

CHAPTER 9: THE ARCTIC INFRASTRUCTURE AND REGULATORY NEEDS

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Innovative Industries and the Future Arctic Economy

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Starting from reindeer herding, fishing, trade in furs, and whale hunting, for example, the Arctic trade and industry has a long history. The Arctic also has great potential for new economic development. Its real worth is not limited to the natural resources but is to be found in the natural environment and the people who live in the circumpolar North. Yet, the Arctic and nearby northern areas have often been seen as a resource base where raw materials are extracted from, and where products with a low degree of processing are shipped out. These activities often conflict with other land uses, for example the traditional livelihoods of indigenous communities. The lion's share of economic benefits from these activities will often flow out of the Arctic. While local communities face pollution, health risks, and the loss of traditional livelihoods, the wealth generated in their homelands largely ends up elsewhere. Many communities in the Arctic depend on a limited number of income streams, for example mining or tourism. In addition to a low population density and limited infrastructures, the lack of economic opportunities creates pressure for residents of Arctic communities, many of which face demographic challenges.

While traditional livelihoods continue to remain relevant, their iconic status does not mean that these activities would be economically dominant. Many Arctic populated areas are modern and urbanized, offering economic opportunities. Among the key challenges are local access to higher education and a limited availability of skilled workers. Furthermore, the traditional livelihoods and industrial production that have played a culturally important role in the area for a long time are not static. The Arctic is not a museum. Also, traditional livelihoods are constantly evolving and updating their processes. At least in the Nordic Arctic, reindeer herders utilize not only snowmobiles but also GPS technology, drones and even helicopters.

Arctic tourism has suffered from the impact of the COVID-19 pandemic, from increasing inflation, and in specific areas where Russian represented a high

percentage of tourists, from the consequences of Russia's invasion of Ukraine. While recent years have thus highlighted the risks related to dependency on industry sensitive to economic fluctuation, the rapid post-pandemic recovery hints that the growth witnessed until the end of 2019 may return. The development of the field that already has decades if not centuries long history in many Arctic destinations has been based on new types of products, services, and experiences (ranging from the commercialization of Aurora Borealis to large-scale cruise shipping in the Arctic) as well as on the emergence of new markets (increased number of tourists from China, for example), and improved infrastructures and accessibility (new routes and investments in airports, hotel capacity). Yet, the increased number of visitors and new destinations have brought forth challenges related to land use, environmental degradation, mass tourism and, for example, authenticity, especially in cases where tourism actors make references to or utilize local indigenous cultures.

The Arctic is a geographically vast and socially and economically heterogenous area. Therefore, the industries located in the Arctic sometimes represents different extremes. While northern Sweden is the home of the most automatized mining processes in the world and globally known for energy efficient and low-carbon steel-making, elsewhere in the Arctic, in particular in the Russian Arctic, extractive and metal industries have difficulties in meeting international environmental standards. Resource extraction contributes to climate change. Climate change makes parts of the Arctic more accessible (although melting permafrost directly impacts Arctic infrastructures), thus facilitating more extractive activities. Measures to combat climate change, for example, the increased reliance on electric vehicles, increase demand for raw materials that may be found in the Arctic, too.

Both tourism and the transport of extracted raw materials and hydrocarbons, but also the need to supply remote communities, for example in Greenland, highlight the relevance of the maritime and aviation sectors. Environmental pollution from ships and aircraft remains a challenge. Efforts are currently underway both in Canada and in Northern Europe to establish opportunities for electric short-distance aircraft that could be powered by renewable energy and that could improve connections between Arctic communities. The Arctic thus have many roles to play in the green transformation ranging from

renewable energy production and mining for required materials to hydrogen and ammonia production.

Some Arctic countries are forerunners in digitalization. Besides the availability of public and private digital services and relatively good access to broadband in the Nordics, for example, the role that Arctic region could play in the global digital transformation has recently attracted attention. The northward shift of the data center industry (toward the cold climate and cheap electricity), started in North America, is now mirrored in the European Arctic. Meanwhile, there are also projects envisioning trans-Arctic submarine cables that could decrease network latency and bring robustness to global cable network, and Low Earth Orbiting satellite projects promising fast internet even to remote Arctic communities. In addition, the space industry is gaining importance in parts of the Arctic.

Another aspect of Arctic economies, that currently remains a work in progress, is the transition to a circular economy which provides opportunities to create more value locally. Local resources can be used more completely, potentially resulting in additional income. This transition can play an important role for the sustainable development of the region. However, the utilization of industrial size streams is often feasible only if the source and the user are in proximity. Therefore, long distance typical for the Arctic may cause challenges.

The future of sustainable development in the Arctic is connected to the involvement of local communities and regional actors. Local stakeholders, including indigenous communities, will have to be heard and land-use conflicts will have to be resolved in fair manners, based on the rule of law.

For more on this, read...

Heininen L, H Exner-Pirot, and J Plouffe, (2017) *Arctic Yearbook 2017: Change and Innovation in the Arctic*. https://issuu.com/arcticportal/docs/ay17_final_pdf_for_arctic_portal_oc.

Varjanot A and J Saarinen, 'After glaciers? Towards post-Arctic tourism' (2021) 91 *Annals of Tourism Research* <https://doi.org/10.1016/j.annals.2021.103205>