

Research Need 4. Prospering communities in the Arctic

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Research Need 4. Prospering communities in the Arctic

1. Introduction

Ongoing and projected climate and environmental changes, increased human activity, and growing geopolitical interest impact communities, industries and livelihoods in Polar Regions in different ways, but the most profound impacts are yet to come. Other drivers of change are especially affecting inhabitants in Arctic communities, including the accelerating urbanisation and intensified in- and out-migration that rapidly are transforming the human geography of many regions in the Arctic.

Research needs to consider the complexity of different Arctic populations, regions, and communities, with different political, cultural, religious, and economic systems. Men, women, youth, and elders are not equally affected by the changes brought about by globalisation, a warming climate, urbanisation, and migration. Thus, there is a need for better understandings of the gender and age dimensions of the impacts of change (Larsen, et al. 2010). The huge diversity of Arctic peoples calls for new and differentiated methods for understanding social and cultural processes and future developments for aiding local leaders, planners and policy-makers. In some parts of the Arctic, there are moves toward greater self-determination and autonomy, especially in regions demographically dominated by Indigenous Peoples, while other parts - such as the Russian Arctic - face centralisation and the abolition of regional autonomies. Many local and regional economies in the Arctic are resource-based, and there has been great dependence on extractive resource industries, which come with exposure to global market forces. To achieve sustainable communities, residents must have the knowledge, skills, and resources to create and implement new and innovative ways of addressing the challenges that researchers and Arctic inhabitants identify. The question is how education systems can develop these capacities (Larsen, et al. 2010; 2014).

The opening of new seaways in the Arctic raises the necessity for innovative and sustainable infrastructure; similarly, the receding cryosphere incurs challenges on land-based transport and other infrastructure, e.g. thawing permafrost (Arctic Council, 2009). As this chapter concerns social issues, it is mostly dealing with the Arctic. But when relevant, for instance when discussing industrial legacy, it also includes Antarctica.

2. Societal Relevance

The research proposed in this plan helps address knowledge gaps around how to enable the economic, social, and cultural prosperity of Arctic communities. Despite efforts to revive Indigenous cultures and languages, many are still under stress across the Arctic. More knowledge is needed to ensure that cultural vitality is enhanced. The ability of governance institutions to provide for soft security (food, water, energy) for Arctic citizens in an age of rapid change is also a matter of concern (Arctic Council, 2016).

The challenges many Arctic communities face in the transition to a less carbon dependent future is particularly acute compared to cities and settlements in the south, due to the long transportation routes for goods, greater heating needs, etc. At the same time, it is necessary to understand how a fair share of the burden tied to this transition can be determined (Skjöld, et al. 2019). There is thus a need for more innovations and knowledge about solutions for a just transition to low carbon energy solutions.

Additional examples of societal challenges this research need intends to address include:

- Developing stronger education systems that integrate western scientific knowledge and traditional knowledge,
- Understanding the relationship between improved well-being and quality of life and increased self-determination and Indigenous participation in regional and local governance,
- Developing new indicators for well-being and sustainable development in the Arctic to complement the UN-SDGs relevant to this Research Need (Figure 1), and
- Creating new regional economic development models that ensure local sustainable value creation and well-being from any increased industrial activity.

3. Research Questions

Key Question 4.1. An infrastructure plan in support of sustainable community development

Infrastructures, in the context of this document, are the basic physical structures needed for the operation of a society, and include such structures as roads, airports, harbours (transportation infrastructure) as well as the power grid, water supply and sewer systems (supply infrastructure), buildings and housing, telecommunication structures and navigational aids, as well as service and health infrastructures. Arctic communities are isolated and require a high degree of independence in terms of operating and maintaining infrastructure (Schweitzer, et al. 2017). Outside the European Arctic there is typically no or a seasonally limited regional road network, and most communities rely heavily on air or sea transport, and thus depend on airstrips, helipads, and harbour infrastructure. In the Barents region the problem is rather the lack of horizontal intra-regional transportation networks¹². There is typically no regional power grid and water supply infrastructure. In addition, the pace of climate change in the Arctic creates significant threats:

- Thawing permafrost causes change in mechanical properties of soils, which in turn deteriorates stability and service-life of built infrastructure,
- In mountainous areas, slope destabilisation increases risk of slides, and at sea level, coastal erosion is enhanced by both more open water and thawing of coastal permafrost,
- The extent of Arctic sea ice is decreasing, the sea ice is warmer, thinner, weaker, and there are larger areas of broken ice than before, and
- Climate and environmental conditions are extreme and changing, and standard construction practices are typically not well adapted even to current conditions.

Many Arctic settlements experience challenges due to lack of adequate freshwater resources, accessibility by modern freight ships, stable ground for airstrips, etc. Such deficiencies may in turn slow or hinder infrastructure development; for example, the lack of adequate freshwater supply, may be a reason not to invest in piped water and sewer systems, as such infrastructures are known to increase household water consumption. At the same time, not every Arctic community wants infrastructure development, such as road connections to other villages and towns (Schweitzer and Povoroznyuk, 2019).

On this basis, we recommend supporting the following infrastructure research activities aimed at growing prosperity in Arctic communities:

- Understanding the complex interaction of adaptation choices in Arctic communities, where solutions to one problem may cause recession with respect to others. This includes identifying building types and construction methods better suited to Arctic environments,
- Exploring how to combine use of the best available technology with local involvement and capacity building to promote local ownership of solutions and create a feeling of responsibility for operation and maintenance, and
- Developing mechanisms for (i) mapping infrastructure barriers for business opportunities; (ii) linking infrastructure development to socioeconomic and physical well-being; and (iii) base policy and governance decisions regarding infrastructure development on community costs and benefits.



Photo: Peter Prokosch

12 Barents Regional Transportation Plan



Key Question 4.2. National and sub-national governance challenges in the Arctic Regions

The Arctic is governed by numerous institutional arrangements at multiple scales, from local municipal councils to international treaties. Still, there are some general characteristics that distinguish them: the distances are vast, and the communities are small, and even the local level of government might cover areas vastly greater than nation-states in the south. In this section we understand governance as the political systems at the national, regional, and local level that undertake public decision-making. Many governance institutions in the Arctic are influenced or run by Indigenous Peoples with their own languages and cultures. But the relatively small size of most communities and a colonial history implies a marginal position of many Arctic authorities in relation to the national state. This creates power asymmetries and affects northern peoples' opportunities to be represented and get their interests on political agendas. There has been a trend in the last decades of increasing devolution of power and increased autonomy at a regional level (e.g., Greenland, Nunavut, Finnmark). The increased self-determination brought about by legal empowerment of Indigenous Peoples is altering governance institutions at all scales. The establishment of separate political institutions for Indigenous Peoples has also led to overlapping governance structures. This can strain the capacity of inhabitants to participate in political processes as well as their economic resources for engagement (Larsen and Fondahl, 2014).

The rapid changes brought about by climate change, increased industrial activities, migration and urbanisation pose extraordi-

nary challenges for governance at all scales in the Arctic. While the expectations of economic growth in the Arctic driven by resource extractive industries (petroleum, etc.) has not been fully met, the tourism industry is increasing rapidly at the poles, with profound impacts on local communities (Stepien, et al. 2014).

Arctic communities are also affected by the UN-SDGs and the expected transition to sustainability and carbon neutrality. The geography of Arctic communities, and their climate and economic resource base pose a tremendous challenge in that respect. It is thus important to keep in mind that "the hallmark of just transition is that it recognises and accommodates the needs of local stakeholders (in the Arctic, importantly the local inhabitants) and ecosystems" (Sköld, et al. 2019).

Based on the above-mentioned challenges, we recommend the following research priorities:

- Increased knowledge and institutional innovations to ensure that governance systems foster greater participation and engagement while growing self-determination and legal empowerment (Larsen and Fondahl, 2014),
- More knowledge about how the economic benefits from increased industrial activity can be combined with cultural and environmental protection, and how this challenge can be managed in a way that also ensures local participation, and
- More knowledge about how local and regional governance systems can enable just transition, in particular, by how it can engage local inhabitants and industries. (Sköld, et al. 2019).



Photo: Ronald JW Visser

Key Question 4.3. Economic innovations for sustainable development of Arctic communities

Arctic local economies have until recently been based on a few industries only, often within natural resource extraction, particularly petroleum, mineral extraction, and fisheries. This exposes them and makes them vulnerable to global changes in demand, particularly anticipating a future circular economy, requesting less of these resources. At the same time new service- and tech-based industries are of increasing importance for local economies. Tourism activities are growing rapidly in several Arctic regions, providing economic development opportunities, but also threatening fragile ecosystems and local cultures (e.g. Arctic Council, 2016). After a temporary drop in mineral prices after the financial crisis in 2008, the demand for minerals has again shot upwards, and there is yet again increasing extractive industry activity in the circumpolar North. Retreating sea ice is allowing for increased maritime traffic in the Arctic Ocean, with hitherto unknown consequences for local communities. The retreating sea ice is hampering traditional hunting practices, which again affect the availability of traditional foods in some communities (Hovelsrud, et al. 2017; RN 3). Subsistence activities constitute an important part of local economies, even though the importance varies greatly between regions. Climate- and ecosystem change does also have impacts on the relationship between subsistence activities and local industrial activity (Statistics Norway, 2015).

There is a lack of adequate indicators for measuring well-being and local economic development in the Arctic, taking their multi-level connectivity with global trends and changes into consideration. The UN-SDGs do not recognise the mix of industrial and traditional economic activities found in many Arctic regions (Sköld, et al. 2019).

On this basis, we recommend supporting the following research activities aimed at growing prosperity in communities in the Arctic:

- More knowledge about how economic activity can be sustained in peripheral Arctic communities and how it can contribute to welfare and desired demographic development,
- A better understanding about how the need for increased economic activity can be met while at the same time balancing the benefits of such development against its negative impacts, and for new business models that ensures sustainable local value creation from the increased activity,
- More knowledge about how the increased maritime activity affects local communities and how it can be utilised for sustainable local value creation,
- A better understanding of the interdependency between traditional subsistence activities and industrial activity – particularly with respect to the decline in food security caused by diminishing availability of traditional food, and how climate change affects this interdependency, and
- Develop a set of indicators that are representative of the Arctic, in order to understand and monitor the socio-economic developments.



Key Question 4.4. Education as a tool to expand the capacity of Arctic residents to respond to changes

The role of education and knowledge transfer in supporting adaptation and sustainability in the face of rapid social, ecological, economic, and environmental changes have not been well explored. This is as urgent in the Arctic as elsewhere. In its SDG No. 4, the United Nations calls education "the key that will allow many other SDGs to be achieved". Moreover, many Arctic communities, especially the most rural and remote, are facing a loss of human capital, with the most educated youth leaving for southern or more urban areas (Hirshberg and Petrov, 2015). State-run education systems across the circumpolar north are not meeting the needs of many Arctic residents, especially Indigenous youth and those in the most remote and rural places. High dropout rates are a major concern in the Arctic both from secondary schools and higher education institutions, and especially among Indigenous students (Beaton, et al. 2019). There are persistent gaps in education outcomes across the north, including between the Arctic and southern regions, urban/industrial Arctic territories and the rest of the Arctic, between Indigenous and non-Indigenous populations, and in terms of the growing gender gap. Across most of the Arctic, but especially in rural and remote communities, girls and women are outperforming boys and men on standardised measures of achievement and graduation from secondary and postsecondary institutions (Beaton, et al. 2019).

The high mobility of human capital in the Arctic is a considerable challenge; across the North communities experience "brain drain" (loss of educated residents), "brain turnover" (intensive inand out-migration of human capital), and "brain waves" (surges and dips of human capital associated with the boom-and-bust economic cycles) (Hirshberg and Petrov, 2015). We cannot assume that, without intentional attention to building needed skills among community members, as defined by those communities and not by outsiders, there will be a cadre of people ready to take on critical roles, whether governance, research, subsistence, social services or perhaps solving problems we cannot foresee yet.

The above-mentioned challenges and knowledge gaps call for the following research priorities:

- Increase knowledge about what kinds of human capacity development can better enable Arctic residents to develop, implement and operate economic, social and governance structures that move their communities toward greater well-being,
- Better understand why youth are dropping out from formal schooling, especially Indigenous students, and better understand why young people choose to leave northern communities and what encourages them to return,
- Better understand why Indigenous youth and young men are not succeeding in our formal institutions, and how we can transform the systems to better meet their needs, and
- Develop more effective education systems in the Arctic which must be based on systemic integration of western science knowledge and traditional (local and Indigenous) knowledge as many scholars and local Indigenous leaders in the Arctic argue.



Key Question 4.5. Learning from the past for a socio-economically balanced and gender-equal development of the Polar Regions

The task of governing the Polar Regions towards a socio-economically balanced and gender-equal future, without re-generating problems associated with colonisation and boom and bust economies, requires consideration of experiences from history, the role of legacies from the past in the Polar Regions in the present and development of new methodological and theoretical tools that allow to capture Arctic processes across temporal and spatial scales. In order to deal with the challenge of attaining sustainability in the Arctic, there is a need to understand the linkages between the past, present and future, in memory and narrative as well as materially. A key requirement is interdisciplinary research on the long-term development of large-scale extractive and other industries in the Polar Regions, and their consequences for environments and communities (Avango, et al. 2013). The Arctic and Antarctic bear the footprints of several boom and bust cycles of large-scale natural resource extraction, conducted by actors from outside. As an example, in the Arctic, European companies hunted and processed whales from the early 17th century at Svalbard (Hacquebord and Avango, 2009) and in the open seas off Greenland. The 20th century has seen the growth of oil and gas extraction.

The material and immaterial footprints of past resource extraction make up an important, yet poorly understood and therefore underestimated, component of cumulative impacts in resource rich regions in the Polar Areas.

Thus, the following research needs should be addressed to further community prosperity in the Polar Regions:

- Understand and assess cumulative impacts of present industrial activities and the role of material and immaterial legacies from the past that linger on as imprints in the physical and cultural landscape in both the Arctic and Antarctic,
- The industrial histories hold a great, yet largely untapped possibility for exploring the dynamics of resource booms in the Arctic and Antarctic. Given their relatively short lifetime, there is a need to get a better understanding of the extent to which extraction should be seen as a foundation for sustainable community development in the Arctic in the future,
- A third field of inquiry with large potential for improving the ability to govern new economic activities in the Arctic and Antarctic, concerns the history of environmental and social impacts of resource extraction. How did the different extractive industries change ecosystems and landscapes that make up the baseline of today? What legacies from the past linger on in the present, in terms of industrial debris, toxic waste, transformed landscapes and ecosystems and of difficult memories? And
- A complete mapping and understanding of the legacies from past extraction in the Arctic would greatly improve our ability to build more holistic and inclusive assessments of cumulative environmental and social impacts of new economic activities. This research requires multi- and interdisciplinary research collaboration, bringing together archaeologists, historians, anthropologists, geographers, and political scientists as well as climate researchers, hydrologists and ecologists, to work in close collaboration with stake- and right-holders.



Key Question 4.6. The demography of the future Arctic population

All Arctic regions are in economically and demographically advanced countries but differ considerably in population size, growth rates, and settlements structure as well as in fertility, epidemiological, and migration patterns (Heleniak, 2015). Indigenous and non-Indigenous populations also differ significantly in terms of demographics. Arctic Indigenous populations tend to have higher birth and death rates, larger families, younger age structures, and reside more in rural areas.

The size of the Arctic population¹³ has stabilised but there are large regional disparities in growth rates with continued population decline in the Russian Arctic and increases in Alaska, Iceland, and the Canadian Arctic (Heleniak, et al. 2020). The trend of urbanisation and faster growth in larger settlements continues among the highly mobile Arctic populations. Arctic regions typically have rather high male sex ratios compared to other populations. These high male sex ratios are more pronounced in smaller settlements as, in some areas, women tend to move to larger settlements or out of the Arctic in greater numbers than males.

Projections of the future size, composition, and distribution of the populations of the Arctic states and regions are useful for policy-makers in planning (Heleniak, 2020). Global population

size is forecasted to continue increasing from the current total of 7.4 billion to 10 billion in 2055. The population of the Arctic, as defined above, is projected to support an increase of just 1 percent. However, there will be considerable variation in growth rates among Arctic regions. Given the above-mentioned trends and issues, there is a need for the following research activities:

- Combine trends from natural and social science to better understand the future size, composition, and spatial distribution of the population of the Arctic,
- The population projections referred to above are the product of standard population projections. While these are useful and often used for planning, we need methodologies that take exogenous or non-demographic factors, such as climate change, into account,
- As small communities are sensitive to population changes, we need to better understand migration flows, including international ones, from and to Arctic communities, and
- In the end, demographic data need to be combined with other social, cultural, and economic factors, as well as with the aspiration of young people, to better understand the attractiveness of Arctic communities.

¹³ We are using here a spatial definition of the Arctic as proposed in the Arctic Human Development Report (Larsen and Fondahl, 2014).

Key Question 4.7. Cultural vitality¹⁴ for prosperity in the Arctic

One of the results of the first Arctic Human Development Report was that "resilient cultures" and "modernity" do not have to contradict each other (AHDR, 2004). Contemporary Arctic residents have long known that the challenge is not to choose between "modernity" and "unchanging tradition," but to find a liveable combination of the two (Csonka and Schweitzer, 2004). The second AHDR found an ambiguous situation with, on the one hand, a trend toward revitalisation of Indigenous languages and cultures and the strengthening of northern identities. On the other hand, there is the perception of a growing "threat" to circumpolar cultures and identities through modernisation, globalisation and (urban) migration (Schweitzer, et al. 2014).

Apart from the above-mentioned trend toward cultural and linguistic revitalisation, there is increased Indigenous participation in academic discourses. Emerging northern identities and Arctic regional perspectives are not limited to Indigenous Peoples, as "Arctic culture" has become a trademark from Greenland to Iceland and northern Fennoscandia. Still, enormous differences remain within the Arctic regarding the social prestige of northern cultures and identities. Cultural and social marginalisation of Indigenous and mixed groups, as well as forms of racism remain a reality in some areas. If we talk about cultural vitality, cultural processes cannot be limited to the maintenance and retention of existing elements and characteristics of the culture. The notion of cultural autonomy - defined as "opportunities and resources necessary for a population with a distinct culture to pursue what it deems adequate for its cultural well-being and maintenance of its group identity" - entails not only that the wider society does not prevent a group from practicing culture but also that cultural innovation is a necessary prerequisite for cultural vitality.

Two dimensions of formal and informal northern economies seem to be particularly relevant in the context of culture. On the one hand, there is evidence that subsistence activities, which are never purely economic in scope, can contribute to cultural well-being and vitality. On the other hand, tourism, which is increasing in many Arctic Regions, can be a showcase for northern cultures, while the accompanying commercialisation of cultural items and practices can have negative impacts on cultural vitality. Gender, age, and ethnicity are important aspects and parameters of Arctic livelihoods. Of these, indigeneity, respectively non-indigeneity, have received most attention in the literature. Gender, however, has not been sufficiently investigated through the lens of Arctic cultures and identities. While we know that traditional circumpolar cultures were characterised by gender-specific realms of activities, we know too little about the gender dimensions of contemporary cultural practices. Thus, more gender-sensitive research is needed. Likewise, the rapid changes of a globalised world are having and will have profound impacts on the younger generation (and future generations); thus, it is critical to understand the hopes and aspirations of the Arctic youth.

Thus, we recommend the following research activities:

- Understand the role of cultural revitalisation vs. cultural innovation in enabling prosperity in the Arctic,
- Explore the intersectionality of Arctic identities and cultural vitality to ensure that all groups and individuals have the opportunity of cultural expression, and
- Develop indicators of cultural vitality and/or autonomy that capture not only preservation but innovation as well, and include commercial and non-commercial aspects of culture.



Photo: Diane Erceg

¹⁴ For a discussion of "cultural vitality" versus "cultural well-being" see the Arctic Social Indicators report (Larsen, et al. 2010).



Photo: Ida Kinner

4. Resource Requirements

For all the above-mentioned research needs, a co-production of knowledge approach should be sought, to ensure salience, relevance and credibility of the results. This requires the involvement of stake- and right-holders in the development and execution of research projects and application of relevant participatory methods. In addition, in order to respond to the research needs identified above, international cooperation is needed for securing the following resources:

- Resolution mechanism for conflicting data management regimes. The role of new technologies in Arctic research deserves to be contemplated. The increased online connectivity of Arctic regions will enable new forms of "remote sensing" in the social sciences and humanities of the Arctic. Data ownership, data sharing, privacy issues, etc., will thereby become even more prominent than they are now. International cooperation, which is an absolute necessity within Arctic science, can mean that different data handling regimes collide. There is an obvious role for European politics in making sure that these conflicting regimes do not impede Arctic research, while at the same time ensuring privacy rights of inhabitants of the Arctic, and
- Access to the Russian Arctic. Given that more than half of the population of the Arctic (and half of the region's land mass), are within the Russian Federation, it is crucial to have research access to the Russian Arctic. Most coastal settlements within the Russian Arctic are administratively located within the so-called "border zone", areas where Russian and foreign citizens need special permission to enter, which makes research access even more difficult than in other parts of the Russian Federation. Reciprocal access is stated by the recent Arctic Council agreement on scientific cooperation, but must become operational and open to scientists from non-Arctic Council countries.