated that 20-25% of the workers would originate from East Iceland. The outcome was however 9 out of 10 workers being foreign at the peak of the project in the summer of 2007. Icelanders were 17% of the workers

⁵ In total this represents 7% of Iceland's watershed

⁶ <http://www.landsvirkjun.is/starfsemin/virkjanir/fljotsdalsstod/nr/856>

building the aluminum plant but the Polish were most numerous or 70%. Another manifest of global interest was that large share of activists who protested the projects were foreign

1.6.2 Oil and gas industry and projects

Due to the fact that mining and petroleum (oil and gas) activities in Greenland (from exploitation to extraction) in the 1979 Home Rule legislation was given its own set of rules as a shared Danish and Greenlandic area of responsibility, this has from the very beginning of the Home Rule had a specific Danish attention. To handle the shared responsibility a body was created, the Bureau of Minerals and Petroleum (BMP).

Having its own set of legislation to answer to BMP has developed very independently from the Home Rule administration. Already from the 1980s, BMP was a professionally operated organisation aiming at attracting potential investors in mining and petroleum activities. Not until the renegotiated and extended Home Rule legislation was introduced in 2009, BMP became a 100 % Greenlandic administrative body.

In 1975, BMP issued six permits for offshore oil exploratory drillings west of Sisimiut. That was the first wave of offshore exploratory drillings for oil and gas west of central Greenland. In 1976-1977, five exploratory drillings completed. In 2000, a second wave of offshore exploratory drillings hit the west coast of Greenland. It resulted in only one offshore exploratory drilling. A third – and until now the latest – wave of offshore exploratory drillings for oil and gas west of central Greenland resulted in eight exploratory drillings in 2010-2011. The company licensed to make the drilling was Cairn Energy from Scotland. None of these fourteen exploratory drillings during the three waves of drilling activity between 1975 and 2012 west of Greenland resulted in any oil findings of commercial interest.

In Northern Norway there are two petroleum project in operation. Snøhvit is a gas field outside Hammerfest, and Norne is an oil field outside the coast of Helgeland. Two other projects are under construction. The first is the Skarv construction also located outside Helgeland, and the second is Goliat project in the nearby of Snøhvit. The latter is an oil project leaded by the Italian oil company Eni Norge. We will follow Goliat during the period of time in our research project.

The construction phase of Snøhvit commenced in June 2002, only a few months after the Parliament approved the project. This phase may be divided into two main parts; The first is the offshore development of the gas fields and the laying of pipelines for onshore transfer of gas and condensate. The second part involves the construction of the onshore facility for gas processing. These two parts vary in terms of duration, sets of participants and how they were organized, but also differences in access opportunities for local firms. Both parts of the construction phase were organisationally structured as projects in which the construction of various modules was outsourced to large suppliers operating worldwide.

Snøhvit is a Statoil-operated, Norwegian company. It is a remote controlled subsea production system on the seabed. The site is characterized by a pipeline to shore, feeding a land based LNG plant at Melkøya Island at the shipping channel entrance into Hammerfest City. At site new technology has given opportunity to capture and reinject a part of the Carbon dioxide from the wellstream. The resources are shipped to the market by LNG vessels.

Goliat was originally awarded in the Barents Sea in 1997, which was initiated in order to increase interest in the area as an oil and gas region. The selected FPSO concept consists of a circular facility containing a processing plant, oil storage capacity and accommodation facilities. Produced water will

be re-injected into the reservoir. Produced oil will undergo interim storage on the facility prior to onward transport by shuttle tankers to the market. The reservoir drainage strategy will include water and gas injection employing a total of 8 well templates with 22 wells. Eleven of these will be producers, while nine will be used for water injection and two for gas injection. Several vessels will be on permanent station in the area close to the Goliat field. All vessels will be equipped with infra-red cameras and oil-detecting radar. Goliat will utilise power supplies from land via a subsea electric cable, combined with energy generated onboard the facility. The discovery well was drilled in 2000 and a total of five wells have so far been drilled. This implies that the licence plan to drill several wells in order to demarcate the field.

1.6.3 Mining industry and projects (Syd-Varanger (Norway), Nalunaq Greenland)

Since the beginning of Home Rule in 1979, BMP has also administrated permits for on-shore mining activities. For thirty years, BMP has given permission to dozens of exploitation projects. Until now, it has resulted in just a handful of active mining projects, among those Maamorilik (lead, zinc), Seqinnersuusaq (olivine) and Nalunaq (gold). All these mining projects are of a minor scale. Many of the other projects – big and small – have been 'just about to start extracting' through several years, but have never found their way to become an active mine with extraction and export.

Only one major mining project is in a process of starting its construction phase. It is London Mining's "Isua" iron mine project just north of Nuuk. If the application and all the assessments are approved the construction of the mine can start in 2013 or 2014.

New industrial establishment in the peripheral regions of population decline is a challenge to find manpower needed locally and regionally. Finnmark is currently experiencing a very low unemployment and have little free labor to take off to new industrial projects. At the same time it demands special expertise in areas of the workforce that may not exist in the region at all. This has been evident in the recruitment of petroleum expertise in Hammerfest where engineering expertise had to be recruited from outside, and in the mining industry in Kirkenes where employees to management positions and specialized in the quarry are from abroad. In addition to low unemployment, the challenges of Finnmark in the region have limited educational opportunities within the profession as industrial establishments requested. The Norwegian mining industry on the mainland has been minimal over the past 20 years, which is why few trained specialists and few have a work experience that is relevant to the reestablishment of Sydvaranger any new mine start-up. The expertise that existed at the closure of the old Sydvaranger in 1996, were either moved out or retired. When Sydvaranger Mining started in 2009, was now spread out to recruit, staff and some local no particular expertise in mining. Competencies related to work in the mines were primarily sourced from northern Sweden, and head positions were filled by Australians or foreigners with work experience from Australia or the U.S., and some Norwegian experience from previous mining activities in the municipality. As for jobs that did not require special expertise, it was therefore employed much unskilled labor that had to learn tasks by internal training (Nygaard 2010).

But it is not only the new industrial establishment that requires labor. The business generates spillover effects in the form of subcontracting from local businesses, the use of contractors, etc. This will also generate demand for new labor and expertise, both through its existing businesses expand and new companies establish themselves in the community. This gives citizens access to a larger labor market

with the opportunity to choose between several employers, and thus a circulation of labor. But it can also create challenges for existing public and private sectors in relation to keeping the workforce who are lured by better pay and working conditions at the competitor or partner. From Kirkenes we know that the public sector has lost staff to the mining industry. Should it rest a greater responsibility on large industrial players who come from outside to help with the import of foreign labor instead of "take away" the existing scarce labor? The problem of finding labor may ultimately shifted to small local businesses with limited resources. Population and employment statistics from the muni shows these challenges. Sydvaranger mines since 2009 have created 300 new jobs + almost as many in other adjacent industries. The paradox is that this does not appear on population statistics can not show any population growth.

The northern Swedish mining companies will also need to recruit new staff with increased production volume, and will fight for the same skills Sydvaranger mines. Recruitment in the northern Swedish mining towns must still be said to be better with a long tradition of education and employment in the industry, and a much higher unemployment than in Norway. Their challenge may be to compete with Norwegian salary is about 50% of the Swedish. Industrial establishments in the construction phase will often have to recruit workers from other places / providers than a phase. We have seen the development of Melkøya where various contractors brought in their own people to the assembly plant. From Alcoa's establishment in Iceland, we have learned that the development phase of the aluminum plant and the power plant was characterized by an extensive use of foreign workers, mainly Poles, but also other European nationalities which were related to contractors. When the smelter began production in 2008, it was more focused on that there would be recruited from the region. 54% of the employees came originally from Eastern Island, and 70% were living in the region (Johannesson, 2011).

Recruiting for new industrial establishments challenged by a tight labor market and strong competition for labor. The expansion of the mining industry globally will make experienced labor very attractive and in demand across borders.

Chapter 2 The conceptual foundation – dynamics of economic space

2.1 A geographical approach to the resource economy

The Arctic is powerfully shaped by economic forces. This economy, as people living in the Arctic experience it in everyday life, is innately geographical. This implies that there is no economy “out there”, floating in the atmosphere, detached from the lived reality (Coe, Kelly and Yeung 2007). Instead the economy is a set of grounded, real world processes, a set of complex social relations that vary enormously across, and because of geographical space. To ignore geographical variations leads to a retreat into the unreal and hypothetical world of mainstream economics, with all its many underlying assumptions and simplifications.

The Arctic is strongly influenced by transnational corporations (TNC). They have different strategies to handle geographical space. The oil and gas developments can i.e be understood as distant links, where managing the development of early phases in a construction, procurement, design, and operation of the field – in theoretical terms may be governed from outside the location of the construction site. This is also more or less the case where big oil companies are involved. Their organizational structure involve regional and in some aspects, also national, division of labour in these phases. When it comes to offshore constructions we experience that managing the projects can be done far from the location of resources itself (Nilssen, 2012; Nilsen forthcoming 2013). The division of labour in a regular offshore project is spread between several countries, even different parts of the world (Nilsen, op.cit). Even though, the construction of such a development needs a location to fulfil the demands of design and engineering. When it comes to oil and gas developments, we experience that mostly construction and development of platforms, take place in South-Korea, Japan or in the Middle East. This involves few Nordic countries in the project development.

In the case of East Iceland the available energy together with location and economic ties with Europe are probably the prime locational factors. Other factors, such as local knowledge in e.g. harnessing the energy and increasingly in this type of manufacturing probably play a considerable role. In the case of east Iceland regional development policy played some role in determining the location of the project even if local resources i.e. the power of the glacial river was the primary factor.

2.2 How can important aspects of resource economy be approached?

We adapt a geographical perspective in this study. This involves the basic concepts of *space, place and scale*. In its most fundamental sense, space refers to physical distance and area. Every economic process must exist “on the ground” in a bounded area and at some definable distance from other activities (Coe, Kelly and Yeung 2007:11). All human and environmental processes happen in space in this way. It might be possible to discuss Finnmark or Iceland's economic challenges based on an abstract theory of how the economy “should” work, without any sense of where Finnmark or Iceland is located in global space. This would, obvious as it seems, create an insufficient analysis due to the distance to central markets. A second set of geographical concepts relates to the specificity of particular places. While mainstream economics tends to create universal principles that are assumed to apply equally in all contexts, geographers tend to focus on the specificity and uniqueness of places. This goes back to the roots of geography that sought to provide detailed descriptions of regions that integrated

both physical features and social processes. This involves the emphasis on place and doing empirical fieldwork – requiring a detailed understanding and lived experience of a place as necessary conditions for generating knowledge about it (op.cit:16). Nevertheless, place is a very vague notion. It may refer to anything from a shop to a country or a continent. The concept relates to somewhere in particular, whatever scale involved. The characteristics of places are unique assemblages of a huge array of political, economic social, cultural and environmental factors. These features are built up gradually and incrementally, so the characteristics of Greenland are the products of historical layers of change over time. In such a perspective, Greenland as a place is a unique intersection of various relationships and flows that intersect there. A third set of concepts helps us to organize the world of space and place around us, namely geographical scale. There are differently sized units that might constitute places carved out of space and we provide an organizing framework for understanding these units by using the language of scale. At a global scale, we have already become acquainted with energy as a global commodity. Its demand is increasing, shaping the need for understanding particular local places in new ways. In between we cannot understand these processes without understanding the national scale of politics involved in such an economy. As we see, there are a variety of scale that might be useful understanding the kind of dynamics that take place in the Arctic.

We need a more thorough understanding of how resource economy create impacts on local communities in the Arctic. Even though there are some few studies that have been studying these relationships, we still need to know how the resource economy shapes development, hinder or creates opportunities in a Nordic context. One way of understanding important aspects of resource economy, is in the traditional way of doing the economics, counting the numbers of firms, what do they deliver to multinationals, are they creating growth or decline in the economy and so on. By “*following the money*” we would be able to understand different dimensions in the economy. One important part is what kind of regional involvement do these projects create. Another important part is to examine how much of the regional value creation that come from this resource economy. Another approach is to follow these developments along several dimensions. While studying the numbers of firms involved, how they create linkages with public policy, peoples involved but also involving analysis of what kind of connections this would bring, we may be able to grasp a wider picture of how multinational companies influence on society as a whole.

2.3 Who are the Actors and how can we understand them?

More than any other institution, the TNC has become the primary shaper of the contemporary global economy, and a major threat to economic autonomy of the nation-state [4]. TNCs have also changed several regions by challenging their base of economic development, changing traditions and ways of production. Most TNCs are capitalist enterprises. As such, they must behave according to the basic rules of capitalism, the most fundamental of which is the drive for profit, wherever they operate.

From the literature we know that natural resources can be developed on the basis of various initiatives [5]. A characteristic of the processes of our concern is that they are driven by TNCs, which for short or longer periods move into new areas - in this case the Arctic areas. We experience that new owner constellations arise where there is risk capital, and the geographical distance between this capital and resource extraction increases [6, 7]. While the new global players gain control the national governments receives a more peripheral role, both as proprietor and premise for development of these industries. The global production chains are integrated in new ways and a high level of mobility characterizes these operations [8].

Most of the various assets a company needs in order to produce and sell its specific products and services are unevenly distributed according to geography. This is most obvious in the natural resource industry, where firms (of necessity) must locate at the sources of supply. Often, investments shape the first element in an organizational sequence of vertically integrated operations whose later stages may be located separately and far from the source of supply. In addition, final processing of natural resources occurs close to the final market. However, Dicken [4] states that technological changes in production processes and in transportation have evened out the significance of location for some of the traditionally important factors of production, i.e. natural resources. The two most important location-specific factors are access to knowledge and access to labour (op.cit:111). An important geographical impact is a strong tendency for knowledge and technological innovation processes to appear in geographical clusters, giving major incentives to locate relevant operations in such locations. These clusters are mostly located in central parts of the respective nations. This challenges peripheral regions and value creation in the periphery, since knowledge driven development and regional development in the periphery depends on new insights and new technology.

TNC`s arrive in regions with established institutions and a framework involving important traditions and a local embedded culture. This culture may be quite different from the ones of TNC`s. The basic institutions in this regard are local governments, firms and civil society. The stakeholders represent a central part of this research project.

2.4 Corporate Social Responsibility

One aspect of particular interest concerning the re-industrialization processes is how industrial actors exercise corporate social responsibility (CSR). CSR denotes how a corporate body manages its role versus the community [20]. The meaning of CSR is more or less in constant change. The focus on CSR is often driven by a desire to enhance reputation and the outside world's perception of the business over time [21]. Corporate bodies are expected to act in accordance with certain commonly accepted social norms. Central questions in this context is how new industrial actors involve different stakeholders, and how they handle social and environmental adverse effects of their operations. Another important aspect is whether the new industries displace other existing businesses. Large impacts on the landscape in relation to the developments (i.e. power lines, wind turbines, industrial plants, road construction, dams and reservoirs) might affect the ability to exercise traditional industries such as reindeer herding and hunting activities. The tourism industry can also be affected as the brand of clean and untouched nature may conflict with large-scale developments. These are important aspects to deal with because corporate bodies need “a license to operate” and this license is normally issued by the community.

Caroll and Carson [22]perceives CSR as an overlapping carpet where businesses meet financial, legal and ethical expectations from the community. In the economic sphere, companies have a responsibility to make money for their owners. In the legal sphere, companies have to follow laws and regulations. In the ethical sphere, companies have to act in accordance with social and ethical norms. It is, however, an open question which of the economic, legal or ethical norms should be given priority when discussing whether a company acts in accordance with CRS expectations. Aspects of CRS in the Arctic re-industrialization processes are not much addressed in the research literature.

Chapter 3 Methodology and data collection

In this chapter we will give an account of what kind of methods we have used and also what kind of methods we will use in the further work in this project. First we give an overview of applied methods. Second, we discuss the strength and weaknesses of these methods. Finally, we investigate if there are other methods which can supplement our question of research in this project.

3.1 Methods

We have used case studies as methodology, and combined this strategy with quantitative methods, involving statistics and accounting data. Yin (1994) defines a case study as an empirical investigation that studies contemporary phenomena in a given context. There are not necessarily well-defined boundaries between phenomenon and context. We will do three case studies, one based in each industry; one on energy based industry, one on mineral industry, and one on the fish processing industry. These case studies are organized in three different work packages. In a fourth work package, we will synthesize and compare the findings from the three case studies. Such a synthesis will provide a basis for answering the four main issues and the overarching research question.

The rationale for doing distinct industrial analysis is that we assume that value creation takes place and is regulated differently in the three selected industries and this will affect how the locals contribute to stabilizing mega-projects. We also assume that similarities and differences within the three industry types become more visible through three separate analyses. For each case study, we have selected projects in three different countries which we have already studied and will further explore. In this way we will reveal important differences in regulations and resource management regimes between different countries in the Arctic which may affect local value creation and work-life outcomes.

Case studies allow for different data collection methods. Both qualitative and quantitative methods as well as triangulation will be used. We will in this project mainly do data collection by interviews. The degree of structuring of the interviews will vary depending on the dynamics studied. We will supplement with other data sources as relevant documents and databases.

3.2 Cases and specific methods

The University of Akureyri Research Centre (UARC) carried out socio-economic studies in East Iceland during the period 2004-2010, monitoring the impacts of the mega-projects on the surrounding region. The emphasis was on the construction period 2003 - 2007. The research was initiated by a parliamentary resolution in 2003 and mainly financed by the government. There was a sociological emphasis with the purpose of seizing this unique opportunity during the construction to monitor the diverse effects on the local communities. The purpose was to use findings to minimize negative impacts and maximise the positive. Furthermore, this was considered an important research for the field of regional studies in Iceland.

Three surveys were carried out among individuals and two surveys among companies. Qualitative interviews were carried out with individuals and experts. Statistics on demographic development and similar matters were used as well as data from municipalities and main contractors. The research was formally completed in September 2010 with the publication of a final report in Icelandic covering the

main changes during the period 2002-2008 (Jóhannesson, 2010). A total of nine reports in Icelandic were published during 2005-2010. The research has however been disseminated widely, especially in the Nordic countries through seminars and conferences.

In cooperation with local actors, the research area was defined as the eastern part of Iceland, divided into three sub-regions; a central area within two hours' average driving distance from main building sites and northern and southern areas beyond this distance. This division can be seen on the map below.

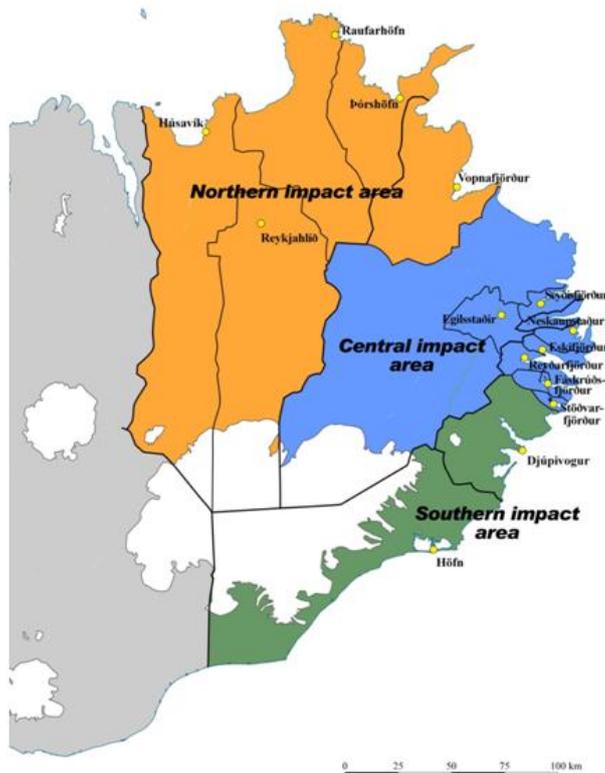


Figure 1. The impact area and its three sub-regions (Source: Jóhannesson, 2010)

This division into central-, northern- and southern areas was mostly used for data analysis in the research. However, another geographical division into 14 sub-regions can also be seen on the map. These sub-regions were formed around main urban settlements and not based on an administrative division. A problem with using this geographical division was the low population number in the smallest areas. Many mergers of municipalities took place during the period and their number shrank from 26 municipalities in 2002 to 15 in 2008.

Some fields were expected to experience high impacts and certain actors were expected to be highly involved due to contact with contractors or direct participation in the project. The following domains were identified as being of special interest and actually they are similar to those of socio-economic impact assessments (SIA) carried out during the EIA process:

- Economy and earning potential
- Labour market
- Population development

- Municipal affairs
- Housing
- Private services
- Public services
- Land use and resources
- Infrastructure
- Tourism
- Lifestyle and social spirit

When planning the research, it was decided to build upon ideas on methodological triangulation (Denzin, 1970; Silverman, 1997). In this way, both qualitative and quantitative data were used to search for a better understanding of the processes taking place in the communities. The emphasis was on data sources that shed light on changes in communities *while they were taking place*.

An important part of primary data consisted of three mail surveys in 2004, 2007 and 2008. The 2004 survey was carried out only among people living in the impact area, while the survey in 2007 was carried out in the whole of Iceland and the 2008 survey focused on East Iceland, but also included the Akureyri region in N Iceland (with 25,000 inhabitants) for comparison purposes. The surveys used the same questionnaire with little changes which between rounds. Mail surveys were also sent to companies in the research area in 2005 and 2008. Semi-structured interviews with individuals living in the central impact area provided important data. These were carried out in 2002⁷, 2004, 2007 and 2009. Interviewees were located both in towns and the countryside, a mix of different economic sectors and gender, 15-20 individuals were interviewed each time and this was expected to give an insight into how individuals experience changes in their community. This was also important for the purpose of guiding the study into certain directions. Expert interviews were carried out regularly with individuals from the municipalities, different sectors of the economy and government institutes.

Data from owners of the projects, i.e. Alcoa-Fjarðaál, Landsvirkjun⁸ and their contractors were also used, but some of the requested data proved difficult to obtain. This may be a consequence of the short time span of the projects and their relative complexity reflected, for example, in a high number of contractors and subcontractors and many nationalities involved. This kind of data appeared to be less accessible than in former projects in Iceland, which is probably related to the above-mentioned complexity, as well as increased globalization reflected by companies and workers coming from all over the world to take part in the project.

Statistics on issues such as demography, economy, labour market, housing and municipalities were obtained, but the nature of such data and delays in making them available may cause them to be better suited for ex-post studies. Thus, some important data had not been published when data collection and analysis was finalized in 2009 and the project came to an end.

As the objective of the research was to study the changes taking place in a community, the researchers believe that their initial emphasis on using primary data from surveys and interviews was right. Relying to a larger degree on statistics and data from the companies and contractors would have resulted in a less satisfactory choice of information due to delays and unavailability.

⁷ This was a part of another UARC study but gave an important information about the baseline before the project.

⁸ The Icelandic national power company.

3.3 Implications

The research in east Iceland emphasized on the construction period and that was the purpose of the research when it was initiated by the parliament. However, data is lacking on the impacts of the operation period but it was apparent that it was the impacts during the operation phase which were primarily considered desirable for the community. There is however limited information available on the nature and scale of these impacts.

Another important implication is that it rests challenges when it comes to collecting valid data from multinational companies. This is due to the desire for privacy and the need to protect their customers to competition concerns. From a research standpoint, it is not difficult to understand why this is so in business. Therefore, we have largely omitted topics where such issues have become apparent. This can obviously be able to influence research process in special directions. We nevertheless considered that to mean that at present no need for details on corporate subcontractors or sub-subcontractors been an urgent item.

3.4 The importance of understanding more of wider impacts

There are aspects of the Icelandic case that further information is needed on. Among these is long term impact on tourism in the region and the eastern highland and tourist related services such as restaurants and hotels. Further information is needed on migration patterns. There are indications that there is less net in migration to the area than some expected. What is the experience of newcomers settling in the small communities and for those who did not manage to settle and returned, what were the main reasons? Further studies are needed on the crowding out effects of the new industry and the structural changes that have been taking place in the region. Development of diverse private services needs to be further studied. Issues related to the work place and working conditions need to be studied. Among these are the impacts of the 12 hour work shift pattern which is still in use even if there has been criticism on its impact on family life. Related is the experience of workers and the aluminium company of work shifts when one has to commute over considerable distances in various weather conditions, which problems are encountered and to how a large degree? As the community closest to the aluminium plant is rather male oriented, further research is needed on the reasons for that and how the issue might be addressed.

Chapter 4 The encounter between Mega-projects and local communities

4.1 Mega-projects in the Nordic peripheries – what do we know about them and their wider impacts?

Virtually every aspects of Transnational Corporations operations, even if it is political, economic or cultural, can be judged in diametrically opposed ways by the proponents and opponents of TNC`s (Dicken 2007). He states that, depending on ones ideological viewpoint, TNC`s may both expand national or local economies or exploit them. Further, TNC`s can act as a dynamic force in economic development or as a distorting influence, they can create jobs or destroy them. Finally, one can imagine that TNC`s can spread new technology or pre-empt its wider use. Our main objective with an analysis of the encounter between Mega-projects and local communities, is neither to judge TNC`s or advise them in ways of doing better business. Our intention is to develop knowledge about how they behave and what their conduct implies for the local communities involved.

4.2 The case of Mega-projects in Finnmark

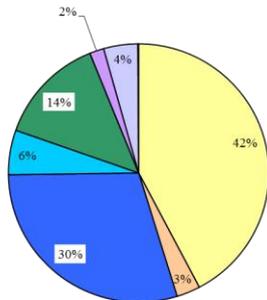
4.2.1 Local firms Snøhvit & Goliat

The transition from construction to production was fraught with technical obstacles and challenges. Statoil and its main contractors were under great pressure to solve these problems, not least due to very high budget overruns (Nilsen 2008; Steen 2010). The analysis of the early stages of the production phase shows how firms outside Hammerfest solved their challenges by mobilizing labour and other resources from other regions for shorter periode of time. This capacity for resource allocation on behalf of the larger companies reduced the need to draw on regional assets. For example, Hammerfest Maritime Sercive, that had created a joint-venture with main contractor BIS Industries as well as an intentional agreement with Aibel, experienced that theirer services were largely neglected for long periode of time. The start-up difficulties of Snøhvit thereby constituted a barrier for local firms acces, since solving the problems became paramount. It is likely to believe that the risks of involving new companies without sound reputation would be high for Statoil and their main suppliers during this phase.

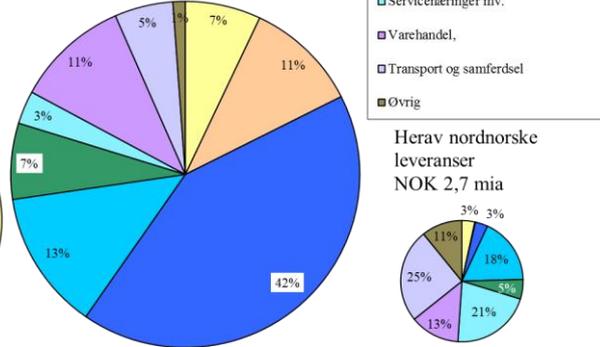
Nevertheless, the technological problems and the delays it resulted in also created an prolonged demand for basic local supplies such as catering, security and adjustment work. As Snøhvit now is in stable production, the organizational configuration of the production phase deviates from that of the construction phase. First, Statoil has demanded its main contractors to establish plants in Hammerfest- A number of specialised service companies now operate from Hammerfest, both for participating in the production phase and for using it as a strategic locational springboard for future operations in the Barents sea. Second, Statoil has required that the main suppliers engage host region firms as sub-contractors. We have identified that external firms are being involved now in sub-contracting.

Fordeling av inngåtte kontrakter pr mars 2008 etter geografi og næring, utbyggingsfasen

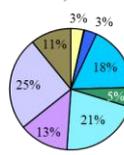
Utenlandske leveranser
NOK 17,1 mia



Innenlandske leveranser
NOK 30,5 mia



Herav nordnorske leveranser
NOK 2,7 mia



In the construction phase of Snøhvit we experience that the goods and services provided by local companies were primarily based on their traditional capacities and competencies, and the proximity to the project organisation is a key factor for explaining a large fraction of local firms`

suppliers. They did the same as they did before, but even more of it – seems to be a statement representative for local business. This captures the essence of local firms` activities in the construction phase.

Firms in the North, with some exceptions, largely lack experience and necessary competence to handle technological key-functions in the petroleum industry. Thus, there are companies in manufacturing, construction and business services that were the main suppliers to the Snøhvit development. If we include companies in the sale - and retail, trade and transport, we have the major supplier industries included. We can also say something about the geographic distribution of supplier companies in northern Norway by comparing (i) the location of the supplier companies in the Snøhvit project, with the (ii) distribution of the northern Norwegian suppliers.

Companies in Hammerfest and Alta are "overrepresented". In Nordland and in the region Harstad, it appears that the proportion of the northern Norwegian suppliers are high, while Snøhvit deliveries are almost absent. If we keep Alta companies outside there is therefore no reason to believe that businesses in the "new" regions extensively is drawn into the petroleum arena through the Snøhvit development. This means that the processes that create new growth in the north based on petroleum industry - is related to the sectors that are located near the construction site in Hammerfest.

Snøhvit - Coupling processes;

For economic reasons (and security and political "Good Will") want the government and the developers in the petroleum industry should be geographically present in the north.

The global players' response to this is to establish project offices or buying up smaller, but good and promising local and regional businesses.

- Major contractors use geographical proximity as a strategy to increase market share
- Relations between contractors and operators based on formal tender-processes

One interesting point here is that it seems that new satellites recruit local people from local enterprises and integrate in the established innovation systems. (Creating local innovation potential)

Project offices are recruiting workers from other industries by allowing them to offer good wages, new skills and status of jobs. Other companies are popular buyers of promising local enterprises because they can offer access to important networks, capital and strategic expertise. In these relationships local labor skills from other areas of useful expertise in, for example, operation of Snøhvit field, and we can imagine that this new knowledge in the future may be converted to local entrepreneurship and so on.

However, we find that the short-term needs of the oil industry can be solved by using local businesses. Again, local firms are connected to the entry of firms or project offices. The local firms' geographical proximity, quick solutions and flexibility are "switched" into deliveries. However, it appears that companies are flowing back to their original areas when the jobs in the north are performed. There is thus a temporary stay on the northern station. Something of the same we see in the global companies that were established in the oil - and gas arena before the Snøhvit project, but drawn temporarily into the new petroleum arena (Hammerfest) to solve some specialist niche-like tasks. They also remain in their global arena by innovative development activities are added to other stations or arenas in the oil - and gas sector, for example, the German Linde and its network.

Summary

Snøhvit

We have thus seen that the first development project in the Barents Sea have specific identifiable relationships with local and regional economy. It is an arena feature of the Norwegian oil and gas industry that makes the relationships we have described possible. At the same time that the review process at the northern station has some implications that are challenging. Examples of this is a marginalization of local businesses from other areas than oil - and gas arena because that companies are losing manpower and expertise.

The northern development sites are attractive through the opening of the Barents Sea, but first and foremost through the sites included in the projects. **This also means that the relationships between companies created over many years in the south, is far more important for what happens around development rather than purely local processes.** These relationships are formal types. It's about regulated by framework agreements, previous contracts, tender stories and new bid wins. There is no results in the material that the horizontal connections between local and regional businesses is a driving force in the development of the new oil economy in the north. But again, the dynamics of these adaptations are "fly in" to do the job and "fly out" of Hammerfest when the job is done. There are rather few local businesses that are connected. In the first case we see that the licensing terms to a small extent, controlled the connections that have arisen between local and regional businesses and the expansion project. This is about all other processes such as market dynamics, geographical proximity and coincidence. The government's role was largely related to the framework conditions in advance of Snøhvit, and not the rules as such, although we see signs of that one regional political condition was the result of local political pressure.

Goliat

In terms of the oil construction Goliat, led by the Italian company Eni Norwegian branch company, Eni Norge, the project will produce first oil in 2014. As a result of this there are not established final numbers regarding the importance of this project for local firms in Finnmark. We experience some tendencies through collected data and these data are now being analysed. It is important to remember that Goliat still have two years in construction before the development is completed.

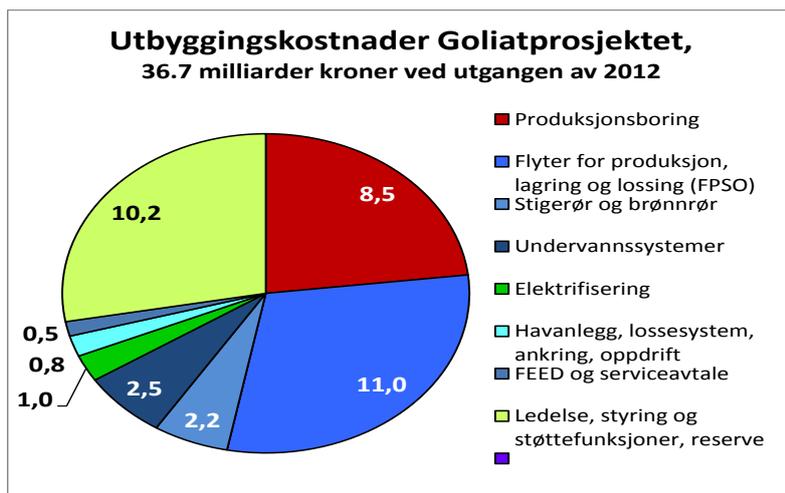
In order to systematize the various components of construction project delivery areas, we used Eni Norges own sections in the main contract. Moreover, we have added to production drilling, which constitute a very significant portion of the total contract value. We have also taken early detailed design since this work has important guidelines for project implementation. Furthermore, we present a service agreement Eni Norway has put out in the market to show the extent of monitoring active ether against individual providers in the development project. Finally, we have included Eni Norges own expenses spent on leadership, management, and various support functions, including the oil spill, to develop the Goliat project according to plan. This item also includes project reserve for unforeseen events. The total development costs at the end of 2012, estimated at 36, 7 billion. A summary of the main supplies are shown in Table and Figure 4.1

Utbyggingsprosjekt Goliat ved utgangen av 2012

Leveranse	Hoved-leverandør	Leveransesum, milliarder kr
Produksjonsboring	Saipem m.fl	8,5
Flyter for produksjon, lagring og lossing (FPSO)	Hyundai Heavy Industries	11,0
Stigerør og brønnrør	Technip Norge	2,2
Undervannssystemer	Aker Subsea	2,5
Elektrifisering, undervannskabel	ABB	0,7
Elektrifisering, landkabel og anlegg	Siemens, Hammerfest Energi	0,3
Havanlegg	DOF Subsea	0,3
Lossesystem	APL	0,1
Ankringsutstyr	Aker Pusnes	0,2
Ankerkjetting og tilbehør	Vicinay	0,2
Oppdriftselementer	Lankhorst	0,1
Tidligfase detaljprosjektering (FEED)	Sevan Marine	0,2
Serviceavtale	Sevan Marine	0,4
Ledelse, styring og støttefunksjoner inkl. prosjektreserve/uforutsett	Eni Norge	10,2
Sum		36,7

In the overview we have distributed the different contracts between the firms who won the specific tender. We have divided the firms along with the operation they have been set to handle in this specific case of offshore oil development.

Further, we have divided the amount of contracts in the project into a pie chart. Here we also have integrated contracts with specific Norwegian interest, involving contracts further down in hierarchy of suppliers. This is done to highlight the distribution between different segments in an offshore oil development like Goliat. It is important to underline that this overview is temporary and is done two years in the construction period, still two years before Eni Norge produce first oil in the Barents Sea. One impact of this is i.e the large amount of investments that is integrated in the part called management, support and government of project in Eni Norge. This is not accurate and will not represent the final distribution when we reach 2014, but this is done to place investments in a temporary format at this point.



If we move over to the largest contract in the expansion project, construction of the floater for the production, storage and offloading (FPSO), the figures show that Hyundai Heavy Industries has signed a contract with Eni Norway to a value of 11 billion. Equipment deliveries account for about 60% of the total contract. Of this, the bulk and pipes, steel 40%. In general, bulk shipped from Japan and Korea. Of the total contract value executed design and engineering largely in Korea. The Norwegian Veritas has had a certain amount of jobs related to calculation of stability. Moreover, Chicago Bridge & Iron in London carried detailed planning. When it comes to production, this part of the contract strongly of Korean content. 38 Norwegian equipment suppliers, however, has secured contracts with Hyundai with a value totaling nearly 2.4 billion Norwegian kroner. Almost half of this scope of ABB's delivery of equipment for electrification, control and telecommunications (EICTA). The Norwegian vendors include primarily industrial players, but also trade and knowledge services.

Providers are localized with gravity in Oslo and Oslo / Akershus, but also Nordland is represented by the supply of exterior doors from Rapp Bomek in Bodø. None of the firms located in Finnmark are represented.

Norske utstyrsleveranser til Goliat FPSO
Geografisk fordeling av leverandører

Region	Antall leverandører
Akershus/Oslo	8
Østlandet øvrig	4
Sørlandet	5
Rogaland	14
Vestlandet øvrig	6
Nordland	1
Sum	38

4.2.2 Deliveries from firms

Goliat project's direct purchase outside of major contracts at the end of October 2012 accrued to over 1.7 billion, of which 1.4 billion from Norwegian suppliers. Contractors nutrient distribution is shown in Table. Deliveries of oil service companies make up the bulk of this.

Direkteleveranser til Goliatprosjektet per okt 2012
utenom hovedkontraktene

Næringssektor	Millioner kroner		Sum
	Norske	Utenlandske	
Verkstedsindustri	1	226	227
Kraft og vann, bygg og anlegg	7	-	7
Transport	87	-	87
Oljeservice	991	87	1 078
Kunnskapsintensiv rådgivning	281	9	290
Annen tjenesteyting, annet	43	-	43
Varehandel	13	-	13
Totalt	1 423	322	1 745

Preliminary direct deliveries spread over regional contractor affiliation as shown in the table below. Yet the major Norwegian direct deliveries from suppliers located in Southern Norway, followed by Akershus / Oslo, local direct shipments from Finnmark is so far around 100 million. It has not been possible to distribute purchases from NOFO (around 30 million) in the region, therefore they are entirely allocated to the local level, and are included in this amount. In addition, it made corrections where invoices from supply company Norsesea is split between bases in Tananger (South West of Norway) and Hammerfest (Finnmark) after specification. The majority of the local deliveries include transportation and logistics, and oil spill response.

Direkteleveranser per okt 2012
utenom hovedkontraktene

Region	mill. kr
Akershus/Oslo	227
Østlandet øvrig	5
Sørlandet	956
Rogaland	76
Vestlandet øvrig	11
Sør-Trøndelag	16
Nordland og Troms	32
Finnmark	100
Utlandet	322
Totalt	1 745

4.2.3 Local workforce

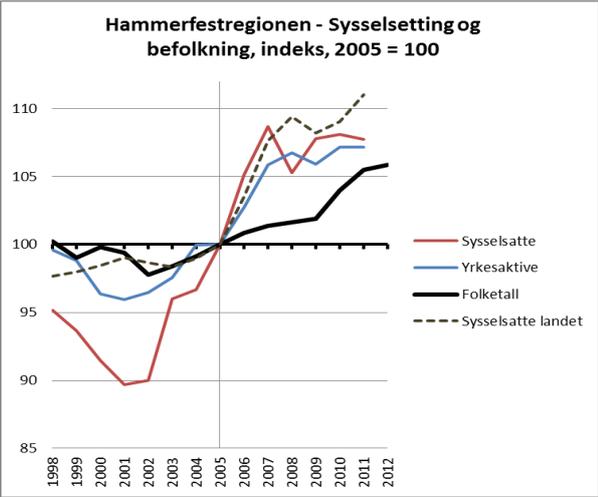
Based on this temporary overview we find some interesting aspects that might be useful and important to follow in the further aspects of research. One aspect is the total distribution of contracts in such a project as Goliat: We find that the most important aspects of involvement with an offshore project is located to Asia, in specific South Korea. The FPSO (Floating, production, storage and loading) unit is produced in Ulsan, 450 km southeast of Seoul. Other important main contracts in this project is found in Southern part of Norway, involving both Rogaland, Hordaland and Oslo/Akershus. These three regions have over 90 % of the Norwegian content of the contracts in the Goliat development.

The development of Snøhvit was mainly carried out as a result of in-commuting. There were several reasons for that. Development projects in the oil and gas industry is characterized by a mismatch between the development and population size structure of the country. Snøhvit was a major cause of

the lack of local and regional labour, another was tight labor nationally and a third that vendors bring with them their people to work out. The latter cause was related to competence (Nilssen, 2012).

Employment in Hammerfest in the development period, naturally enough influenced by high activity during development. From the end of 2002, the registered employment in the municipality with 1,300 employees until the end of 2007, when there were 5,900 people employed in the municipality, where the numbers in employment statistics only include employees who are registered residents in Norway. A significant feature of the construction of the LNG plant at Melkøya was that the demand for labor was temporary, it had a substantial volume and largely assumed special qualifications, and most of the employment growth in the period was recovered by commuters.

Construction start-up in Hammerfest coincided with a cyclical decline with a reduction in employment at the national level from 2002. From 2005 there was again a strong cyclical upswing, with strong growth in employment in Norway until the end of 2008, when the financial crisis began to take root. While Hammerfest had a prolonged downturn in the years before construction start, the number of employees with Hammerfest both workplace and residence after construction began, while in Norway the way was a downturn period up to 2005. Employment growth of Hammerfest-residents kept largely kept pace with the growth on a national basis after the recovery began and up to 2007, and has since leveled off. The figure shows employment and population growth in the Hammerfest region of index terms. Hammerfest Hammerfest region includes the neighboring municipality Kvalsund, which is a natural living and labor market region.



While Statoil has the majority of employees live locally, it has been for some contractors is a challenge that a rather high percentage of the activity is based on commuters. The proportion of local residents is increasing even though the total number of employees in firms increases. Most companies say they want to recruit as many as possible locally, but the lack of operators within individual disciplines. Also nationally makes recruitment more difficult (eg. within ISO subjects - insulation, scaffolding and surface). Statoil, which is at the top of the value chain, has gradually succeeded in reducing the need for commuting based labor to a minimum, and have good tuning their jobs for both highly educated with university / college and skilled workers. Several companies said that the recruitment of highly educated doing better than before, but that in today's tight labor market is still challenging for certain types of operators / technicians.

Because many are already covered by commuters, and that there will still be substantial supply of new

jobs, it means that educational and recruitment of qualified personnel is a major challenge ahead. Eni Norway require personnel with several types of qualifications to the ongoing development of the Goliat organization in Hammerfest .. Further, Eni Norway about to put out to tender several operating contracts for maintenance, supplies and miscellaneous support etc.. which will involve ytterligere nyetableringer or expansion of established businesses in Hammerfest.

4.2.4 Local politics in Finnmark Snøhvit & Goliat

We seek to uncover the strategies these public actors have to create and facilitate socio-economic effects in region, but also the degree to which public policy affected by an increase impulse Goliath. In this part of the research result, we are committed to follow the interaction between Eni Norway, Goliat Project and the municipalities located within the impact area Goliat field. It also means that we will have a special eye for the formal arenas that occurred between municipalities and between the oil company and the local authorities. Further we examine how the local group themselves or cooperate with other municipalities and public actors to strengthen their position in the processes that are enabled by result of the Goliat development.

We ask the question of how Goliat project affects public actors in the region's strategies and choices, and how the interaction between the developer and public actors that municipalities contribute to regional effects. How positions in public actors, in this case primarily the neighboring municipalities, the to help create ripple effects? Have the various actors resources that can be exchanged for this purpose? It creates trust between the players as a possible foundation for further development of collaborative process? And, what comes out of the process? Interaction Arenas is in this report defined as (i) the interaction between municipalities, primarily municipalities of Hammerfest, Hasvik, Måsøy and North Cape and Finnmark county, (ii) interaction that occurs directly between Eni Norway and these municipalities, and (iii) the interaction between Eni Norway, Goliat Project and Cooperation Group Goliath is a formal superstructure of cooperation between these municipalities. The effects we have decided to wait to give a more coherent and comprehensive presentation. In part this means that the process should be allowed to develop more before it is possible to say for certain effects, and partly by the fact that it has proved challenging in this stage to get good data about the repercussions. We will still provide some clearance on the basis of the information we have considered it appropriate to convey.

Thus early in the development phase and it is so far not produced many tangible and verifiable results in terms of regional effects. This report must be read as a first contribution to the analysis of any dynamic processes between actors, which may change with respect to the participants as actors emerge as relevant, and the content of the processes. In conclusion we ask a question about whether Goliat has started "drawing of new Finnmark Map" - understood as the project initiates new constellations than previously seen in the region. Our data suggest that there is a tension between the public, institutionalized network relationship Working Together group is Goliath and other cooperative relationships, where both municipalities operator are important players. Currently, the picture is as follows: The formal partnership arena Cooperation Group Goliath has so far primarily filled the role of information arena, primarily for information from Eni Norway to municipalities on the progress of the Goliat. This part of the connector are all participants satisfied with. Municipalities perceive it as positive and confidence-building that everyone gets the same information at the same time. They believe it helps to reduce misunderstandings and create understanding between participants. Both Eni Norway and the four municipalities are less satisfied with the Work Group Goliat not getting started

with concrete actions to create a ripple effect. Explanations for this may be more. Informants pointed out that meeting frequency has been low, partly because of a conflict between Hasvik Municipality and Eni Norway that it has taken some time to get cleared up in. It also appears that both the oil company and the local authorities have been waiting for the other would come up with concrete proposals and initiatives, but this has happened. It nevertheless appears that expertise in the form of decentralized education to recruit labor for development and production phases could mean a turning point in this respect. The reason why the partnership so far has not received the additional feature had intended it, however, also lie in completely different circumstances. That is, first, an unbalanced relationship between the four municipalities in terms of size, but perhaps primarily terms of competence and connection to other, less formal networks than Cooperation Group Goliath. Hammerfest is the largest and has access to completely other resources than the other three. Nordkapp municipality signs on their side in market-initiated network along other geographic lines than those who work group represent, and collaborate with companies in Alta and Tromsø on emergency preparedness efforts and disposal. We also noted that all the four municipalities have their own bilateral connections to Eni Norway. These compounds involves various specific projects and measures, development of service functions associated with the Goliath development and / or financial support from Eni Norway to local development and cultural projects.

These conditions can put a damper on the ability and willingness to do the Work Group Goliath an important tool for creating effects. Ideas and development as it Work is often not intended for the public, as we have noted several examples, and this will at least put a damper on the degree of openness of communication. Confidence often regarded as a prerequisite for creating a good cooperation development. Trust between the four municipalities affected by several factors; previous cooperation experience of the political debate on development decision and so Well knowledge that lack of knowledge about the other municipalities bilateral relations Eni Norway and to other developing networks. We can not on the basis of our analysis provide a exact diagnosis of trust between participants in the Collaboration Group Goliath. The interviewees' own statements nonetheless points in the direction that this forum has contributed to confidence is increasing, both between municipalities and between these and Eni Norway. Interviewees from Eni Norway points out that in the time that has passed has become better acquainted with the local authorities, their way work and their strategies. It was very unusual for the company to be met by local politicians and administration, rather than business people, when they came to local meetings to discuss the need for supplies and plans installations.

We also see that both the oil company and the local authorities have perceptions that they can be mutually beneficial - that they have the "goods" they can exchange, exchange with each other. Municipalities need investment and support for good causes, while Eni Norway needs goodwill and especially of Hammerfest, preparation and service. Here, it appears that municipalities, especially the smaller ones, considering its importance as more important than the meaning Eni Norway attaches to them. Municipalities can also look to anchor its power to influence government decision-making processes in an unstable element, namely primarily personal contacts in the government apparatus. During that time, our material is about, municipalities have mainly had contact with Eni Norway and to a small extent with the operational organization of the Goliath, which is located in Hammerfest. Now this organization more "in place" and local reviews operations director as a person they think they can have a good dialogue. One question in the further follow-up research is whether the contact is going to turn more in the direction of operating organization and, by extension of that, the content of cooperation change. Also in the future there will be questions about how collaborations

develops. There are several factors that come into play, such as the priorities of central stakeholders, what is the current contents of cooperation, and not least: What comes out of it? Here are the elements that make this one, or more, processes unpredictable outcomes.

4.2.5 Gender

Gender and the arctic context

We can not find any studies who explicit has given attention to gender in Finnmark related to the development of oil and gas activity. This underlines the importance of creating solid knowledge also in this context.

The setting for the research will be a Northern Norwegian resource periphery, specifically Finnmark. Most likely I will focus on industrial re-structuring processes tied to the re-opening of mining industry in Sør-Varanger municipality.

The research on gender developments in resource peripheries referenced above is highly relevant to my research, but it is worth noting that the specific resource periphery we are interested in is also part of what might be referred to as an arctic context. As such, there are some contextual aspects with regard to gender, important to keep in mind.

First of all, there is often a gender imbalance in terms of the number of women and men living in arctic societies that can be found in societies which experience industrial restructuring. In fact, Rasmussen (2008) say that many northern communities are experiencing a situation where there are only six or seven females to ten males (in the 16-35 year age group), and "this gender imbalance has a marked impact on the community, affecting both social life and the economy, through fewer opportunities for marriage, for the maintenance of family life and family structures, for natural reproduction, as well as for influencing cultural activities" (p. 91-92). Similarly, Hoogensen, Lotherington, Hamilton, Savage, Koukarenko and Kalinina (2004) point to a "pattern of disproportionate out-migration by young adult females has been observed in a number of northern regions including Alaska, Greenland, the Faroe Islands, Iceland, Norway, Newfoundland, and Russia" (191-192). "In addition, women tend to experience negative short-term and long-term consequences in terms of careers, earnings and pensions, and this has significant consequences for migration patterns" (Nordic council of ministers, 2011, 49-50). The Nordic council of ministers (2011) say that "one of the most striking features of most peripheral and semi-peripheral regions in the Arctic is the deficit of women, both in balanced or declining population, primarily due to out-migration, and further the very high proportion of women with a higher education" (p. 49).

In addition to this form of gender imbalance, research has also indicated that gendered violence, rape, and child sexual assault is higher in the north (Hoogensen, 2004; Rasmussen, 2009). Furthermore, "the pregnancy rate for young women has increased alarmingly, there are growing numbers of hidden homeless or "couch surfers," the spousal and intrafamily abuse rates are extremely high, and many women must leave their communities to escape domestic violence" (Rasmussen, 2009, p. 529).

But there are also other aspects with the context which my research focuses on, that are important in terms of gender. The arctic resource periphery in focus is located in Norway, a particularly interesting context as Nordic countries in general are conceived as being advanced in terms of working with

gender equality. Gender equality is a key value in contemporary Norwegian cultural identity (Kristensen, 2010; Kvidal, 2008). State feminism (Hernes, 1987) and expressions such as the Femocrat (feminist and bureaucrat) (van der Roos, 1996) illustrates the embeddedness of the gender equality discourse in society and especially within policies and state affairs. The law on gender quotas in boards (implemented in 2006) is another example.

Though discursive contradictions may be connected to either global or local forces, their outcomes tend to be most apparent at the micro-level. Post-structuralist, postcolonial and other theories attuned to differences and diversity in discourses, and methods such as semi-structured interviews, discourse analysis and media critiques are highly amenable to investigations of this type of contradiction (O'Shaughnessy & Krogman, 2011, p. 140).

Case study

In this project, in which I seek to build knowledge regarding globalization and gender in a resource periphery part of a "privileged" Western context, a case study approach will be applied. A case study approach involves using one or more cases to create theoretical constructs, propositions and/or midrange theory from case-based, empirical evidence (Eisenhardt, 1989). Case studies lend themselves well toward richly describing a phenomenon and they can accommodate a rich variety of data sources, including interviews, archival data, survey data, ethnographies, and observations (Eisenhardt & Graebner, 2007). In order to build contextualized knowledge about gender and globalization in line with the approach described above, primary data for this project consisted of media texts and in-depth interviews or focus group interviews.

In case studies, a key approach is to use informants who view the phenomena from diverse perspectives, for instance "organizational actors from different hierarchical levels, functional areas, groups, and geographies, as well as actors from other relevant organizations and outside observers" (Eisenhardt & Graebner, 2007, p. 28). For the purpose of this project, I am interested in interviewing different representatives knowledgeable on the phenomenon of the industry restructurings, in particular the re-establishing of the mines in Sør-Varanger. Following this, I will conduct in-depth interviews or focus group interviews with actors such as employees, management, as well as key regional actors who are implicitly or explicitly involved in the re-opening of the mine and/or other industrial developments. The interviews will be done according to a semi-structured approach (Fontana & Frey, 1998; Spreadley, 1979).

Written interview-guides will be prepared and sent to the informants who required it prior to the interviews. The questions and topics will be chosen to give a rich basis of information about the informants' assessments of the ongoing process of industrialization and/or reopening the mine. With global industry actors established in the region, I am interested in informants' perceptions of different aspects with such processes; for instance, I will ask them about any cultural and organizational tensions related to industry establishment as well as industry actors' communication with the local community.

Media are a crucial component of and vehicle for globalizing processes. Since mediated communication is integrated into culture, it provides an indication of how local cultural identity is experienced and expressed (Kvidal, 2008). By conducting analyses of media content we can complicate our thinking about globalization. Since local cases and discourses are readable as a "symbolic responses" to/in globalization (Polan, 1996, p. 259), focusing on the local in the global becomes a useful way of better understanding the processes of globalization.

4.3 The case of Mega-projects in Island

4.3.1 Encounter between Mega-projects and local firms

One of the important impacts of the aluminum plant were its crowding-out effects. It was however rather unclear how many jobs were cut because of its construction and operation within its labour market. Jobs in fish processing fell however greatly in number during the construction period, more than in the previous years. It was interesting that the fishing industry proved very supportive of the project, indicating that they were not in competition for labour. Instead, there might have been a labour surplus. The large decrease in jobs in fish processing lead the researchers to consider how the economy of East Iceland would have developed had there been no heavy industry on the scene and the negative population development of north and south areas of East Iceland during the research period gave a good indication of that (Johannesson, 2010).

The building industry was the part of the economy in which most overinvestment took place, almost twice as much housing was built as was predicted necessary in the research (Heiðarsson, 2005) and in the SIA project the aluminum plant (Nýsir, 2006). This was during a general housing boom in the Icelandic economy, before the credit crisis in 2008 and a similar picture but in larger scale could be seen in the capital area and its neighboring communities. There were however found cases of overinvestment and general lack of prudence and caution in other fields than that of the building industry. Some contractors acted unscrupulously and invested excessively. After the project, conditions became tougher due to lack of available work and, later, with the addition of a poor state of the economy in the credit crisis of 2008 and the concomitant devaluation of the Icelandic krona, some people were unable to live up to their obligations. Due to the changes in the Icelandic economy in and after 2008 impacts on local firms and the local economy in general are much harder to understand and estimate than if there had been more consistency during this time period. At the end of the research this proved to be a difficult or almost impossible task, i.e. trying to isolate the impact of these events from other changes in the community at the same time.

It appears that the tourist services connected themselves in a rather positive way to the construction enterprises, in spite of negative forecasts by many relating to the alleged incompatibility of heavy industry and tourism. The construction phase seems to have brought operators in tourist services considerable extra income, especially those providing accommodation and restaurant facilities. This applies to the construction period when there were migrant workers in huge numbers and much media coverage of the projects resulting in much interest in the area among the general public. How the tourism has evolved during the operation phase is however a matter of great interest and there are indications that tourism has somewhat decreased.

4.3.2 Encounter between Mega-projects and local workforce

The surveys showed as was to be expected that participation in the projects was highest in the central east Iceland. Approximately 30% of respondents aged 18-65 indicated that they were directly connected to the construction project in the survey in 2007. The capital area was next in line with 11% reflecting things such as its high service capacity and the fact that it has the best transportation links to east Iceland.

Population growth in the central area was to a large degree caused by influx of foreign workers. They were actually added to the population registers of the municipalities where their work camps were located. In 2007 the maximum number was reached and around 11,800 persons were registered in

municipalities of the central area. The population then declined sharply again when the migrant workers moved away. In the beginning of 2011 the net population increase in the research area of east Iceland as a whole was less than 200 persons. However there was an increase of 1,100 in the central east Iceland while decrease continued in the more peripheral areas and in fact this was a good indicator of the limited geographical scope of impacts.

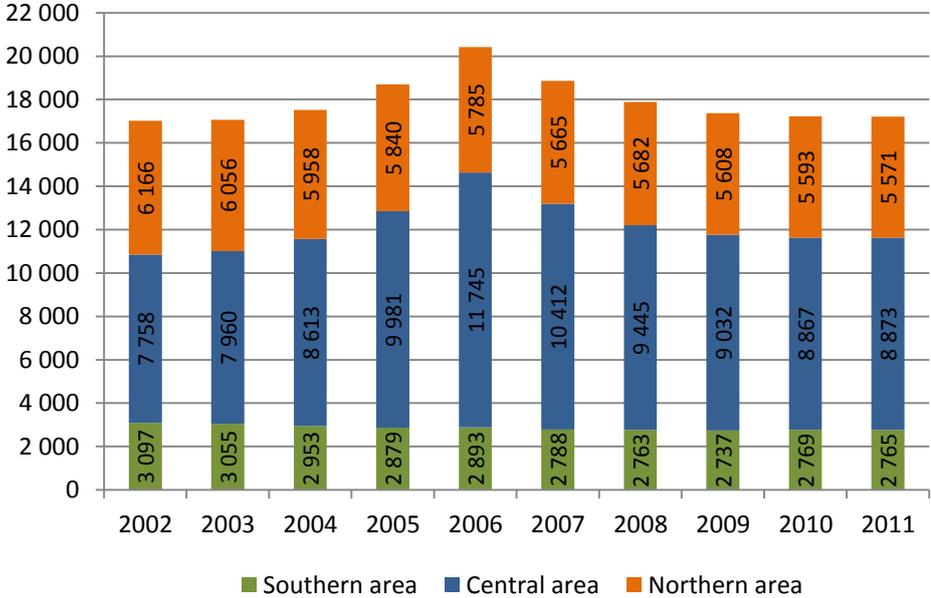


Figure xx. Population development 2002-2011.

In fact, among the most important findings of the study is how confined the impacts of the projects were within two municipalities closest to Alcoa Fjarðaál and Kárahnjúkar power station. The surveys indicated that many positive impacts were felt in the central area. This had to do with personal income, diversity of jobs, availability of services and more. According to the survey in 2007⁹, satisfaction with job diversity was highest in the central area of east Iceland, second only to the capital region¹⁰. Interviews also indicated that individuals in the central area experienced more optimism and belief in the future of the region. Data from the municipalities showed that financial impacts were seen in only three municipalities and that rhymes with many other findings on the limited geographical scope. In 2008, after opening of Fjarðaál, it was observed through survey data that much commuting takes place to the town Reyðarfjörður where the plant is located and it has thus become a magnet in this sense and the other main centre for commuting is the service and transportation hub Egilsstaðir 25 km from Reyðarfjörður. In 2008 70% of the staff of the aluminium plant was living in Fjarðabyggð¹¹ but the remainder was mostly living in the town Egilsstaðir.

⁹ Carried out in all of Iceland.

¹⁰ This is of course not a measurement of diversity but sheds a light on how respondents perceive these things.

¹¹ The municipality where the plant is located, divided into several small towns and rural areas.

4.3.3 Encounter between Mega-projects and local politics

The Kárahnjúkar-Alcoa project is probably the most heavily protested construction project to date in Iceland's history and the issues raised by its opponents have not been settled yet¹². Therefore it is only to be expected that more information on that particular issue will be made available in due course.

Iceland has two government levels, the state and the municipalities. The law making and regulatory framework lies with the state level. Municipalities however have the planning authority within their boundaries and issue building permits. This applies also to such large projects as power plants, transmission lines and other linear infrastructure and large manufacturing units which tend to impact much larger areas than the respective municipalities which are sometimes very small geographically with a low population number¹³. If a large project happens to be located within the boundaries of a municipality, property taxes will be paid solely to that particular municipality, as is e.g. the case with the Kárahnjúkar power plant which is located within the boundaries of the municipality Fljótsdalshreppur which has merely 78 inhabitants (2012). Planning for larger areas than single municipalities can, however, be carried out according to the planning act in the form of cooperation between the respective municipalities (Planning and Building Act no. 73/1997). A new Planning Act (No. 123/2010) includes important changes, notably a new planning level for the whole country "landsskipulag" or Iceland's National Spatial Plan which the Minister for the Environment shall put forward as a parliamentary resolution¹⁴. This plan can consist of policies on transportation, regional development, nature conservation, energy harnessing and other fields which concern land use planning. Furthermore, this plan shall include the government's policy on sustainable development. The plan is however not binding for the municipalities. The planning process of the projects in east Iceland was however carried out according to the Environmental Impact Assessment Act (No. 106/2000).

Housing is the policy area where the most obvious mistakes were made, the most striking of which being the excessive building of residential housing as mentioned above. Two specialist reports presented the assessment that 70-80 thousand m² of residential housing needed to be added in central area in the wake of the aluminium plant construction. When the municipalities allocated building permits, however, little regard was apparently paid to those forecasts. When the end result was achieved in 2008, residential housing had expanded by 135,000 m², or 60,000 m² in excess of research estimates. Population growth in the central impact area of 1,170 during the period 2002-2008 turned out to be similar to what had been forecast in the two specialist reports.

Anticipating more increase in population, the municipalities also overinvested in facilities and infrastructure related to new residential areas. It is obvious that there was a certain degree of competition between municipalities to attract new residents to their respective areas with the evident result that many new houses stood empty together with underused infrastructure in the form of roads, drainage systems and more. From this, the conclusion may be drawn that more consultation between municipalities regarding planning would have been desirable. Also, in connection with this, the advantages and disadvantages of further amalgamating the municipalities of East Iceland might be

¹² The present minister for the environment (September 2011) declared in a speech in parliament that she will start an inquiry into the planning and decision making process of the Kárahnjúkar hydro power plant.

¹³ Five municipalities out of 75 had less than 100 inhabitants Jan. 1 2012.

¹⁴ The Spatial Plan was made public on the 24th September 2012 and, according to a decision by the minister for the environment, the key themes for the first planning period 2013-2024 are: settlement distribution, development of the highland interior and planning of coasts and the ocean.

deemed worthy of consideration. That however has been taken off the agenda and emphasis instead put on more collaboration of municipalities.

In 2012, five service units which provided collaborative services for the municipalities in east Iceland were amalgamated into one institute. This is a unique system in Iceland and rather complex as there are outposts from this institute in five communities in the region. One of the reasons for establishing the institute was the experience from the megaprojects which finished 5 years earlier and the competition between the municipalities in the area (Guðmundsson, 2012).

There were high expectations among both politicians and the general public on positive impacts. As far as can be seen, little was done to dampen these down. In such conditions, there is always a certain danger of disappointment if all does not go according to plan. Among those who were disappointed with the impacts of the mega-project were those living in other municipalities than the three where the impact was felt most strongly. Depopulation continued and jobs in traditional economic sectors were being lost.

East Iceland is a mountainous area and road connection between some communities has been a challenge. Municipal leaders in the region have been in the forefront in efforts to push forward road tunnel projects to alleviate the high mountain roads, sometimes over 600 m high. These conditions have proved to be a challenge for the aluminum plant which draws workers from many locations in the region, even if the majority of them live close to the plant. There has also been cooperation between municipalities and the aluminium plant on organizing bus system in the region that can both be used for work shifts and as a general bus system.

4.3.4 Encounter between Mega-projects and gender, local community-perspective:

The proportion of women in the total workforce of Alcoa-Fjarðaál plant was relatively high at 32% in autumn 2007 but has since levelled off to around 25%. It is however a higher ratio than in other aluminium plants in Iceland, 20% in Norðurál aluminium plant in west Iceland and 18% in Rio Tinto Alcan aluminium plant in the capital region (2009). In 2008 Alcoa-Fjarðaál received recognition by the Icelandic Equal Opportunities Council for its successful recruiting of women. Certain objectives were established with regard to the level of education of the plant's workforce in the social impact assessment (SIA). Those objectives were very satisfactorily achieved and probably the company's recruitment policy has been decisive in obtaining a result so close to what was specified in the social impact assessment. When 400 employees had been hired, about 17% were university educated, 19% had an upper secondary certificate, 20% a trade qualification and 42% had completed compulsory school.

With regard to the labour market 12 hour work shift schedules were among those aspects which the researchers believed needed to be carefully considered when a large employer is located in a small population area. It was clear that in such a setting the place of employment has a decisive influence on the social rhythm. As brought out in interviews with individuals and experts, situations may arise where the 12 hour shift schedules, originally chosen by the Alcoa Fjarðaál staff, may be ill-suited to the needs of the family.

The gender ratio in Reyðarfjörður has proved to develop rather unfavourable or around 57% males. If this uneven gender balance persists it may be a sign that the community is not developing in a positive way as hoped for, a male oriented community.

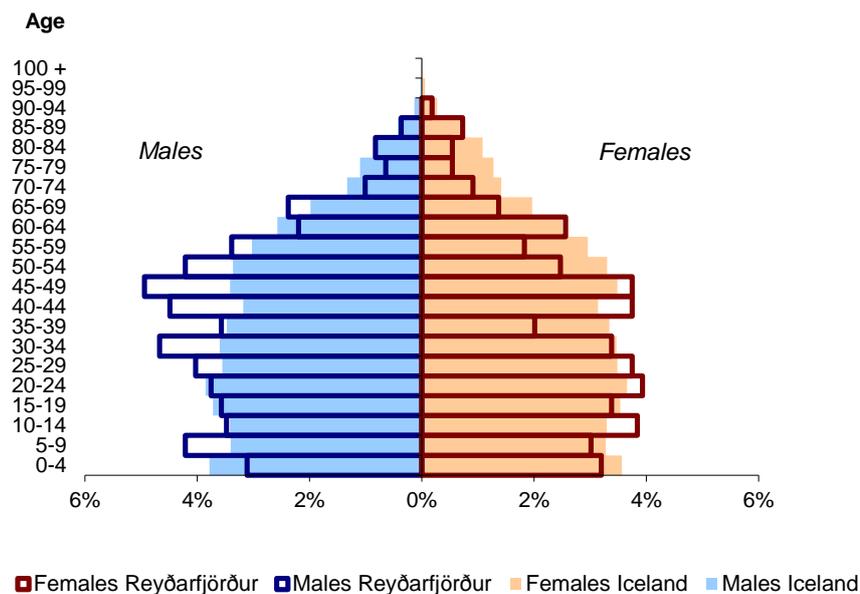


Figure xx. Age- and gender in Reyðarfjörður Jan. 2012.

As the age pyramid shows, there is concentration of males on most 5 year age groups between 25 and 69 years and similarly there are lacking females in many age groups approximately from the mid-thirties.

4.3.5 Iceland - sum up

Firms. There was much investment taking place during the construction period. This was most apparent in the building industry. There were also found cases of overinvestment and general lack of prudence and caution in other fields than the building industry. Some contractors acted unscrupulously and invested too much. After the project, conditions became more difficult due to lack of available work and, later, with the addition of a poor state of the economy in the credit crisis of 2008 and the devaluation of the Icelandic krona, some people were unable to live up to their obligations. Crowding-out effects were felt in the local economy due to the large factory. It is however unclear how many jobs were cut because of its construction and operation. Jobs in fish processing fell however greatly in number. The fishing industry proved very supportive of the project, indicating that they were not in competition for labour. Instead, there might have been a labour surplus. Service base of the area became stronger as a result of more inhabitants and money.

Mobility. There was considerable population growth in the central area due to influx of foreign workers who were added to the population registers of the municipalities where their work camps were located. The maximum number in the central area of east Iceland was reached in 2007 but population declined sharply again when the migrant workers moved away after 2007. In the beginning of 2012 net population increase in the research area of east Iceland as a whole was less than 200 persons. However there was a net increase of 1,100 in the central area. Population decrease however continued in the more peripheral areas of east Iceland due to out migration and this is a good indicator of limited geographical scope of impacts. A survey in 2008 showed much commuting between places and the town Reyðarfjörður where the plant is located is the main attraction in this sense. The other main centre of employment is the service- and transportation town Egilsstaðir some 25 km from

Reyðarfjörður. In 2008 70% of the staff of the aluminium plant was living in Fjarðabyggð its home municipality but the remainder mostly in the town Egilsstaðir.

Politics. Being a member of the European Economic Area (EEA) since 1992 Iceland has adapted to the free movement of persons, goods, services and capital. Change in the level of globalization was apparent when comparing former megaprojects in the country, the ratio of locals versus foreign workers had dropped dramatically and forecasts using former experience were not applicable. Another manifest of globalization was protest against the project on grounds of nature preservation. It became the most heavily protested construction project to date in Iceland's history and foreigners were active in this battle. The project was widely covered in the news and made it to the cover of National Geographic. Two government levels, the state and the municipalities divide the power between these. Local interests of municipalities can be narrow. They have the planning authority within their boundaries and issue building permits. This applies also to large projects such as power plants, transmission lines and other linear infrastructure and large manufacturing units which tend to impact much larger areas than the respective municipalities. These are sometimes very small geographically with a low population number. An interesting fact is that if a large project is located within the boundaries of a municipality, property taxes are paid solely to that particular municipality. This is the case with the Kárahnjúkar power plant, Iceland's largest, located within the boundaries of the municipality Fljótshreppur with 78 inhabitants (2012). Anticipating more increase in population, municipalities overinvested in facilities and infrastructure related to new residential areas. There was competition between municipalities to attract new residents to their respective areas with the evident result that many houses stood empty together with underused infrastructure in the form of roads, drainage systems and more. From this, the conclusion may be drawn that more consultation between municipalities regarding planning would be desirable. Finally expectations raised by politicians both locally and national were probably too high and should have been more prudent.

Gender. Males in a narrow age span coming to work on the projects overshadowed other segments of the population and age- and gender pyramids for the construction years were very strange. Males turned out to be 59% of the population in the central impact area at the peak of the construction in 2007. However the proportion of women in the total workforce of Alcoa-Fjarðaál plant since beginning of production has been relatively high, peaking at 32% in autumn 2007 but has since lowered to around 25% compared to 18-20% in aluminium plants in the capital region. Alcoa-Fjarðaál received in 2008 recognition by the Icelandic Equal Opportunities Council for successful recruiting of women. The gender ratio in Reyðarfjörður (place of the aluminium plant) is around 57% and if this uneven gender balance persists it may be a sign that the community is not developing in as positive way as hoped for and becoming a male oriented community. The plant's work shift pattern of 12 hours has been found not to be particularly well suited for families.

Expectations were high and little was apparently done to damp these down and there is always a certain danger of disappointment if all does not go according to plan. Those responsible for making decisions and planning the constructions must draw up as realistic a picture as possible of changes which could occur and keep expectations within the limits of moderation. At the conclusion of this research, it may be said with certainty that too many backward looks had been brought into play regarding the possible effect of the construction work, i.e. too much attention was given to how previous projects had been organised but in the meantime great changes had taken place, such as increased openness of the economy, i.e. globalization. Conditions in society can change fast and this is true of the period under discussion here. The effect of globalisation had in fact most likely become stronger than people of Iceland realised, e.g. the impact of the European "four freedoms". It is clear that Iceland was no longer an island in every sense of the word. This was certainly true as far as

economic effect is concerned. The Icelandic system of governance was not sufficiently prepared for the project and it can probably be seen in other areas of society, that the Icelanders were not equipped to live in an open economic system with its resultant free flow of labour, capital, goods and services. One of the consequences of this was that the participation of foreigners exceeded forecasts and this put a great deal of pressure on official institutions. However, the influx of hundreds of foreign workers caused less social disruption than might have been expected. Strong institutional framework is necessary with sufficient information systems in order to respond swiftly to changing conditions. The government's emphasis on assessing the construction phase is of particular interest and demonstrates that many have seen it as desirable, i.e. creating construction jobs and related activity. The construction phase can be an attractive period, but it was not so in this case. It was shorter than desirable and there might have been better preparation and time to give the people of the area more time to understand the changes which were on the horizon. Time limits and pressure affect working conditions and risk. Opportunities to plan attractive communities to live in when such projects are undertaken should not be missed and this was partly the case in east Iceland.

4.4 The case of Mega-projects in Greenland

For Greenland, three cases of mega-projects will be examined. The three cases of mega-projects are the aluminium smelter by Alcoa (2006-), the iron mine Isua by London Mining (2008(?)-), and the oil exploration by Cairn Energy (2009(?)-).

An important distinction between the aluminium smelter project on the one hand and the two other mega-projects on the other hand must be stressed here. As a consequence of the separation of the mining and petroleum activities in the 1979 Home Rule legislation, the iron mine project and the oil exploration project have been developed within the frames of the BMP legislation whereas the aluminium project has been developed within the general Home Rule legislation. Technically, BMP became an integrated part of the extended Home Rule in 2009, but the legislative separation is still in force.

The differences between the two set of legislation have been debated over some years. Among the differences are the requirements when it comes to public involvement through hearings and when it comes to the description of the political decision process.

4.4.1 Encounter between Mega-projects and local firms

The characteristics for the local companies in Greenland are that they in general are too small to be able to engage directly and individually in the construction phase at any mega-project.

A handful of Danish and other Nordic construction companies have a tradition for being active in Greenland. Some of these companies had large contracts with the Grønlands Tekniske Organisation (GTO) during the 1950s, 1960s and 1970s. They are still active in Greenland. Some of these companies might be able to and might be interested in being involved in the construction phase in some of the mega-projects.

Especially during the discussions about the aluminium smelter, the possibility of local companies in Maniitsoq being engaged in mainly logistics, transport, catering, cleaning have been discussed. These

local companies have been encouraged to find together and establish a local cooperation in order to be able to get some subcontracting contracts. Unfortunately, it has so far not resulted in any general initiative to merge the many small, local companies.

4.4.2 Encounter between Mega-projects and local workforce

The employers' association, Grønlands Arbejdsgiverforening (GA) and the union for unskilled workers, Sulinermik Inuussutissarsiateqartut Katuffiat (SIK) have been very active especially in relation to the projects by Alcoa and London Mining. GA and SIK have agreed on not fully welcoming the mega-projects. In spite of their seeming unanimity in their reservations, the two organisations have different arguments for not supporting fully the mega-projects.

In the public debate focus has been on the degree of local workers during the operation phase and on wages for the thousands of foreign workers who are expected to become involved in the construction phase.

4.4.3 Encounter between Mega-projects and local politics

Being such a small society with 57,000 inhabitants in all Greenland and the (now) four municipalities with at most about 20,000 inhabitants each, the local (municipal) level of politics has not had the leading role in the contacts with the companies behind the mega-projects.

The Home Rule authorities have had a leading role in the interaction with the foreign companies with mega-projects. The exclusion of the local political level has several times generated critic from the municipalities to the Home Rule authorities.

4.4.4 Encounter between Mega-projects and gender, local community-perspective: Seeing Gender in the economy?

The three examined mega-projects are typically male dominated activities. That has in itself been a topic in the public discussions. Among the concerns raised are the many foreign male workers in the construction phase – for the smelter as well as for the iron mine several thousand foreign male workers. Here the risk of getting prostitution activities has been pointed at as a concern.

Especially for the aluminium smelter project, the question of gender has been raised. The focus has been on the operation phase, not on the construction phase. Here Alcoa has actively argued that female workers will be welcomed. Alcoa has referred to their smelter in East Iceland which has about x % of female workers on the smelter.

In the research on the mega-projects, some of the long-term consequences of the male dominating industrial activities have been discussed. With the male dominated activities many women are not attracted to the area, and many of the women will most probably leave the region. This will have severe negative long-term consequences for the natural reproduction in the local community.

Chapter 5 Sustainable development from a local community perspective?

5.1 The local – global tension: Trans National Corporations as regional developers?

We have seen in this report that a closer integration of the economy and the labour market, supported by international regulation regimes, facilitate a more mobile labour force as well as more mobile industrial actors. We question the consequence of this increased mobility on local value creation and local labour markets in the Arctic, and ask if locals can act as stabilisers in a local context. These questions are important for five specific reasons. First, work-life in the Arctic region will be dramatically altered as a result of transnational corporations (TNCs) arrival in the region. Second, a sustainable work-life will be highly significant to meet the global demand for energy in the years to come. Third, the TNCs move into these peripheries will shape societies in new ways and transform the work arena. Fourth, the Arctic region is given a new position in the development of welfare through their economic contribution to state income. Finally, the bargaining between what seems to be understood as “the mobility of capital” and “local labour”, imposes important dynamics: On one hand, TNCs threatening to relocate production has a powerful position when negotiating wages, contracts and benefits with workers¹⁵. On the other hand, workers in particular places experience increased pressured to defend their interests and secure their jobs against potential workers in other places. The inter-place competition foster a process where labour terms and conditions are at stake, as mobile capital seeks out the best rate of return¹⁶.

Increased global interest for the Arctic region is however a potential source of tension between the need for exploration and the requirements for conservation and the complex interests of people, organizations, and institutions in the Arctic societies. As industrial regions, resource peripheries in the Arctic have been deeply affected by technological and regulatory dynamics of post-Fordism (spearheaded by the imperatives of flexibility and neoliberalism), and resource cycle dynamics. The consequences have been downsizing and close-down of industrial activity. As the global demand for raw material such as oil/gas and minerals has increased the past decade¹⁷, re-industrialization processes have appeared in resource peripheries in the Arctic. The increased global demand for raw materials has provided strong incentives for new and established industries.

More than any other institution, the TNC has become the primary shaper of the contemporary global economy, and a major threat to economic autonomy of the nation-state¹⁸. TNCs have also changed several regions by challenging their base of economic development, changing traditions and ways of production. Most TNCs are capitalist enterprises. As such, they must behave according to the basic rules of capitalism, the most fundamental of which is the drive for profit, wherever they operate.

From the literature we know that natural resources can be developed on the basis of various initiatives¹⁹. A characteristic of the processes of our concern is that they are driven by TNCs who for short or longer period move into new areas - in this case the Arctic areas. We experience that new

¹⁵ Coe, Kelly and Young (2007) *Economic Geography. A contemporary introduction*. Blackwell publishing.

¹⁶ This is a process sometimes known as the “race to the bottom”, and is visible in oil and gas industry in Norway competing with Asia on time rates, also highlighted in debates about fish processing.

¹⁷ World Energy Outlook 2010.

¹⁸ Dicken P. 2010. *Global Shift. Mapping the changing contours of the world economy*. 5th Edition. Sage.

¹⁹ Wicken O. and Hanson J. (ed.) 2008. *Rik på natur. Innovasjon i en ressursbasert kunnskapsøkonomi*. Fagbokforlaget.

owner constellations arise where there is risk capital, and the geographical distance between this capital and resource extraction increases (Eikeland et al 2009, Nilsen et al 2012). While the new global players gain control the national governments receives a more peripheral role, both as proprietor and premise for development of these industries. The geographical mobility of the multinational companies is high, and they move quickly into new geographic areas. The global production chains are integrated in new ways and a high level of mobility characterizes these operations (Peck and Young, 2003).

5.2 Global capitalism creates new patterns

Most of the various assets needed by a company to produce and sell its specific products and services are geographic unevenly distributed. This is most obvious in the natural resource industry, where firms (of necessity) must locate at the sources of supply. Often, investments like this shape the first element in an organizational sequence of vertically integrated operations whose later stages may be located separately and far from the source of supply. In addition, final processing of natural resources occurs close to the final market. However, Dicken⁵ states that technological changes in production processes and in transportation have evened out the significance of location for some of the traditionally important factors of production, i.e. natural resources. The two most important location-specific factors are access to knowledge and access to labour (op.cit:111). An important geographical impact is that there is strong tendency for knowledge and technological innovation processes to appear in geographical clusters, giving major incentives to locate relevant operations in such locations. These clusters are mostly located in central parts of the respective nations. This challenges peripheral regions and value creation in the periphery, since knowledge driven development and regional development in the periphery depends on new insights and new technology.

In some sense the developing of the natural resource economy serves as a possibility for remote communities. This implies possibilities for new income due to tax benefits, new businesses located in remote areas, and also providing the economy a diversity and in some way adjusting the dependency on one or two sectors. On the other hand, it seems to be difficult to create adequate links between the local economy, meaning traditional aspects on remote places, with large scale industries and the dynamics this industry has. It comes to a question about need for labour in the Mega-projects and local communities having difficulties in serving the projects with demanded labour. This seems to be different depending on what kind of place characteristics involved in projects like massive oil and gas developments, and mining. From Finnmark we experience one kind of process, giving new opportunities in long term aspects, but this is not the case in ie Sydvaranger, Kirkenes, being left alone with immigration and workers commuting from other part of the world.

The periphery position attributes a number of characteristics that contest the local capacity to operate and support major industrial developments in a way that secure long-term local sustainability. Arguments against such a position, is that work and labour are attached to specific places. The majority of workers do not have the time or financial resources to travel far to work. In advanced capitalist economy the average commuting distance can be as high as 100 km pr. day. However, the vast majority of world labour lives much closer to their workplace (Kelly, Coe and Young 2007:259). As Harvey states, “labour-power has to go home every night” (Harvey 1989:19).²⁰ In addition to physical distance, the labour reproduction is also necessarily local: The various institutions of everyday life and communities such as the family church, schools etc. all develop over time in particular places. Another factor is that labour has the propensity to develop place-attachments or place-identities (op.cit:259). The notion of “home-place” points to this intensely local dimension to

²⁰ Harvey, D (1989) *The Urban experience*, Oxford Blackwell

many people's sense of themselves. Places may become site of familiarity, routine, affection and friendships. Such emotional ties to places may be hard to break (op.cit:260). Finally, all production activities are necessarily local. For the vast majority of paid workers, production occurs on fixed sites; even the largest TNCs must combine labour, materials and technology in particular workplaces.

As opposed to these arguments, we can observe that the geographical mobility of capital certainly has increased over the last decades, due to a number of factors. First, deregulation has lowered the barriers to international trade and foreign direct investments, increasingly enabling transfer of both finished goods and factors of production (materials, people, capital) (Dicken, 2010). Improvements in modern transport and communications technologies have also facilitated increasingly complex geographical arrangements of productions and the rapid global circulation of capital.

Issues of mobility can in particular be studied through questions concerning industrial work-life organization. One aspect in this regard is the highly distributed and thereby limited local human resource bases in Arctic areas. Local recruitment assumes competent free labour resources (i.e. unemployment), or that locals are able and willing to change jobs. In this case the locals have to have the necessary qualifications and the new job has to appear more attractive than the old one. Appeals may be higher salaries, better working conditions, more attractive hours, good training and education programs, and opportunities for personal development. The businesses, in private or public sector, that loses labour, are faced with a number of dilemmas in the competition for the same heads. They risk incurring additional expenses whether they try to meet the competition with higher wages or end up having to recruit new staff. Another aspect concerns the possibilities of gaining synergies by integrating existing local work-life with the new industry developments. The integration of the coastal fishing fleet in the oil spill preparedness system to guard the coast in case of oil spills which is developed especially for the Goliat oil field (in Finnmark), is a good example in this regard. Qualifying farmers for off-shore work which was done in the Western parts of Norway, is another.

The work-life is an important and understudied arena in the industrialization processes in the Arctic. Three work-related issues seem to be particularly relevant; *recruitment*, *competence* and *regulations*. The industries' needs and the local communities' ability to provide "hands and heads" has long been a central challenge of the re-industrialization of both fisheries and the mineral industry, as well as in the petroleum sector, however in different ways. This challenge is linked to the regional R&D and education sector's capacity to contribute to the re-industrialization processes, in addition to local socio-cultural influences on young and adults' ability and interest to take industry relevant education. In relation to the latter the youth's decision whether to stay or leave is at the same time a question of ensuring a future continuity of the new activities. These factors limit the periphery's ability to provide skilled manpower, just as a regional zero-sum situation where the ability of attracting the necessary skills to one community may result in an unsustainable pulling-out of them from surrounding places²¹. Added to these are regulatory issues around rotation schemes and labour migration.

While there are expectations in the periphery areas that the re-industrialization will create new industries and new conditions for growth and sustainable local communities, several scholars have argued that this development is more about a temporary relocation of existing activity and labour to new areas (Hernes, Hippe, Svaland, 2007).

According to Rasmussen (2008), while international attention has been drawn toward the rich mineral and energy resource potential in the North, most of these activities are promoted and supported by external sources of capital and are therefore also subject to decisions made by outsiders, with very

²¹ Rasmussen, R. O., 2010, Mobilitet i Grønland. Grønlands Selvstyre.

limited influence by local communities or authorities. Rasmussen (2008) explains that such activities usually generate very few jobs locally as they first and foremost are related to world markets, as opposed to local community interests. That means the benefits rarely remain in the region, and rather flow toward shareholders around the world. This situation has recently been documented in Greenland where the expected positive economic outcome for the involved communities in Greenland by means of tax from the large scale iron ore mining activity with London Mining in charge has been hampered by the company by moving a subsidiary company's office to the tax haven of Jersey (Rasmussen 2012). Even though some of the benefits are retained (for instance through wages and contracts for local enterprises), more often transfer payment based on royalties is resulting in adverse effects such as social stratification, inequity in wealth distribution, and perceived deprivation. And while local benefits stop when the resources are exhausted, long-lasting consequences often persist through industrial waste, tailings, and environmental contaminations.

Scholars have pointed to conflicts and tensions related to restructurings in resource peripheries, for instance tied to economic, environmental, geopolitical and cultural dimensions (Hayter, Barnes & Bradshaw, 2003) and underscore the importance of sustainability and social equity tied to economic prosperity, environmental quality and social justice (Vodden, Pierce & House, 2002). Following Hayter, Barnes and Bradshaw (2003), there are in particular four sets of institutional dimensions or principal modalities through which conflict occurs within resource peripheries: the economic dimension, the environmental dimension, the cultural dimension and the geopolitical dimension. The valuation of nature is central in many of these conflict dimensions. Resource industries need to exploit nature, but nature also has other values for society than the mere economical. Environmental and cultural politics are rooted in alternative ways of thinking about resources that give priority to non-industrial values (Hayter, 2003).

5.3 Cases and results

In chapter four we presented the most important findings from cases involved in this study. We will now sum up and extract the patterns from the case studies.

In the case of Iceland it is obvious that accessibility of relatively environmental friendly and inexpensive energy is the prime locational factor for the aluminium industry in Iceland. Location of such an industry would otherwise not take place in such a remote location as east Iceland. One of the important impacts of the aluminum plant were its crowding-out effects. It was however rather unclear how many jobs were cut because of its construction and operation within its labour market. Jobs in fish processing fell however greatly in number during the construction period, more than in the previous years. It was interesting that the fishing industry proved very supportive of the project, indicating that they were not in competition for labour. Instead, there might have been a labour surplus. The large decrease in jobs in fish processing lead the researchers to consider how the economy of East Iceland would have developed had there been no heavy industry on the scene and the negative population development of north and south areas of East Iceland during the research period gave a good indication of that (Johannesson, 2010).

The building industry was the part of the economy in which most overinvestment took place, almost twice as much housing was built as was predicted necessary in the research (Heiðarsson, 2005) and in the SIA project the aluminum plant (Nýsir, 2006). This was during a general housing boom in the Icelandic economy, before the credit crisis in 2008 and a similar picture but in larger scale could be

seen in the capital area and its neighboring communities. There were however found cases of over-investment and general lack of prudence and caution in other fields than that of the building industry.

The surveys showed as was to be expected that participation in the projects was highest in the central east Iceland. Approximately 30% of respondents aged 18-65 indicated that they were directly connected to the construction project in the survey in 2007. The capital area was next in line with 11% reflecting things such as its high service capacity and the fact that it has the best transportation links to east Iceland. Population growth in the central area was to a large degree caused by influx of foreign workers. They were actually added to the population registers of the municipalities where their work camps were located. In 2007 the maximum number was reached and around 11,800 persons were registered in municipalities of the central area. The population then declined sharply again when the migrant workers moved away. In the beginning of 2011 the net population increase in the research area of east Iceland as a whole was less than 200 persons. However there was an increase of 1,100 in the central east Iceland while decrease continued in the more peripheral areas and in fact this was a good indicator of the limited geographical scope of impacts.

In fact, among the most important findings of the study is how confined the impacts of the projects were within two municipalities closest to Alcoa Fjarðaál and Kárahnjúkar power station. The surveys indicated that many positive impacts were felt in the central area. This had to do with personal income, diversity of jobs, availability of services and more. According to the survey in 2007²², satisfaction with job diversity was highest in the central area of east Iceland, second only to the capital region²³. Interviews also indicated that individuals in the central area experienced more optimism and belief in the future of the region. Data from the municipalities showed that financial impacts were seen in only three municipalities and that rhymes with many other findings on the limited geographical scope. In 2008, after opening of Fjarðaál, it was observed through survey data that much commuting takes place to the town Reyðarfjörður where the plant is located and it has thus become a magnet in this sense and the other main centre for commuting is the service and transportation hub Egilsstaðir 25 km from Reyðarfjörður. In 2008 70% of the staff of the aluminium plant was living in Fjarðabyggð²⁴ but the remainder was mostly living in the town Egilsstaðir.

The proportion of women in the total workforce of Alcoa-Fjarðaál plant was relatively high at 32% in autumn 2007 but has since levelled off to around 25%. It is however a higher ratio than in other aluminium plants in Iceland, 20% in Norðurál aluminium plant in west Iceland and 18% in Rio Tinto Alcan aluminium plant in the capital region (2009). In 2008 Alcoa-Fjarðaál received recognition by the Icelandic Equal Opportunities Council for its successful recruiting of women. Certain objectives were established with regard to the level of education of the plant's workforce in the social impact assessment (SIA). Those objectives were very satisfactorily achieved and probably the company's recruitment policy has been decisive in obtaining a result so close to what was specified in the social impact assessment. When 400 employees had been hired, about 17% were university educated, 19% had an upper secondary certificate, 20% a trade qualification and 42% had completed compulsory school.

With regard to the labour market 12 hour work shift schedules were among those aspects which the researchers believed needed to be carefully considered when a large employer is located in a small population area. It was clear that in such a setting the place of employment has a decisive influence on the social rhythm. As brought out in interviews with individuals and experts, situations may arise

²² Carried out in all of Iceland.

²³ This is of course not a measurement of diversity but sheds a light on how respondents perceive these things.

²⁴ The municipality where the plant is located, divided into several small towns and rural areas.

where the 12 hour shift schedules, originally chosen by the Alcoa Fjarðaál staff, may be ill-suited to the needs of the family.

The gender ratio in Reyðarfjörður has proved to develop rather unfavourable or around 57% males. If this uneven gender balance persists it may be a sign that the community is not developing in as positive way as hoped for, a male oriented community.

In the case of Finnmark in Northern Norway. As regards the more general changes in the light of what happens when a petroleum project is developed onshore, is primarily data from Hammerfest in a northern context available. An immediate effect of the decision on the development of Snøhvit was made was that the population decline stopped and changed to population growth. Hammerfest has experienced strong population growth in the 2000s, in line with growth cities in northern Norway. In addition, the age structure of the population has become more favorable and it is once again the births. There has been a rapid employment growth, far more powerful than population growth, until the Hammerfest LNG plant was completed, as was a small fall, but after only a year it was again increased. The strong employment growth has been possible due. large oscillation in Hammerfest, and many foreigners with temporary periods of work. In addition, occupational activity locally in the Hammerfest increased and unemployment decreased in the community.

After development of the Hammerfest LNG plant started up, there was a strong pressure on the housing market and housing construction came late in time. Its development period has been a major residential development and existing housing stock is renewed and increased in value. Prices have risen sharply in Hammerfest, and during the development period, prices rose more than the average for the country, prices are reduced after the development period was over. For all those who were already established in the housing market before 2003, developments in the housing market had many positive effects. However, it has created a higher threshold for first time buyers to get into.

It has been difficult to detect changes in the social and living conditions associated with the development of Melkøya. However, follow-up research points out that the benefits of an improved labor has probably prevented the higher living expenses, the number of social assistance recipients. Furthermore, it is unlikely that the violence increased during the development period. It may inter alia caused by active preventive measures, especially in the beginning, because the tendency to increased violence was present.

Three surveys of youth attitudes and opinions show that the growth of the oil and gas sector in Finnmark has contributed to youth perceive Finnmark more attractive as a residence. Adolescents are also more positive about working in the oil and gas sector, although hardly one of ten chosen field of study on the basis that it is in the oil and gas industry they want future job. The petroleum industry appears far more attractive to young men than for young women.

This seems to be rather different compared to the effects from an offshore project. It seems to be rather obvious that local workers have little influence in the construction phase of offshore oil and gas project involved in this study. The Goliat project is planned and designed in Southern part of Norway, detailed engineering is done in London, and the supreme contract is designed and constructed in Asia. Other important contracts seems to be subsea and electrification contracts. These contracts follow more or less the same pattern, involving a design part in Norway and also the most important procurements are done in Southern part of Norway. When it comes to construction of the equipment, large fabrication and building of the structure – none of these operations are undertaken in the Northern part of Norway.

In Greenland we experience an important distinction between the aluminium smelter project on the one hand and the two other mega-projects on the other hand must be stressed here. As a consequence of the separation of the mining and petroleum activities in the 1979 Home Rule legislation, the iron mine project and the oil exploration project have been developed within the frames of the BMP legislation whereas the aluminium project has been developed within the general Home Rule legislation. Technically, BMP became an integrated part of the extended Home Rule in 2009, but the legislative separation is still in force. The differences between the two set of legislation have been debated over some years. Among the differences are the requirements when it comes to public involvement through hearings and when it comes to the description of the political decision process.

The characteristics for the local companies in Greenland are that they in general are too small to be able to engage directly and individually in the construction phase at any mega-project.

A handful of Danish and other Nordic construction companies have a tradition for being active in Greenland. Some of these companies had large contracts with the Grønlands Tekniske Organisation (GTO) during the 1950s, 1960s and 1970s. They are still active in Greenland. Some of these companies might be able to and might be interested in being involved in the construction phase in some of the mega-projects.

Especially during the discussions about the aluminium smelter, the possibility of local companies in Maniitsoq being engaged in mainly logistics, transport, catering, cleaning have been discussed. These local companies have been encouraged to find together and establish a local cooperation in order to be able to get some subcontracting contracts. Unfortunately, it has so far not resulted in any general initiative to merge the many small, local companies.

The employers' association, Grønlands Arbejdsgiverforening (GA) and the union for unskilled workers, Sulinermik Inuussutissarsiuqartut Katuffiat (SIK) have been very active especially in relation to the projects by Alcoa and London Mining. GA and SIK have agreed on not fully welcoming the mega-projects. In spite of their seeming unanimity in their reservations, the two organisations have different arguments for not supporting fully the mega-projects.

In the public debate focus has been on the degree of local workers during the operation phase and on wages for the thousands of foreign workers who are expected to become involved in the construction phase.

Being such a small society with 57,000 inhabitants in all Greenland and the (now) four municipalities with at most about 20,000 inhabitants each, the local (municipal) level of politics has not had the leading role in the contacts with the companies behind the mega-projects. The Home Rule authorities have had a leading role in the interaction with the foreign companies with mega-projects. The exclusion of the local political level has several times generated critic from the municipalities to the Home Rule authorities.

The three examined mega-projects are typically male dominated activities. That has in itself been a topic in the public discussions. Among the concerns raised are the many foreign male workers in the construction phase – for the smelter as well as for the iron mine several thousand foreign male workers. Here the risk of getting prostitution activities has been pointed at as a concern. Especially for the aluminium smelter project, the question of gender has been raised. The focus has been on the operation phase, not on the construction phase. Here Alcoa has actively argued that female workers

will be welcomed. Alcoa has referred to their smelter in East Iceland which has about x % of female workers on the smelter.

In the research on the mega-projects, some of the long-term consequences of the male dominating industrial activities have been discussed. With the male dominated activities many women are not attracted to the area, and many of the women will most probably leave the region. This will have severe negative long-term consequences for the natural reproduction in the local community.

One central implication of the natural resource dependency that the regions involved in the study are characterized of, is that there always will be a mismatch between available and competent labour at sites and the demand from industry in the construction phase, but also when it comes to operations. This gives the industry challenges. Even more important for us is the challenges that are formed by this mismatch and take place in local communities. Dramatic changes can occur for local sustainability if the local content in workforce is very low, challenging the work-life in these regions and also challenge the traditions which have been constitutional to these places. Huge variations in the need for labour and fluctuation when it comes to local participation, will also create unanticipated visions for the future in these communities.

In the Icelandic research in east Iceland during the construction phase a majority of the workers were of foreign nationality. During the operation phase there are some foreign workers especially in metal working and maintenance on the site of the aluminium plant.

5.4 How to combine local sustainability and a reasonable development based on resource dependence: Can locals stabilize global actors?

Based on this report, we have made several important lessons from the Arctic industrial activity. Firstly, these three regions are very different. this is described in the first part of the report. it implies that the term arctic periphery or Nordic periphery, does not mean the same thing. For example, there is a great difference between western Finnmark and coastal communities there and those found in Greenland in terms of established infrastructure, service facilities and communications. Secondly, we have learned that these regions are in different phases. where the region of Finnmark has established oil and gas industry, is Greenland in a completely different and earlier phase. The same can be seen from the mining industry and the aluminum industry: here Greenland and Iceland established business, while Finnmark not. Through these differences, we see that these regions can not be compared directly with respect to phases since they are in such a different phase. Nevertheless, we find many of the same challenges when it comes to involvement, participation and involvement of local and regional actors.

This report shows important pros and cons of resource development in the Arctic. We show how people, institutions and firms in Norway, Greenland and Iceland are affected by the resource economy. Through the existing data we have collected and the analysis which is done on this basis, we have pointed out important aspects of such a development for humans living in Greenland, Iceland and Northern Norway. As such we have a rich material to build further research upon and provide new insights about the sustainability in these processes for people, firms and communities in Nordic peripheries.

As the reader discovers, we have not specifically gone into the discussion about the extent to which local actors can act as stabilizers for transnational corporations in a local context. It is essentially the

question we now started to explore in the research project. The material that this document represent will be an important step on the way to conduct such investigations.

The need for understanding these processes in the future will increase in the light of the global demand of natural resources. In this context, this project can illuminate important effects of such a global economic race on people living in these areas. The paramount question is about to be raised: Can people, firms and institutions in the North stabilize the global actors in such a way that traditions are protected and ensured? How does this take place? *It is of significant importance to keep this development under surveillance and monitor global processes where they take place.*

References

- Alcoa Fjarðaál (2011). *Grænt bókhald 2010 [Green book keeping 2010]*. Reyðarfjörður: Author.
- Coe, N, Kelly, P and Yeung, H (2007) *Economic geography. A contemporary introduction*. Blackwell publishing.
- Denzin, N. (1970). *Strategies of multiple triangulation*. In Denzin, N. (Ed.), *The research act in sociology. A theoretical introduction to sociological method* (297-313). New York: McGraw Hill.
- Dicken, P (2007) *Global Shift. Mapping the changing contours of the world economy*. 5th edition. SAGE.
- Environmental Impact Assessment Act. No. 106/2000.
- Eypórsson, G. Þ., Ólafsson, K. and Jóhannesson, H. (2001). *Kárahnjúkavirkjun. Mat á samfélagsáhrifum. [Kárahnjúkar hydro power project. Socio-economic impact assessment]*. Akureyri: Rannsóknastofnun Háskólans á Akureyri.
- Eikeland, S m.fl (2009): Dette er Snøhvit. Sluttrapport fra følgeforskningsprosjektet av Snøhvit-utbyggingen. Norut Alta-rapport 2009:3
- Guðmundsson, B. H. (2012). Personal interview, 13. November 2012.
- Wicken O. and Hanson J. (ed.) 2008. Rik på natur. Innovasjon i en ressursbasert kunnskapsøkonomi. Fagbokforlaget
- Heiðarsson, J. Þ. H. (2005). *Rannsókn á samfélagsáhrifum álvers- og virkjunarframkvæmda á Austurlandi. Rannsóknarrit nr. 1: Íbúafjöldi og þörf á íbúðarhúsnæði á Austurlandi árið 2008 [Research on socio-economic impacts of aluminium- and hydro power projects in East Iceland. Research report no. 9: Inhabitants and need for housing in East Iceland in 2008]*. Akureyri: Bygðarannsóknastofnun.
- Icelandic geodetic Survey (2012). Online maps: www.lmi.is
- Jóhannesson, H. (Ed.) (2010). *Rannsókn á samfélagsáhrifum álvers- og virkjunarframkvæmda á Austurlandi. Rannsóknarrit nr. 9: Lokaskýrsla – stöðulýsing í árslok 2008 og samantekt yfir helstu áhrif 2002-2008 [Research on socio-economic impacts of aluminium- and hydro power projects in East Iceland. Research report no. 9: Final report – status description by end of 2008 and summary of main impacts 2002-2008]*. Akureyri: Bygðarannsóknastofnun.
- Landsvirkjun (2012). www.landsvirkjun.is
- Nilsen, T (forthcoming 2013) Utbyggingen av Goliat. Leveranser fra global leverandørindustri til et oljeprosjekt i Barentshavet. Norut Alta-rapport 2013:XX
- Nilssen, I m.f (2012): Erfaringsstudier om ringvirkninger fra petroleumsvirksomhet for næringsliv og samfunnet for øvrig. Kunnskapsinnhenting for det nordøstlige norskehavet. Utarbeidet på oppdrag fra Olje- og energidepartementet.
- Nýsir hf. (2006). *Mat á samfélagslegum og efnahagslegum áhrifum álvers Alcoa í Reyðarfirði. [Socio-economic impact assessment of aluminium smelter in Reyðarfjörður]*. Reykjavík: Nýsir hf.

Planning Act. no. 123/2019.

Planning and building Act. no. 73/1997.

Rasmussen, R m.fl (2011) Megatrends. Nordic councils of Ministres, Copenhagen 2011.

Statistics Iceland (2012). www.statice.is