

# Mineral Exploitation and Development in Greenland: Engaging Local Workforce and Planning Flexible Settlements

Kåre Hendriksen, Birgitte Hoffmann & Ulrik Jørgensen

*The key question of the paper is how to plan and organize mining projects in Greenland in ways that involve local workforce and develop business as well as settlement potentials. The paper outlines a concept of flexible settlements with the aim to build a socio-economic sustainable future for Greenland.*

*A major contemporary challenge for Greenland is its economic deficit and dependency on state support from Denmark, to maintain its living standard. The evolving decoupling between existing settlements and the main export industry based on marine living resources re-enforced by new mineral extraction based on a workforce that is working temporarily at the mining sites poses a threat to employment in Greenland. At the same time, attracting mineral resource based industries is key to overcome the economic challenges. Mining companies envisage potentials for a fast extraction of the resources using immigrant and migrant labourers that work intensively while living in temporary quarters. The historic experiences of Greenland tell that a different, slower exploitation of mineral resources may contribute to social improvements and competence-building thereby providing long-term improvements for the Greenlandic society. This points to a need for plans and the organisation of mineral exploitations that operate based on coupling local settlements and resources with mining and other forms of activities. This demands new perspectives on the content of social impact assessments as well as new criteria for the planning of settlements and infrastructures.*

## Introduction

The natural mineral and energy resources in Greenland have been researched in detail by Danish state institutions like the Danish Geological Surveys (GEUS) and the former Greenland Technical Organization (GTO) for many years. This implies that the hitherto rather scarce exploitation of raw materials and hydropower energy in Greenland is a result of high costs, accessibility, and global market conditions for exploitation, more than a lack of knowledge about their potentials. The increasing global resource shortages of certain raw materials and consequent expectations of price increases is a major explanation for the increased international interest in

some of Greenland's mineral potentials. This is also reflected in the global geopolitical considerations towards the Arctic region resulting from changing climate conditions.

From a Greenlandic perspective the global interests in the countries' resources are highly welcomed. Currently, the Danish government contributes almost half of Greenland's government budget (577 million Danish Kr. out of 1.261 million in 2011) (Statistics Greenland 2013) and approximately one third of the disposable gross national income. At the same time, Greenland has the same demographic challenges as a number of other Arctic areas, with increased life expectancy, a declining birth rate which is down to 1.8, and migration from Greenland, which together result in an increased dependency ratio, with consequent growth in public spending. Public spending is also challenged by expectations of increased welfare, education and health, while export incomes are declining, overall resulting in an expected increase in public finance deficits.

The political desire in Greenland for increased political and economic autonomy creates an obviously untenable situation. Over the past decades, the value of mineral exports has been quite modest, while fish and shellfish account for approx. 85% of exports. In recent years a massive political desire has emphasised the need to expand the export incomes to more areas than just living marine resources and this has resulted in the development of new business areas based on the exploitation of mineral resources.

This article explores in section 2 the historic policies of centralisation supporting the growth of cities and the reduction in settlements based on subsistence fishing and hunting, but also an increase in the economic dependency of Greenland. This provides a backdrop for an eventual further de-coupling between workplace and habitat, but also raises critical questions on the sustainability of the dominant policy and the concrete strategies for organising mining projects.

In section 3 the article traces the experiences for local employment resulting from early mining activities in Greenland. This leads to a discussion in section 4 of an alternative to the de-coupling based on flexible settlements that integrate workplace and habitat.

In section 5 the role of social impact assessments, the organisation of mining activities, and the spatial planning for the future of Greenland is discussed from the vision of developing spatial and locational planning based on flexible and settlements operating with a higher degree of mobility of people as well as societal support structures and institutions.

## **Contemporary Challenges in Greenland**

Greenland is, like many other Arctic societies, characterized by a very small population in relation to its size, and the country's settlements are widely dispersed. At the same time, all Greenlandic settlements practically operate as "islands" without roads and with few and expensive options for daily commuting between settlements. This implies that the Greenlandic economy is not coherent, but can be characterised as a number of interconnected island economies. One of the major results is that there exists only little trade between the settlements. Only around 15% of ship cargo is transported between Greenlandic settlements, while around 50% are imports from Denmark, and approx. 35% are exports to or through Denmark (Hendriksen 2012).

For both individual settlements and Greenland as a whole, the traditional exploitation of marine living resources increasingly has been moved from locally-based fishing and hunting, to large,

ocean-going trawlers with some processing and freezing on board selling directly to ports outside Greenland, or landed in Greenland ready for export. Most of the raw materials are today exported unprocessed. This means that the impact on employment and thus value for the communities where seafood processing still exists is modest, and that the settlement's localization in reality is de-coupled from its sources of income. Only a small number of settlements still exist where the primary economic base is linked to the exploitation of marine living resources and where the vast majority of the inhabitants and workforce is of Greenlandic origin. For major towns, the primary income base has become the maintenance of society's basic operations, including administration, health, education, retail supplies, telecommunication, construction, etc. (Ibid.)

### *Policies of Centralization*

In the government commission reports from the 1950s and 1960s on economic and social development, policies for centralisation were evident in their emphasis on economic developments based on private business activities. After WWII the traditional trade monopoly of the Royal Greenland Trading Company was cancelled while its duties of provision were continued. The goal was to provide a ground for private businesses to make the Inuit society independent (self-sufficient) concerning economic incomes and supply.

At first fishing and fish processing were identified as the new core industry, in combination with increased utilization of the mineral resources in Greenland (Grønlands-kommissionen 1950). There were no customs and import restrictions and government taxes were kept low (Boserup 1963). Some new business activities started in this period, but the owners were primarily persons from Denmark and they concentrated on supply activities taken over from colonial Royal Greenland.

Realizing that private business could not deliver the needed industrial development in Greenland, the Danish government began in the late 1950s to stimulate this through massive investments in the fish processing industry. In parallel, massive investments in public schools, education, public housing and health care were funded through Danish subsidies (Grønlands-udvalget 1964; Boserup 1963).

In the wake of these investments that placed fisheries as the core business activity, policies were set up to centralize the population in larger cities with harbours and fish processing industries. But unfortunately the mono-culture based fishing activities did not continue to grow and private fish processing industries went bankrupt or were taken over by the government. The privatized growth strategy had largely failed. The only private economic actors that survived were those involved in goods supply and in the housing construction and infrastructure sector dependent upon public spending.

The Danish centralization policy sparked protests in Greenland, which were largely key to the establishment of Home Rule in 1979. In the first decade of the home rule, measures to stimulate the industrial development of the individual settlements included policies and infrastructure development such as establishing a system of purchase and storage plants, service houses and stores in a number of settlements. The focus on a decentralized settlement pattern was based on

the desire to exploit local resources locally combined with a more ideologically based intention to take care of the ‘original Greenlandic culture’ (Bro 1993; Grønlands Statistik 1996 to 2004).

Due to overuse of funds and inadequate financial management, the treasury ended in 1987 in a significant deficit. And after 1990, the cod disappeared from the seas around Greenland, so most seafood purchase and storage plants in both cities and settlements went unused (Danielsen 1998). The combination of deficits in public finances and a sharp decline in export earnings brought Greenland into a recession requiring cuts in public spending. Slowly, there was a transformation of economic policy away from a balanced geographical development, and thus from the focus on small decentralized units, back to the known market economic tools that involved rationalization, economies of scale, and cost optimization.

The discussions and controversies around the role of smaller settlements and the idea that a centralized population living in a few larger cities may best serve the economic development of Greenland is far from over. As part of the focus on large-scale industrial and mining activities the dominant concept promoted has ‘again’ been to work with centralization of the population as a core policy. This is based on distributed mining activities combined with a workforce living in cities and working in concentrated periods in mining areas supported by city-based supply and infrastructure businesses (Råstofdirektoratet 2009; Mobilitetsstyregruppen 2010).

The Nordic Council report on *Megatrends* (Norden, 2011) supports this development by presenting urbanisation as indisputable. The analysis continues with some rather important observations:

In many instances immigrants are hired to keep the fishing and agriculture industries alive. In their place many new economic initiatives are developed based on enclave arrangements, for instance in connection with the establishing of mining and other extractive activities, either with the population staying for a defined and finite period of time, or through on/off working arrangements, generally, two weeks on/two weeks off. In these circumstances the old notion of “the rural” as culturally pure and nationally original quickly becomes obsolete (Norden 2011: 9).

The lesson from the centralization and urbanization processes resulting partly from the centralization processes of the 1960s and partly from people moving to the cities for education, facilities and jobs in Greenland, has been that unemployment and poverty has been a socially challenging companion.

### *Asymmetries and Adaptive Capacity*

In economic theory on agency, emphasis is put on the distribution of knowledge between economic agents including the eventual regulators of economic exchanges. While typified ideal economic models at large build on the idea of distributed and available knowledge, more sociological based approaches emphasise the unequal – or asymmetrical – distribution of knowledge making providing the involved economic and regulatory agents with very different capacities to negotiate and intervene.

Typically, producers have a much larger knowledge of the technologies and market conditions of relevance for the products produced. In contrast, the knowledge of environmental conditions resides with regulatory authorities and not least local people. Experiences concerning social structures also reside within the local communities. Besides the uneven distribution of knowledge

and experiences a big challenge is whether these different forms of knowledge are at all made relevant and useful for e.g. negotiations of what could be called the ‘social license to operate’ when it comes to large-scale projects with potential large social and environmental impacts.

This also emphasizes the importance of the interplay between the periphery and political and economic centres that may create new challenges for the local population that they may have limited capacity to handle (Keskitalo et al. 2011; Keskitalo & Kulyasova 2009). Not only is the local knowledge of importance, but the ability of the local population to organize and respond to policies and knowledge derived from the outside, be it the central government or impacts from large-scale projects and economic globalization. The local community draws on its experience, sometimes defined as ‘social capital’, and its ability to form collective action and respond to the different adaptation arenas at play (Hovelsrud & Smith 2010).

When it comes to mining activities and the political and regulatory actions needed, such experience is lacking in Greenland. This requires the administration to build rather independent competence units dependent on knowledge and principles brought in from the outside, but lacking the local competences for building a countering perspective. This asymmetric knowledge originates from the limited capacity of the administration when it comes to understanding the detailed technical and market-based conditions for mining. This is contrasted by the involved companies that typically operate globally and have a lot of established knowledge and skills and also have access to international networks of knowledge institutions, consultants, etc.

The argument from the Greenland central administration has generally been that it was possible to include and use expertise from international legal advisors and consultant companies who were working with similar problems on a global scale. This is a necessary and fundamentally sound strategy as international experience and references are crucial for regulators in this field. It does not however remove the need for basic competence in asking the right questions and being able to assess the advice and solutions proposed. This to avoid the government receiving the same advice from the same experts that provide advice to the mining industry. The expert strategy also does not secure the societal capacity for handling the meeting and exchange of different forms of knowledge and engagements of relevant Greenlandic actors and local communities in sustainable development. Here especially the local communities have been left behind.

### **Mining and the Use of Local Workforce**

Greenland has, through a long period of time, built a work force capable of running core parts of the country’s infrastructure and maintenance activities. This has been the result of the government-funded basic education system in combination with vocational training and a still small system of professional education for teachers at the university in Nuuk, and the Arctic engineering education in Sisimiut. The vocational training comprised of education provided by infrastructure companies like Royal Arctic Line and Air Greenland in combination with a number of specialised technical schools have provided skilled craftsmen to Greenland, recently supplemented by courses in mining.

Though the recently opened mining school in Sisimiut is providing training for miners, the specialized knowledge needed at all levels to run a mining operation is scarce and not currently

provided. This is not just a problem for Greenland, as mining operations generally are organised based on global work practices and with a high degree of migrant workers that seem to accept long working hours and a high degree of isolation in temporary barrack accommodations. The needed workforce competencies and skills are not just related to the technical skills of the workforce but as well to the workers' adaptation to the specific social conditions that mining activities share with other 'remote' and not settled types of technical work like the building of railroads, bridges, pipelines, oilfields etc.

Only a few of the current, potential mining sites are directly connected to existing settlements. This supports an often used strategy by mining companies calculating capacity, extraction periods, and the subsequent closing of the activities while balancing the cost of equipment and the development of market price for the minerals in question. The size of the workforce is seen as secondary. This results in the so-called fly-in-fly-out operations based on the use of migrants or emigrant labour accommodated in boarded, temporary accommodations at the mine itself, interrupted by shorter furloughs at home. Intensive periods of work - 12 hour shifts, 6 days a week - are typical for this type of work organization.

### *Experiences from Mining in Greenland*

Experiences with this type of work organization are not particularly positive in Greenland. From 1972 to 1980 the Canadian (and later Swedish) mining company Greenex operated the zinc and lead mine Marmorilik in the Uummannaq district (Nordregio 2009:12). The shifts were organised as 14 days of work followed by 14 days off (ibid: 13). Approximately 15% of the workers were born in Greenland. (Dahl 1977: 6; Nordregio 2009: 15) An illustration of how Marmorilik was a special community was the percentage of women, which during the period from 1992-1997 was only 9%. (Nordregio 2009: 14) Until 1977 the Greenlandic workforce were discriminated against with lower salary and poorer employment and work conditions. After a work conflict the formal conditions were equalised, however the number of employees with a Greenlandic background were not elevated, according to Nordregio, because of the company's right to choose who they preferred to employ (Ibid 2009: 13-14).

The only recently operated mine is the Nanulaq gold mine in Kirkespirdalen in South Greenland, Nanortalik district, which has been running since 2004, but for the time being is closed down. The mine has continuously employed 80-100 people, but only in the last period, where it went down to 60 workers, has the mine managed to have more than 50% domestic manpower, of which a large part were working in service activities such as cleaning, catering and transport. This is particularly remarkable as the mine is located in one of the country's poorest districts with massive unemployment.

Relatively more Greenlanders have worked shorter periods at the Nalunaq mine, but few have done it for a long time. The most often heard explanation is that the workers choose to work in the mine for a period long enough to raise money for e.g. a new tractor for their sheep, a dinghy or boat engine for hunting and fishing, consumer goods for the home, or other similar reasons. The working conditions are not acceptable for an extended period of time (Hendriksen 2013). The way work is organised seems not to be acceptable to the everyday life practices and culture of Greenland, where time spent with family counts very much, any many consider having time to get out into the countryside, hunting and fishing, to be very important. This also explains why a

relatively large part of the crew on Greenlandic trawlers is recruited outside Greenland from the Faroe Islands, Iceland, Norway and Denmark (Nielsen, 2000).

In recent decades, several hydropower stations and runways have been constructed by contractors from outside Greenland that primarily use migrant workers, while local job creation has been extremely modest. There are indications that the next big mining projects can quickly end up creating the same problem. At the anticipated iron mine at Isua in the bottom of Godthåbsfjord, alone, a workforce of up to 1,000 during the operational phase is expected. The question is whether it is realistic to find manpower at this scale in Greenland under contemporary conditions considering the failure to find more than approx. 50% resident labour for a mine with 80-100 employees.

If a large proportion of local workers are not employed, the socio-economic impact for Greenland from mining may be very modest, as long as the only direct income is taxation of the employees' wages, and workers from outside Greenland are exempted from council tax and only pay national taxes. Because these migrant workers do not live permanently in Greenland, they do not re-circulate their wage income into society for basic consumption, having primarily a negative impact on the local economy.

### *Experiences from the Qullissat Coal Mine*

From 1924 to 1972 there was an active coal mine in Qullissat, which was organized as a diverse community with school, shop, hospital, administration, etc., and where there was a fairly even gender distribution. Although Qullissat's primary industrial base was mining, a broad industrial base of hunting, fishing, construction companies, etc. emerged, and the city developed into an attractive habitat that attracted people from all over the country. For a time, Qullissat was Greenland's second largest city with about 1,200 inhabitants. Qullissat was an innovation centre and the birthplace of the Greenland trade union movement, as well as a cultural centre for music and politics.

In this context, it is key that the Greenlanders were a very large part of the workers in the mine, and that there was a community adjacent to the mine attractive even for citizens who did not work in the mine. This shows a historical example of mining in Greenland successfully combined with an attractive community with great diversity.

The closing down of the settlement of Qullissat by the Danish government in 1972 was not a success. The closure was based on the low grade of the coal. In addition the easily accessible resources had been extracted and as Qullissat had no port, coal had to be lightered out to the ships that sailed it to Denmark. Another key factor was that Polish and South African coal was cheaper, making world prices crucial for the decision. The decision was made without consulting the locals, and people experienced it as a decree. Inhabitants of the community were forcibly relocated, scattered along the Greenland coastline. This decision became a politicizing factor in Greenland and was an important political mobilized leading to the Home-Rule in 1979.

## **Exploring Alternative Strategies – Flexible Settlements**

Based on the experiences from earlier mining projects, Greenland faces a number of challenges of an economic nature in relation to education and work force recruitment for new large-scale industries. The experiences indicate that the idea of inland migrant workers commuting to mining accommodations and staying for 3-4 weeks followed by a week or two at home, does not look very promising nor realistic. This points to a large need to re-consider the dominant localization and mining policies. Instead of following the dominant trend with temporary migrant workers living in barracks and working hard without a family, the government and administration should look for alternative ways of linking settlements and large-scale industrial and mining projects. These should cater to the daily lives of families with 'normal' working hours and a social life related to the livelihood of workers families and open to a combination of both employment in mining with periods of e.g. traditional hunting practices.

This is not to be seen as an argument against increased mining, as there may be good reason to increase the country's revenue base through the exploitation of mineral resources. It is mainly a question of how the new activities are implemented in terms of securing a socio-economic and socio-cultural sustainability.

### **Flexible Mining Related Settlements**

As an example, Arctic engineering students from Sisimiut in 2012 have investigated a potential mine on the east coast of Greenland at Kangerlussuaq, midway between Ittoqqortoormiit (Scoresbysund) and Tasiilaq (Ammassalik). Earlier there was a settlement at Kangerlussuaq, which was closed during the Danish Government's efforts to centralize the population. Kangerlussuaq is one of the best fishing and hunting spots in the Ammassalik district, and every summer around 30 families sail the 300 km up to Kangerlussuaq, where they camp and hunt, among other species, narwhals and polar bears. With both mining activities and local fishing and hunting the combination of habitat and income from new activities could create a complex synergy. These may not be equally beneficial in money terms, but can be seen as combinations of different cultural practices.

Ammassalik district is one of the country's poorest, and the base for hunting and fishing, and fish purchasing capacity is inadequate to effectively support the district's existence. This is a major reason why a part of the population is dependent on social transfers.

Interviews carried out in the local community by the engineering students indicated that they see a fruitful connection between their interest in working at the mine and the establishment of a proper settlement at Kangerlussuaq, including space and institutions that gives way to family life and may also provide work for women and have space for children. In this case the rich marine resources might bring other opportunities even though a closing of the mining endeavour could reduce the size of the settlement. There is also a desire for the work to be organized with normal operating hours, allowing time for family and leisure, which is typically spent on hunting and fishing. In this context, there is a desire for flexibility, allowing for holidays or other forms of free time in the periods where this is e.g. narwhal catch, is something that cannot be planned and predicted in the longer term.



Very often the life span of a mining process is planned to be short. However, if mining is organized as a slightly less intensive and lengthy process, it seems possible to establish a settlement of about 200 inhabitants. Engaging with the strategies of mining companies it might be possible to offer alternatives to a very fast extraction e.g. in relation to the investments and risks involved. Different scales may offer different economic solutions that are equally beneficial. By engaging in a more lengthy extraction process, one fourth to one third of the local population may be employed in the mine while the other part of the population could ensure the settlement's operation as well as work with fishing and catching. This leads to an estimated resource potential of at least 30 years of operation that could help improve the community and motivate social investments. In addition new business opportunities may develop around the mining settlement related to fishing and tourism that can help creating a more diverse economic base that makes the settlement sustainable for a longer period than that of the mineral based 'adventure'.

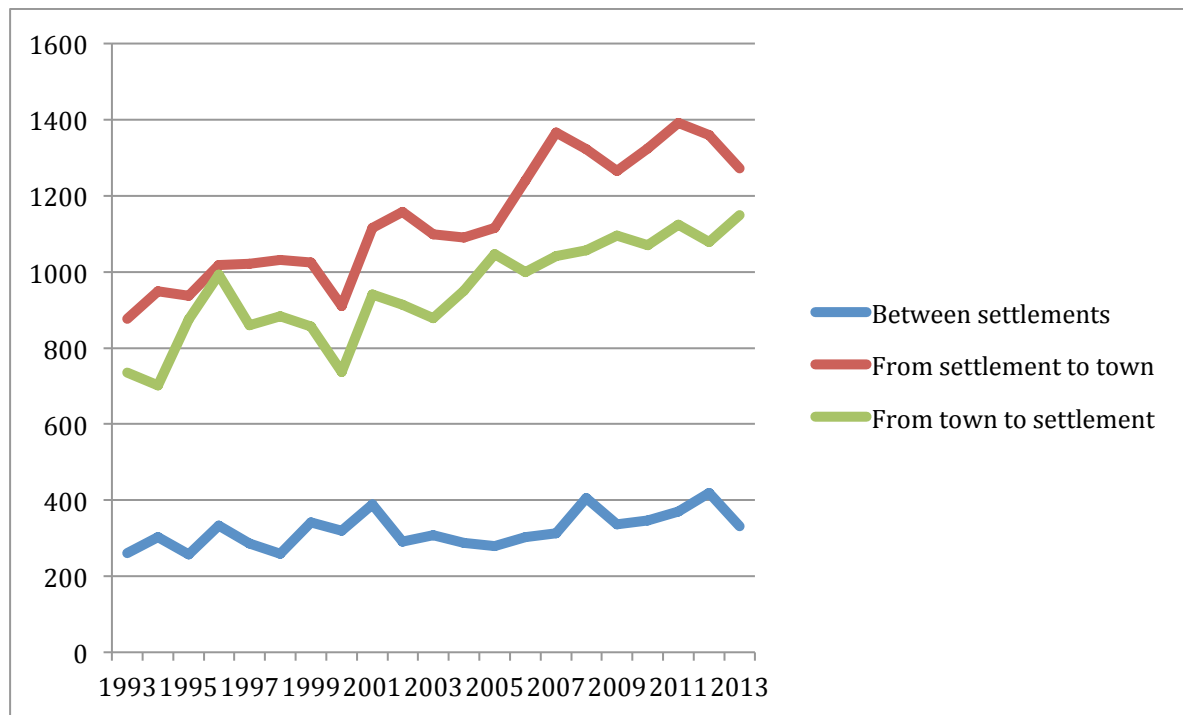
There will obviously be some societal costs of (re)establishing a proper settlement at Kangerlussuaq. However, the alternative may result in the classic Greenlandic problem where major projects are based on outside labour and wage money circulation will take place outside Greenland, with the majority of secondary multiplications thus absent.

### *Mobility within Greenland*

In support of the strategy of more flexible settlements as an alternative to the vision of further urbanisation, a relatively high mobility of the population can still be observed which is at present mostly related to engagements in hunting and fishing (Nordregio 2010). Flexible in this context means both able to grow and shrink and eventually to be based on buildings and institutions that can be planned and operated as mobile. The question is whether this mobility can become part of a new environment for mineral extraction, if the work is organized and arranged in accordance with social and cultural frames of reference.

The historically high mobility of the Greenlandic population has continued or even accelerated. From 1993 to 2013 the mobility from one town or settlement to another town or settlement increased from 10% to 13% of the total population. This mobility is partly based on job mobility, and the fact that it is not possible to commute on a daily base from one town or settlement to another anywhere in Greenland. But it can also be seen in correlation with education where many youth have to move to one of the larger towns to finalise their basic education, and for a growing number in additional education. There is also relatively high mobility of people moving for family reasons or the desire to get away from personal problems.

As the foreign part of the Greenland population is not increasing this figure shows that the migration between town and settlements is high and even increasing. It also shows that the net difference is quite small compared to the total migration and to the migration between settlements.



**Figure 1:** Mobility in Greenland between towns and settlements by number of migrants and year. The figures are based on data from different sources in Greenland Statistics 1993 to 2013 (see e.g. GS 2013).

## Challenges to Governance and Planning

In this section the role of social impact assessments (SIAs) and public planning and involvement in relation to mining activities are discussed in order to point to how to open up for alternative strategies. On this basis the section outlines perspectives for governance and research that shall assess the rationales behind the dominant fly-in-fly-out strategies of several mining companies compared to strategies that plan for and prioritize the involvement of local settlements and local workforce not just as a supplement, but as part of the core strategy. This may entail public planning efforts that combine the building of socially functioning local communities in relation to mining activities at the same time as these are operated as flexible and mobile entities dependent on the other natural (e.g. biological) resources available.

### *Social Impact Assessments as Governance*

Two of the major instruments for the societal and regulatory preparation of mining activities, besides legal conditions of ownership, fees and taxation, are the impact assessment within the social and the environmental field (SIA and EIA). The first also influences the 'social license to operate' by forming the basis for IBAs (Impact Benefit Agreements). This framework was adopted in Greenland based on experiences from global regulatory efforts in relation to large-scale industrial projects.

The impact of large-scale raw material projects in Greenland was taken up as an explicit policy issue at the end of the last century in the 1997 report: 'Impacts of large scale raw material projects in Greenland' written as part of the preparation for further independence (self-rule) of Greenland (Direktoratet for Sociale Anliggender 1997). In this report, the objectives of eventual large-scale mining activities were pointed out to be:

- Societal developments must be based on the demands and expectations that the Greenlandic population has for a good life.
- The primary male workforce in large-scale projects does pose a problem for the gender balance of the population.
- The negotiation strength for Greenland is its resource base. There is a need for time to scale-up projects in which training of locals can be done to avoid projects being dominated by an immigrant workforce.
- As several mining projects have a limited life span the whole life cycle is important and the impact through the creation of supplementary business activities is crucial.
- Dedicated educational programs are needed to prepare the Greenlandic workforce for these new opportunities.

Though this report is just one among a number of contributions to the formation of the government of Greenland's policy in the field of mining, its legitimacy resulted from its focus on the social challenges of mining activities.

In 2009 Greenland, similar to many other countries and regions, finally defined its own 'Guidelines for Social Impact Assessments' (Bureau of Minerals and Petroleum 2009) based on international guidelines. The following issues are here seen as essential in the Greenlandic context:

- Recruiting Greenlandic labour;
- Engaging Greenlandic enterprises;
- Focusing on knowledge transfer (e.g. education programmes) in order to ensure long-term capacity building of local competence within the mining industry and mining support industries; and
- Preserving socio-cultural values and traditions.

A way of managing the social effects from mining projects is to prepare a Social Impact Assessment (SIA) in which it is important to identify and analyse potential impacts of a proposed action or development on the human environment, and to recommend initiatives to realize both direct and indirect sustainable development opportunities as well as mitigate negative impacts.

These demands reflect the need for situating the new projects within the existing societal conditions as well as staging the transformation of the society to be able to cope with the challenges. This also implies providing the workforce with services that are crucial for an integration of new industrial activities as alternatives to their separation through the building of 'closed communities' around the large-scale projects. At the same time, the explicated goals of the first three points demonstrate a rather instrumental approach to new business activities and the potential migrant workforce while the fourth point reflects a rather defensive approach with the wording of preserving and not specifying what has to be preserved and why. In contrast it is rather common in political debates and in cultural studies of changes in Greenland to emphasize the ability of the population to adapt to new situations and to change, so this fourth point should rather raise the political issues of influence and future choices.

The Greenland government and minerals administration made a very crucial choice when delegating the obligation to produce the SIA and passing the responsibility for public

consultations to the mining companies planning the activities. This has resulted in a focus on the single projects at the outset, and leaves it to the company to define the frame and outreach of the project in question. The assumption seems to be that these SIA's can draw on an existing body of knowledge and expertise as well as an informed public and regulatory administration that is capable of maintaining standards and coping with the processes installed by copying the procedures and concepts from the field of environmental impact assessments (EIA). A study of SIAs demonstrates that leaving these to the companies have reduced the scope and reach of the resulting studies. Instead the focus must be on the process of preparation and development within the local communities, which basically follow a process approach to citizen involvement in planning and policy processes.

The preservationist approach does not reflect the anticipated problems as demonstrated with the historic and contemporary examples. A more realistic approach might be to build scenarios for those transformations of the Greenlandic society that will follow with large-scale projects and ask how these can be moderated and how different groups in society can navigate in the rather conflict-based changes of the future. In particular the idea of accepting today's starting point as 'baseline conditions' is problematic in that the society at large is already undergoing huge changes.

What seem much more important is to open up for serious investigation of alternatives to the given project design as provided by the mining company and look into potential impacts as a core part of the planning process, while the contemporary focus on just one solution ('take it or leave it') reduces the relevance of the resulting SIAs. An obvious alternative is to identify large-scale projects as the meeting place between two different cultures (worlds of logics and everyday life practices) of the mineral exploitation and the local communities. A merger resulting in a transformation of the practices from both cultures (and value systems) as the result should be strived for, instead of a result where one of these cultures becomes hegemonic and marginalises the other, making it become peripheral and dependent. The intention of 'Maximisation of development opportunities and mitigation of negative impacts', as stated in the guidelines, seem to be reduced to mere rhetoric as the organisation of the mining operations, their timeline, and use of workforce as well as the localisation policies are not opened for analysis and questions.

Following the framework of professionalized SIAs as the main tool to handle public participation in Greenland when planning for large-scale projects places great expectations on the formulation of Impact Benefit Agreements (IBA). In such IBAs the company together with the local community can define the responsibility of the company, its rights and duties and its interaction with local society. Legally, these are framed as local agreements and seem to operate more with compensations and procedural modifications, than to influence the projects and their operations. It is also unclear what legal right they give to the local communities in cases of non-compliance.

The imbalance becomes clear in the approach to analysing 'potential impacts and alternatives' where a list demonstrates a much more instrumental set of targets (Appendix 1 to the guidelines). Here local businesses, employment, education, public service, health, and cultural heritage are put in the forefront, while 'social issues' related to the process of societal transformation and influence are reduced to resettlements and changed demographics. Instead a more profound focus should be on the processes of social polarisation and disruption resulting from a process of marginalisation and lack of influence.

The hitherto largest project that has also loomed large in public debate in Greenland is the iron mine in the inner part of the Nuuk fjord. The SIA report from this project illustrates the problems outlined by leaving out any questions related to the mining operation project and eventual alternatives and reducing the SIA to a detailed description of the existing circumstances, and focusing solely on employment, education, taxation and settlement issues without any further consideration of the social impact of the project (London Mining and Grontmij 2013).

In this respect, two problems seem to be core to improving the role of SIA's as a governance tool in relation to mining projects:

- The guidelines must more clearly specify the options concerning the mining operations and their impact on working hours and conditions by requesting alternative project options for analysis and consideration.
- The analysis of social impacts is dependent on culture and localities and consequently the consultations of local and relevant adjacent communities must include the questions of settlement and social, everyday life conditions that surround the mining activity.

#### *A Narrow Approach to Planning and Public Involvement*

One of the important issues in the potential future transformation of Greenlandic society is the time span and scale of projects. These obligations are delegated to e.g. the mining companies and their interpretation of how the global market conditions shall be interpreted when it comes to the balancing of costs of equipment, the scale of the project, the speed of start-up activities and the development of market prices for the resources in question. This must be set in contrast to the impacts on Greenland, where experiences from e.g. Canada and Alaska point to the need to counter the marginalisation of local communities due to the growing social problems and disruptions of families and communities that have been shown.

This puts demands on the way the Greenland government sets its societal targets in the changes to come and how public consultation must include issues of social change and new ways of organising everyday life for the potential workforce. This goes beyond the mere training of miners and consultations framed by given single projects. Instead, it must include much broader questions of competence building and new ways of organising work in mines not leaving behind the security and competence demands that result from potentially complex and dangerous work situations.

Recently the Greenlandic government has announced that potential Greenlandic labour can only be expected to provide transport to and from the mine from a major city, while they themselves must pay for any transportation to smaller settlements, and the government encourages people to move towards the major cities. This illustrates that the government at the outset has a rather narrow approach to the social challenges, and has operated from the assumption that the separation of habitat and work place and migrant working conditions is not to be questioned.

### *New Perspectives for Governance*

There is a great need for more research as well as development of dialogue and planning tools in this area, involving a systematic exploration of experiences from similar projects in areas with indigenous peoples within and outside the Arctic.

It is essential to explore how the local population can be involved constructively in the Greenlandic mineral extraction projects, and how work can be organized so that it will not undermine the existing cultural context, but will be included as a positive element in sustainable development dynamics. In this context, it is necessary to analyse the socio-cultural implications of establishing settlements with an expected service life limit, and how the settlements can be soundly closed when livelihoods are exhausted. Already in the start-up phase, it should be assessed whether the site has other potentials that can enable a long-term establishment and continued run of the settlements or parts thereof. The culture of the Inuit is originally a nomadic culture, and parts of the population have maintained a high mobility. It should therefore be examined to what extent the general mobility can be included as a positive factor in the establishment of settlements of a temporary nature.

In addition, an assessment of the individual mines' socio-economic potentials under different operating modes is needed, including a much broader analysis than just the financial return for the mining company.

Finally, there are a number of technical challenges to the establishment of settlements, which are expected to have a limited lifespan, so that most elements can be reassembled and reused at another settlement, and so that the settlement can also be environmentally sustainable in the operation phase, and that there may be an environmentally sound dismantlement.

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