Gap Analysis: Impacts of Resource Development on indigenous communities in Alaska and Greenland

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**Introduction**

In July 2009, a public meeting was held in the village of Kivalina, Alaska. It was an opportunity for community members to voice their opinions and concerns regarding the Red Dog Mine’s development plans and especially the mine’s new waste management permit. Community members were concerned about the mine’s impacts on their land, their health, and their community as a whole. A female community member said the following:

“For the health and safety of our people and our subsistence way of life, our concerns should be heard and taken seriously, taken into considering very seriously, for the benefit of our future generations to come” (Public Comments 2009:19).

A couple days later a corresponding meeting was held in Kotzebue. A male community member stated:

“I've always liked working in mine companies, you know. I worked for a mining company in Nome in the '50s and I worked for a mining company in Deering (...) I got along real well with most of them. One of the reasons why Deering -- it's one of the only villages in the region that don't speak Inupiaq because of the influence we have. We talk English all the time because of the mining. (...) Because of the fact that we were influenced by these people, you know, we figured out something better than what we’re doing. Consequently, they lost a lot of us for a while, a lot of our – at that time, we didn’t have high schools in our villages (Public Comments 2009:21-22).

These statements are indicators of how resource development projects have shaped and are shaping indigenous communities and indigenous ways of life. They show that it is of high priority for community members to protect a subsistence lifestyle; that values are changing because of resource development projects; and that people are migrating from rural areas to pursue education, jobs and new lives because of resource development. Arctic indigenous people are communicating with resource development industries and governments to maintain a voice in the debate about how to develop and how it might impact community sustainability, culture and health (Nuttall 2010:14).

In this article impacts of resource development will be explored. Through a literary review, gaps in research on the impacts of resource development on indigenous communities in Alaska and Greenland have been identified and two themes have been found to be of special importance to discuss in-depth: subsistence and cultural values, and human mobility.

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1 This article looks at non-renewable resource development
Impacts of resource development are often explored through socio-economic measurements of population influx-outflux, community involvement, previous impact events, occupational composition, local benefits, presence of outside agency, and mitigation measures (Burdge 1988:43). What are missing from such explorations are cultural impacts of resource development. These are important to take into account, posing questions such as: what are the cultural values of the community and how are these affected? What cultural traditions will change and how? How are economy and culture interconnected? How can impacts be identified and measured without knowledge of the cultural context of the community?

Temporally the analysis will focus on impacts of resource development from the 1970s to the present. Data on impacts of resource development on indigenous communities is primarily found in “grey literature” such as Environmental Impact Statements and Social Impact Assessments (EIS, SIA). Data can also be found in academic and governmental reports and analyses. Transcripts and summaries of public meetings are also a source of data. A small amount of data has been retrieved from newspaper articles.

**Context: Alaska and Greenland**

Mining has been a part of Alaska’s history since the 1800s while oil was discovered in the 1960s and drilling began on the North Slope in 1971. Rothe (2006) writes:

> In the minds of many Americans, the image of the sourdough miner is nearly synonymous with the image of Alaska. The discovery of gold at Crow Creek in Southcentral Alaska in 1888 prompted more than 60,000 Americans to make their way north to seek their fortune. This was the first of Alaska’s “gold rushes.” It was followed by gold discoveries in the late 1800’s in Southeast Alaska, including the Klondike Gold Rush of 1897-1900, as well as turn-of-the-century gold discoveries in Interior Alaska, and the Nome gold rush of 1898 on Alaska’s Seward Peninsula (Rothe 2006:8).

The Alaska that this analysis deals with is about much more than the white male miner from the south looking for gold. 710,231 people live in Alaska and approximately 104,871 of these are Alaska Native/American Indian (Laborstats.alaska.gov 2010). There are more than 220 indigenous communities in Alaska all relying to some extent on subsistence from the land for their livelihoods. Most villages were established where traditional subsistence camps once whereas schools and churches were built and children were required to attend school (McClintock 2009:120-121). Development of natural resources often takes place in remote areas of Alaska on land that Alaska Natives own, use for
hunting and fishing, and consider as part of their cultural heritage. In 1971 the Alaska Native Claim Settlement Act (ANCSA) was passed awarding Alaska natives 44 million acres of land and 962.5 million for giving up claims to the rest (Hensley 2009:159).

Greenland has seen mining activities since the early 1900s (Hayley et al. 2011:48). Approximately 56,500 people live in Greenland and of these 50,000 are born in Greenland (Nanoq 2012). It is difficult to estimate how many people are Greenlandic and what that really means as Greenlanders and Danes have mixed blood since the beginning of the 1700 Danish colonization of Greenland (Thisted 2011:614). Greenlanders have been forced to speak Danish instead of Greenlandic and so language is not an accurate measure for ethnicity. Furthermore Danes who have been born and raised in Greenland identify as Greenlandic even though they often do not feel like they have the right to do so (Thisted 2011:615). At the same time the term indigenous is not used as a political tool in Greenland as it is in Alaska where indigenous people do not have autonomy. Therefore the need to define who are Greenlandic and who are not is not as urgent. There are 17 villages/settlements in Greenland, all of which are predominantly indigenous. A great part of Greenland’s modern history cannot be understood without mentioning that Denmark colonized Greenland from 1721 to 1953. In 1953 Greenland was accepted as part of the Danish kingdom but special conditions continued to keep Greenland in a subordinate position (Thisted 2005). In 1979 Greenland was granted home-ruling giving Greenlanders more power to make independent decisions about their country and in 2009 Greenland was given self-ruling. Self-ruling is an important step towards Greenland becoming independent but they continue to rely on annual subsidies from Denmark. One way to become economically independent is to develop the natural resource industry in Greenland, which is why there is a boom in resource development happening right now (Haley et al. 2011:56-57).

Alaska Natives and Greenlanders have gone from being nomadic to settlers, from hunters to businessmen, from wearing skin clothing to wearing industrial produced clothing, and from eating off the land to, at least partly, eating store-bought foods (Olsen 2011: 426, Kruse 2011:10). Over the past 60 years arctic indigenous people have undergone tremendous changes affecting their cultures and social organization, but a great threat to their lifestyle still remain: resource development.
Formal and informal economic impacts

Formal economic impacts of resource development have been researched extensively focusing on consequences for a state/country as a whole and for local communities. Economic impacts are often the most obvious and most attractive impacts of development and as such a large body of literature focuses on them. Rural communities are often investigated through a rural-urban continuum, where development towards urban/modern living standards is interpreted as positive and desirable (Burdge 1988:37). The urban economic model has become the standardized measure for prosperity, which a small community can reach with the help of an economic boost. Literature on formal economic impacts of resource development was analyzed in order to show the kind of research that has been done in impacts of resource development. We argue that informal economic impacts of resource development are generally left out of SIAs and other impact analyses, which create a gap in literature that leads to a number of impact aspects neglected.

In literature from Alaska, the many benefits of resource development are emphasized and the continued development of mines, oil extraction and industrial fisheries are argued in favor of (Baring-Gould et al. 1975, Colt et al. 2010, Goldsmith 2008, Huskey 1979, McDowell 2002, McDowell 2011, McDowell 2012, Rogers 2006, Trenholm 2012, Vinning 1974). SIAs prepared for resource development contractors are showing how the mining and oil industries will provide new and more jobs, higher average salaries, and through taxes contribute to local economies (Baring-Gould et al. 1975, McDowell 2002, McDowell 2011, McDowell 2012, Rogers 2006, Trenholm 2012). It is emphasized how resource development will be a way for communities to develop and make way for new opportunities. In 1974 Aidan Vinning wrote that for the state the only “ideal impact” of the development of the pipeline was an increase in employment opportunities (Vinning 1974:3). Employment is emphasized in all SIAs; listing how many direct and indirect jobs a development will create and what kind of wages they will have (Colt et al. 2010, Goldsmith 2008, McDowell 2002, 2011, 2012). These reports and analyses do not consider how the informal economies of rural Alaska are being affected by development and how that relates to their overall economies. Subsistence is investigated in terms of access to, abundance of, and quality of (Rogers 2006), but not as an economic factor. Resource development is primarily estimated in terms of economic, monetary, values because this is expected to be the main reason why a local community might accept and promote resource development (Hayley et al 2011:57).
Some assessments mention the negative economic impacts of resource development. These are explained in terms of damages to the natural environment that will lead to deteriorating health and social relations that again will affect the local economies and workforces. An example is the following:

“In regions of the world where mining has occurred, the magnitude of impacts from mining activities has, in many cases, been profound. The impacts have included altered landscapes, extremely low soil and water pH, changes in slope of land and rates of erosion, abandoned tailings piles, alterations in groundwater regimes, contaminated soils and water, and significant changes in plant communities. These, in turn, have led to impacts to fish and wildlife populations, changes in river regimes, land no longer useable due to contamination or loss of soil, high levels of contaminants in milk of domestic animals that graze in areas where mining activities occurred, air pollution from dust or toxic gases, surface subsidence and landslides” (Rothe 2006:4).

Impacts on the natural environment will affect local economies especially as these are heavily dependent on subsistence harvesting. Subsistence harvesting is not considered as an economic system in these reports, which might have resulted in downplay of the impacts to natural environments. A single report compares the economic value of a wild salmon ecosystem to the value of the Pebble mine proposal (Trenholm 2012). The report argues that although the economic value of the Pebble mine seems greater now, the long-term value is questionable, while the value of a wild salmon ecosystem will continue, as it is a renewable resource (Trenholm 2012: 81). The wild salmon ecosystem will also maintain and promote social and cultural relationships that a mine will only disrupt. The report emphasizes the contrast between a mine’s boom-and-bust cycles and the wild salmon ecosystem’s reliability (Trenholm 2012:81).

Greenlandic SIA’s and other literature regarding impacts of resource cite the main impact of resource development as a positive formal economic impact: jobs will be created and good working relations will be provided for the workers (Watkinson 2009:7, Grontmij 2012:vii). The emphasis on good working relations is important in Greenland where Greenlanders for decades have been paid less and given worse working conditions than Danes as part of the home-rule relationship. Formal and informal economic activities can be difficult to distinguish in Greenland where commercial fisheries are the most important export industry (Frederiksen 2012:95), and fishing at the same time is an important informal economic source for the individual Greenlandic family (Nutall 1998:113). Private catches are
both shared and sold on local markets while the government simultaneously encourage people to sell their meat to the national fishing export company Royal Greenland (Nuttall 1998:118-119).

Assessments from Greenland are somewhat differently organized than EISs and SIA from Alaska. One reason for this might be found in differing governmental and political structures. Assessments from Greenland are more formal in their design. They are written as reports on how already established, homogenous, governmental structures on both local and national levels might be affected by the opening of a mine or oil drilling on the coast. The cross-cultural context is largely left out as it is presumably assumed that Greenlanders are already familiar and used to outsiders working and living in settlements. There is not the advocate perspective that can be found in some of the Alaskan impact assessments defending cultural and environmental traditions. In fact the cultural implications of resource development are completely left out in some SIAs. Even more problematic is the interpretation of cultural values as cultural heritage sites (Watkinson 2009). In the SIA for the Nalunaq goldmine a paragraph on cultural values states that the only cultural value in the area of the mine is a Norse settlement that they will maintain the access to (Watkinson 2009:54-55). Culture is exclusively interpreted and reduced to historical material. One reason for the lack of an advocate perspective might be that Greenlanders have already achieved self-rule and the need to establish themselves as an oppressed minority in a dominating nation-state has been abandoned (Nuttall 1998:109). A negative impact of resource development is predicted to be the loss of local jobs when a development will close (Watkinson 2009:9, 42), as well as a lack of formal structures and guidelines about how to inform about and involve local communities in resource development activities. One SIA states:

“Relations between the community members and the company have been channeled through the highest ranking company employee on site in an ad-hoc manner based primarily on open and informal communication. Formal meetings were held irregularly but generally at least once per year. Community information was distributed by posting on the community bulletin board. No formal communication channels such as grievance mechanisms have been established” (Grontmij 2012:IX).

The lack of communication has resulted in conflicts between community members and employees of the mine while the lack of formal structures has prevented ways to solve the conflicts.
In many ways Greenland finds itself in the developing phase that Alaska saw in the 1970s. Everyone wants to develop resources in Greenland and the new independent government is working hard to achieve contracts that will benefit Greenlanders as much as possible. They are also just starting to estimate the consequences of resource developments such as the social, economic, and cultural impacts. They are posing questions such as “What are the social consequences of large in-migration of Chinese mine workers on small indigenous communities?” (The Guardian article 2012), which is a question similar to that posed by researchers in the 1970s in Alaska asking: What will happen when a large group of workers from mainland U.S. comes up and live in or near rural Alaska Native villages? (Vinning 1974).

Informal economic activities are generally not considered in the SIAs or other analyses. Indigenous communities in Alaska and Greenland are constantly adapting to the economic, political, social, and cultural environments they are a part of and their small-scale economies depend on their abilities to utilize informal economic means such as subsistence harvesting (Nuttall 1998:97). They need to adapt to economic boom-and-bust cycles, continue to fight for self-determination and stimulate local empowerment; all of which is done through informal economic activities (Nuttall 1998:97). One informal economic activity is subsistence. However subsistence is of much more than economic value.

**Subsistence and cultural values**

Subsistence can have many meanings and values attached to it, but a lack of literature on subsistence as impacted by resource development creates a narrow idea of what subsistence is. Here we briefly show how diverse a term it can be. In 2010 the Inuit Circumpolar Council stated:

“Inuit hunting, fishing, and other forms of subsistence gathering constitute a common basis of Inuit spiritual, cultural, social, economic and political way of life and are essential to the continued viability of Inuit communities and individuals” (Kruse 2011:18).

In 2008 Hayley and Magdanz emphasized the importance of subsistence foods to indigenous communities in Alaska saying:

“Subsistence serves a wide range of economic, social and cultural functions in Inupiat society, including: food and nutrition; economic production, consumption, cost of living and economic security; sharing, social ties and cultural identity; values and spiritual resilience; social capital in the form of reciprocity, trust, cooperation and leadership; and physical and mental health. Time on the land promotes observation-based knowledge, skills, experience and judgment;
hunting provides a positive outlet and valued social role for young men; and self-reliance promotes a sense of efficacy and fate control” (Hayley & Magdanz 2008:26-27)

As shown by ICC and Haley and Magdanz subsistence is closely connected to and can be considered a cultural value. In his book A Yupiaq Worldview (2006), Oscar Kawagley explains how Alaska Natives share certain worldview characteristics resulting in certain shared values. Alaska Natives all try to live in harmony with their environment: “This has required the construction of an intricate, subsistence-based worldview, a complex way of life with specific cultural mandates regarding the ways in which the human being is to relate to other human relatives and the natural and spiritual worlds” (Kawagley 2006:8). The shared emphasis on harmony, balance and reciprocity has resulted in some common Alaska Native values (Kawagley 2006:9). Among these shared values is the importance of sharing, the importance of cooperation within an extended family and respecting and thanking the universe for what have been given (Kawagley 2006:10). The emphasis on sharing is also a value among Greenlanders (Curtis et al. 2005:446, Nuttall 1998:83). Sharing among hunter-gatherers has been studied extensively in anthropology. Nurit Bird-David refers to them as having an economy of cosmic sharing between people, animals, and the environment (Nuttall 1998:83). However this is a kind of economy that is not acknowledged in EISs and SIAs.

Like Hayley et Magdanz 2008, Natuk Lund Olsen writes that Greenlandic culture can be understood through the saying: ”To live is to survive” and the only thing keeping death at bay is food (Olsen 2011:409). Food is not just nutrition; it is also customs, norms and identity shaping (Olsen 2011:412, Jeppesen 2008:96). Quoting Lotte Holm, Olsen explains: “We incorporate our environment in our bodies when we eat – we let the environment pass through us” (Olsen 2008:413).

Many arctic indigenous people live in subsistence dependent communities with an economy based on hunting, fishing and gathering as well as supplemental wage employment (Hayley & Magdanz 2008:25). Sharing of subsistence foods help reinforce and maintain social relationships, while participating in subsistence activities teach new generations about values and identity. Olsen writes that: “Through the ages gastronomy has proved to be a stronger cultural force among the peoples of the world than linguistic or other influences” (Olsen 2008:425). The two only things that have survived (been preserved) are the Greenlandic language and Greenlandic food. However many Greenlanders, especially in the capital Nuuk do not speak Greenlandic anymore and so Greenlandic food is really the
mail cultural activity (Olsen 2008:426). When subsistence is threatened by resource development whole cultures and economic systems are threatened.

Resource development is impacting subsistence in major ways: by threatening the natural environment and by increasing the cash flow to indigenous people resulting in changing lifestyles, priorities, and values (Jorgensen 1990:14-19). EIAs describe how resource development will impact land and animals, which in turn will have impacts on local residents’ subsistence hunting, fishing and gathering. These are described as potential problems that continue to be monitored while the actual effects have not been proven (Boertman 1998, ConocoPhilips 2008, Frederiksen et al. 2012, LGL 2012, Perry et al. 2010, 2011, TetraTech 2009). In Greenland, noise from oil drilling is defined as an issue as the noise will disturb animals and scare them away (Boertman 1998:11). Oil drilling and oil spills have an affect on the environment and will therefore impact subsistence and access to subsistence (Bortman 1998:25,33). In the EIS for the National Petroleum Reserve in Alaska, ConocoPhilips states that drilling, construction of ice roads, and overland moves might affect subsistence in the area, but that these are expected to only have short-term affects (ConocoPhilips 2008:26). Tetra Tech has much the same arguments in the 2009 EIS for the Red Dog Mine (Tetra Tech 2009). What is interesting here is that both EIS’s and presumably a large number of other EIS’s have held public meetings with residents of affected indigenous communities. The summaries and comments from these meetings are publically available and they show that local residents are very much voicing concerns about changes to lands and animals. They are worried about the changes they see and want their livelihoods protected as shown in the introduction to this analysis.

In 2011 Institute of Social and Economic Research (ISER) at the University of Alaska, Anchorage published a number of articles discussing the development of an Arctic Subsistence Observation System under the Arctic Observing Network Social Indicators Project (AON-SIP). This project aims at investigating and mapping arctic change (Kruse 2011). The scope of the project goes beyond changes associated with resource development and includes climate change, political change and more. However some of the changes to subsistence that the project has recorded include birds dying from poisoning; foxes with soar-like spots; and changing caribou migrations patterns (Kruse 2011:16). Phenomena that could be related to resource development and that are threatening subsistence but are not mentioned in impact assessments.
The Exxon Valdez oil spill is an example of the negative impacts resource development can have on indigenous communities. The oil spill occurring in 1989 in the Prince William Sound of Alaska caused economic, cultural, spiritual and social disruptions to Alaska Native communities (Gill et al. 1997, Ritchie 2004). Liesel Ritchie describes how the oil spill had both short-term and long-term consequences for subsistence in south Alaska (Ritchie 2004:392). One Alaska Native male is quoted saying:

“The damage it was doing. It wasn’t the money so much. People weren’t really thinking about [money]…. I wasn’t thinking about money. I don’t know if … any of our people were thinking about money. We were more thinking about what it was doing to the water – because we called it ‘the day the water died’ – … and how it was going to change our life” (Ritchie 2004:277).

The Exxon Valdez oil spill had major impacts on subsistence foods and lifestyle in south Alaska both short-term and long-term. Quoting Meaganack 1989, Gill et al. 1997 write:

“Our elders feel helpless. They cannot do all the activities of gathering food and preparing for the winter. And most of all, they cannot teach their young ones the Native way. How will the children learn the values and the ways if the water is dead? If the water is dead, maybe we are dead, our heritage, our tradition, our ways of life and living and relating to nature and each other” (p. 7).

Another consequence of the spill was changes to the indigenous diet as people were forced to replace subsistence foods with store-bought food. Changing diets can result in a change in values, as subsistence lifestyles are increasingly abandoned or downscaled to part time. Values do change and indigenous people living in Western parts of the world are constantly influenced by both traditional indigenous values and Western values. It is perhaps impossible to define what causes values to change because they are changing as a result of an accumulation of many things. Assessments from the 1970s raise concern over how indigenous communities that have not had much contact with the Western world might change as a result of that contact established through the construction of the pipeline in Alaska. However no research was done to follow up on this particular concern.

It is clear that an in-depth analysis of contemporary understandings, values, and roles of subsistence in Greenlandic and Alaskan indigenous communities is necessary in order to understand what impacts resource development will have on such communities.
Human mobility

Alaska holds a special place in history as the place where people first migrated to, to settle America approximately 50,000-15,000 years ago (Landgon 2002:6). People migrated from Canada to Greenland approximately 4500 years ago and have been studied extensively in connection to past human migration. Studies of past migration differ widely from the migration that an analysis like the present is investigating, but the focus on past migration in Alaska and Greenland might have overshadowed the importance of present day migration in connection to resource development.

In Canada, migration is closely connected to resource development, as workers move to an area being developed and then move away again when the development is downscaled leaving behind struggling local communities, businesses, and sometimes ghost towns. In Alaska migration as connected to resource development is not dealt with in-depth. Only one recent social-economic impact assessment mentions migration and here it is only to say that migration is low (Rogers 2006:77). Looking further back the construction of the pipeline caused some migration as workers followed the construction up north. It did not however create ghost towns as in Canada because only temporary camps were established and these were located away from indigenous communities in the hope that workers would not disturb the ways of life in the villages (Vinning 1974). No actual studies of the affects of pipeline work camps on indigenous communities are available. One study of the affects of pipeline work camps on a non-indigenous community (Valdez) describes how workers are hard working, hard drinking and from the Outside (Baring-Gould 1975:23). Most of them do not participate in local community life aside from buying liquor, books and clothes. Relationships with locals were minimal but considered friendly or civil and most social problems were found within the camps, not involving residents of Valdez (Baring-Gould 1974: 23-25).

In the EIS for the Red Dog Mine extension in 2009 the historical context of the Red Dog Mine was briefly discussed. The following was said about migration:

> Conversely, another potential impact on the cultural integrity of the region is in-migration due to the mine. One of the key concerns brought up at the 1984 public hearings regarding the development of the Red Dog Mine site was the possibility of an influx of people from outside into communities and villages (Public Hearing Transcripts 1984). These individuals have the potential to bring stronger influences of western culture, which could further alter local culture. With this concern in mind, the mine and its related infrastructure was purposefully located away from any
established villages to avoid directly impacting any one community. These interactions, however, may still take place at the mine site between local and non-local employees” (Tetra Tech 2009: G-17).

A follow-up to this potential impact has not been identified. As the Red Dog Mine is still active, it would be highly relevant to investigate the impacts of the in-migration to the surrounding villages and hub-town: Kotzebue.

Martin et al. (2008) mention that while Alaska has experienced large in- and outflows of people in connection to the construction of the pipeline, today migration has changed to a one-sided out-migration (p. 7). The question is: why are people leaving the villages? How big an effect has resource development had on this trend of out-migration? Building on SLICA, FAI and Hamilton and Seyfrit 1994, Martin et al. write that people hope to enhance their well-being by moving to places with more jobs and better education (p. 8). People are migrating from rural to urban areas in both Greenland and Alaska. Since the 1950s people have been leaving Alaskan villages for hub towns and bigger cities (Martin et al. 2008:3). Between 1990 and 2000, the net migration rate out of the Northwest Arctic Region was -4.7 Percent (Tetra Tech 2009:G-17). In Greenland, a similar trend is found in more recent years as people move from smaller villages to bigger ones (SMV 2010:10). It is repeatedly indicated that young people leave the villages for later to return either because they were unsuccessful in creating new lives elsewhere or because they want to give back to the community they belong to (Hamilton et al. 1994:191, Gram-Hanssen 2012:60). In Alaska, more young women than men have been leaving the villages in pursuit of higher education and different lifestyles (Hamilton et al. 1994:191). A gap-analysis of management of living resources in Greenland (Mulle-Wille et al. 2005) names migration as a gap that should be analyzed. It is emphasized that the role of in- and out migration is not clear (Mulle-Wille 2005:17). Another hypothesis is that when a development is closed down local people start migrating out to find new work after having become used to the new income. This is not dealt with in the literature. Today workers in Alaska and Greenland are flown in on a bi-weekly basis, working two-three week shifts and are then flown out again. There are no studies investigating the impacts of this traffic on indigenous as well as non-indigenous communities. In proposed projects in Greenland workers are expected to live in camps while working but it has not been decided whether these camps will accommodate families and welcome women and children (Agersen 1997).
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