



UMEÅ UNIVERSITY

ARCTIC SUSTAINABILITY TRANSFORMATION

WHAT IS IT, WHAT CAN IT BE, AND WHAT DOES IT NEED TO BE?



Arctic Sustainability Transformation 2023

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Arctic sustainability transformation

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Introduction



Arctic Sustainability Transformation – What is it, what can it be, and what does it need to be?

We have entered a new phase in how we consider and seek to govern the fate of the planet in these increasingly unpredictable times. Everywhere in the world, relationships within societies and environments, and between humans and nature, are rapidly changing. The notion of “sustainability transformation” generally captures both the challenges of these disrupted relations and profound solutions to restore them at a global scale, but the Arctic in particular is seen either as a hotspot for hope and possibilities, or as a social and ecological flashpoint under increasing pressure of resource use. What, then, is Arctic sustainability transformation? And what can or does it need to be?

Over the last few decades, sustainability has been a ubiquitous call to arms, focusing on ways to make natural resources last longer and be available for future generations, and to make resource distribution fairer. The understanding that development and economic growth could be combined with long-term and sustained yields of natural resource use entered the scene of global environmental governance with the United Nations Brundtland Commission’s report in 1987. The 2015 Sustainable Development Goals established concrete targets for equal and sustainable access to resources in a range of societal areas, such as human health, functioning ecosystems, and education. Over the last three decades, the objectives of sustainable development have aimed to promote balanced and integrated economic growth, social development, and environmental protection. As a result, eager national agendas and municipal action plans for sustainability were developed (or the need for them was willfully ignored).

Now, however, the goals of making resources last longer and distributing them equally is not considered enough, and the new call to arms is for “transformation”, which can be understood in two different ways. Basically, transformation can be viewed as either an (ideally) ongoing, fundamental change toward sustainability in all aspects of society, or as a new and increasingly unpredictable reality in which we and all other beings on this planet find ourselves.

In its first interpretation, the word “transformation” is used without reference to a specific end state or solution, and here it is often understood normatively, describing ongoing and deep changes in societies in order to make their relationships with environments less damaging, less exploitative, and thus radically different from their current state. These changes are not about improvement and development of what is already there, but about taking a new direction, a change of means and attitudes. In the face of a crisis, this transformation is commonly understood as a fundamental change in structures, conditions, and functions.

The second interpretation considers the word “transformation” to refer to the fact that societies and environments have already been fundamentally altered because of climate change and ecological crises brought on by industrial activities. From this perspective, transformation is viewed as a new reality of radically changing, often unpredictable conditions resulting from profoundly altered forms and functions of human and animal life.

We have set out to explore what sustainability transformation means in various Arctic regions, sectors, and cultures. Both the notions of sustainability and of transformation have commonly been accused of denoting universalized ideas that disregard historical, cultural, and geographical particularities. Without attempting to offer one definitive answer, this booklet therefore brings together reflective texts from researchers actively working with Arctic societies and in Arctic environments.

As editors of this booklet, we have placed the contributions under three themes that were not necessarily intended by the authors, and these themes should not be considered separate boxes. The order of the texts is our attempt to guide the reader through these collective insights, and to offer entry points for exploring further the meaning of transformation. In the section **Reflections on Transformation**, the texts engage critically with the ways current research on transformative social and environmental change is conducted in the Arctic. These texts also reflect on the frameworks of scientific and political endeavors for describing, analyzing, and proposing ways for governing transformation. In the second section, **Instances of Transformation**, we find concrete examples of attempts to transform existing structures and practices. The texts in this section refer to sector-specific transitions seeking to enable deeper transformation or exemplify how Arctic Indigenous livelihoods and other cultural practices are transformed. In the third section, **Dimensions of Transformation**, the texts highlight spatial and temporal dimensions of transformation, as well as the groups of actors that in various ways partake, shape or are affected by sustainability transformation.

This booklet is a result of our collaboration within the Arctic Five Chair initiative and has come to form a central part of our work of reflecting on Arctic sustainability transformations. The Arctic Five is a collaboration among five Nordic universities, namely Luleå University of Technology and Umeå University in Sweden, UiT The Arctic University of Norway, and the University of Lapland and University of Oulu in Finland. Our work on Arctic transformations is conducted within the Future Challenges in the Nordics program and the research project Peripheral Visions, jointly funded by the Society of Swedish Literature in Finland, Riksbankens Jubileumsfond, the Finnish Cultural Foundation, the Swedish Cultural Foundation in Finland, Stiftelsen Brita Maria Renlunds Minne, and the Kamprad Family Foundation for Entrepreneurship, Research & Charity.

Many of the researchers who kindly agreed to join this booklet

participated in our panel at the Arctic Science Summit held in Vienna in February 2023. In addition to these researchers, we have also invited colleagues who have crossed our paths in our ongoing research on transformations in Arctic regions. Their diverse scholarly backgrounds reflect the complexity of sustainability transformation – a complexity that mirrors both the actual challenges societies face and the diversity of scientific disciplines engaging with Arctic transformations.

We hope that the perspectives offered on the following pages open new ways of thinking – not only about what Arctic sustainability transformation currently is, but what it can be and what it needs to be to ensure that transformations are truly sustainable.

Janina Priebe, Arctic Five Chair in Environmental History at Umeå University, 2022–2024

With Hanna Lempinen, University of Lapland, and Hanna Vikström, Luleå University of Technology

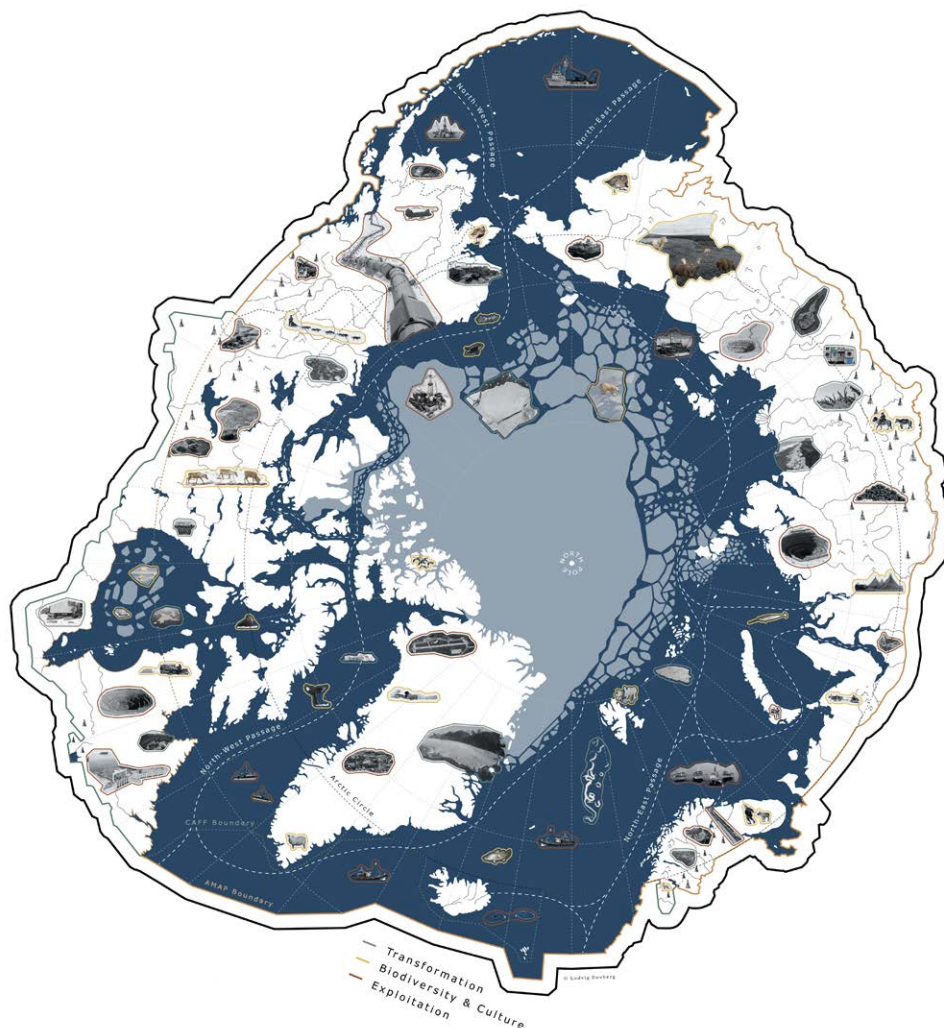


Illustration "Circum Arctic perspective" by Ludvig Douberg



Reflections on transformation



Is sustainable development an adequate framework for protecting the Arctic in the Anthropocene?

Ana Manero-Salvador
University Carlos III of Madrid

Sustainable development is based on the interweaving of three pillars: the environment, economic growth and social development. Achieving a balance among the three is not easy, especially in a region as fragile and threatened as the Arctic. The effects of climate change are dramatic in the Arctic, making the establishment of environmental protection instruments a major and unavoidable challenge.

Sustainable development has been present in the Arctic almost since the concept was first formulated. The Arctic Council (and its antecedents) made sustainable development its own, and this concept became a transcendental axis of the progressive economic exploitation of the Arctic. The Arctic Environmental Protection Strategy envisaged a series of objectives and principles, while identifying the most serious problems and what should be the priorities for Arctic environmental protection. Aware that the Arctic is an environmentally exceptional territory, endowed with great biodiversity and of essential importance to the regulation of the planet's climate, the Strategy recognized the importance of sustainable development in the region, stating: "The use of natural resources is an important activity of Arctic nations. Therefore, this Strategy should allow for sustainable economic development in the north so that such development does not have unacceptable ecological or cultural impacts."

The latest Sustainable Development Working Group's Strategic Framework sets out a number of priorities based on sustainable development, thus, sustainable development is proposed to form the backbone of the Arctic Council's actions in the complex situation the Arctic currently faces. This framework was formulated in 2017, two years after adoption of the 2030 Agenda at the United Nations, and, as can be seen at a glance, there is no correlation between the Sustainable Development Goals and the Strategic Framework's priorities. At most it can be noted that the Working Group recognizes as an opportunity the pre-eminence and recognition of the Sustainable Development Goals, but in no case is there an alignment with them.

However, it is worth considering (as various authors have done) whether sustainability is the ideal framework for halting the environmental deterioration of the Arctic (and the world) in consideration of the transformations caused by the Anthropocene. For example, Robinson says that "each successive rhe-

torical endorsement of "sustainable development" emphasizes more immediate human needs and less the sustainability of the environmental system." Kotzé has also pointed out that the 2030 Agenda has a clear anthropocentric foundation, which is "an unfortunate situation that reinforces the anthropocentrism of [International Environmental Law]." Sustainable Development is "based on human development, progress and the improvement of the human condition... while ignoring the critical need to respect the integrity of the Earth system and ecological limits."

Therefore, alternatives must be sought, such as an Arctic Treaty that would reformulate the rules based on ecological integrity (for instance, as Bridgewater has stated, there could be an international grundnorm to assess the adequacy of states' conduct to norms), or consider a new regulatory paradigm (such as Earth law system/Lex Anthropocenae) based on global environmental problems.

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An ethical and fair future for the Arctic: reflections on the climate crisis from academia

Anna Soer
University of Ottawa

The term “Anthropocene” – the age of human impact upon all aspects of the global sphere – doesn’t quite catch the fine nuances and dynamics occurring in the Arctic. The “Anthropocene” gives however much needed highlight to the anthropogenic nature of global pollution causing the climate crisis. The term nevertheless leaves to one side the responsibilities about global pollution: not everyone pollutes the same amount nor the same way, and this matter of climate justice encompasses both the human and the more-than-human. While it is generally preferable to avoid victimization discourses, the Arctic has nonetheless been a victim of colonial and capitalist destruction. Within the field of Arctic Studies, there are innumerable ways to approach the subject, from environmental history to biology to international and regional policy to (human) geography. What all of these approaches have in common is that they all bring specificities and knowledges to the table for a common goal, that of building a resilient and fair future. I aim to frame my research and understanding according to this aspect (that is, academia’s focus on climate change and the Arctic) of the profound changes brought by the climate crisis: disciplinary borders will never allow knowledge production in the Arctic to envision a resilient and fair future. Arctic transformations go beyond the shackles of the natural sciences, social sciences, and the humanities, and are instead articulated at the intersections of fields and realms of knowledges. Crossing artificial borders – including the bordering of Western academia away from other realms – gives life and depth to our collective endeavour in understanding what is happening in the Arctic. Coming to terms with the fallacy of disciplinary borders and with the conceptual limits of the Anthropocene, these profound climatic and biological changes have also brought forward the need not only for collective research, but also for more meaningful engagement with ethics. The actors or agents who have a seat at the table and who participate in research and agenda-setting are key for the continuation of Arctic Studies and the region as a whole. Working meaningfully with Indigenous knowledge stemming from first-hand, collective, and generational lived experiences and analysis requires a re-evaluation of working relationships and a de-centring of hegemonic knowledge production stemming from non-Arctic researchers and non-Arctic (and Western) research institutions. While I dispute that there are capacity challenges in the Arctic – the work of the many Indigenous organizations, from cross-border cooperation to Indigenous peoples and Indigenous

women’s rights, is beyond commendable – addressing structural challenges such as difficult access to (higher) education is a priority. Arctic transformations are not mere graphs or numbers on sheets of paper. They are the lived realities of 4 million people, 10% of whom are Indigenous. From permafrost thawing to loss of biodiversity, from the housing crisis to the wellbeing crisis, from limited educational resources to the high price of food, promoting locally-produced knowledge is central to establishing relevant agendas both in policy drafting and implementation and in research. In a nutshell, here is how I as a researcher in academia reflect upon the Arctic’s profound changes and how these reflections influence my work: the first stage of reflection is meaningful engagement with ethics, the second is understanding dynamical holistic systems in the Arctic and how they operate, and the third – more conceptual – is the framing of a resilient and fair future for both humans and the more-than-human.

Reflections on Arctic transformations in Svalbard

Jasmine Zhang and
René van der Wal
Swedish University of Agricultural
Sciences

The editors of this timely booklet posed us an intriguing and challenging question: how can we think and talk about transformations in relation to sustainable issues in Arctic regions? These issues are particularly relevant to think about in the geographical location of our research area, namely the Norwegian archipelago Svalbard. When considering sustainable transformation in the context of colonial exploitation of natural resources in all Arctic regions, we face the question of legitimacy: to what extent should sustainable transformation reduce human impacts so that there would be justice to human and non-human actors who have 'rights' to their lands? In Svalbard, this question has been given less thought because of Svalbard's status as 'no man's land' before Norwegian sovereignty was established by the Svalbard Treaty in 1925. Nevertheless, the inconsistency and irony still exist. Transformations are going on all the time; yet, how seriously sustainability is engaged with at a fundamental and legitimate level remains an open question.

In the past three years, we have been concerned with questions about how knowledge generated from environmental monitoring and place-based experiences in Svalbard may enhance each other, such that we can better understand and work with environmental changes unfolding. Through the project SVALUR (Understanding resilience and long-term environmental change in the High Arctic: Narrative-based analyses from Svalbard), we have gathered insights from scientists, technicians, tour guides and local residents via in-depth interviews, focus groups and Maptionnaire surveys. An eagle's eye view of our materials leads us to this conclusion: despite the fact that rapid changes are observed and experienced, 'sustainable transformation' remains a concept that people occasionally refer to but have difficulty answering questions about or take actions on.

Reflecting on this observation, we wonder whether it tells us something about Arctic transformation in relation to sustainability issues. While we actively avoided normative framings such as sustainability or climate change, the low presence of sustainable transformation in our materials may point towards several important questions that may be relevant to other Arctic regions and beyond. What kinds of sustainability can we imagine in a place that we have transformed? When environmental changes add to an already-transformed landscape, how do we respond to the sum of the effects in an adequate way so that environmental regulations are not merely political instruments? Finally, what can be done when remote Arctic regions, not least Svalbard with

its unique physical and legal infrastructure, continue to attract different interests and actors to visit and stay? Can Arctic transformations ever be sustainable? And according to whom?

We may not have clear answers to these questions. Arctic transformations are constantly unfolding at different levels, invisible but felt. The storyline of sustainable transformation has real consequences for the work and lives of people in Svalbard, such as energy transitioning to fossil-free sources, and increasing environmental regulation to limit human impacts. While the Norwegian government pushes hard to preserve the wilderness of Svalbard, future research can look into how various endeavours taken in the name of sustainability might or might not have led to transformation away from the current system of consumption and production.

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Transformation as decolonial ceremonies

Ranjan Datta
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I was born and raised in a minority family and communities; my communities, including my family, were displaced from our land and faced racism in every aspect of life. As a minority scholar and as a racialized immigrant scholar in an Indigenous land (generally known as Canada), I learned the meanings of transformation from my decolonial ceremonies about reclaiming who I am and who I need to be. From my 17 year decolonial learning journey with various Indigenous and minority communities from various parts of the world, I learned that transformation is not an event but a lifelong learning process. It is a process of relearning and rethinking who I am as a researcher and who I need to be from the community-engaged and community-led perspectives. The transformation from decolonial perspectives is a form of responsibility for rethinking our research into action and being a change-maker for achieving social justice. The meanings of decolonial transformation are discussed below.

Because many Indigenous and local minority land-based communities' traditional land-based knowledge and practice have been sustainable for years, their traditional practice is science. As academic researchers, we can benefit from learning traditional practices and creating meaningful bridges to the worldviews of communities and scholars. Community Elders and Knowledge-keepers should guide research in a way that respects and honors community knowledge, culture, and practice. In this process, community Elders and Knowledge-keepers are scientists for the community, and their knowledge is scientific knowledge for their community; academic researchers become learners.

Understanding complexities in adaptation and barriers are a form of decolonial transformation. Knowledge varies in many Indigenous and minority land-based communities from land to land, from Elder to Elder, from Knowledge-keeper to Knowledge-keeper, and from generation to generation, and so understanding any challenges from multiple perspectives is a form of transformation.

Engaging in community-based participatory action research is a decolonial form of transformation. The implication of this type of research in decolonization is that I must spend enough time in the community so that it can know who I am as a researcher, and that I learn the community's expectations of my research.

- Engaging the community in research decision-making is also a form of transformation. In my decolonial journey, I learned that the community should be not only engaged throughout our research from the very beginning, but should lead the research.
- Research in decolonial transformation must be considered community capacity building. I learned that community capacity building as self-determination is necessary for reclaiming the meanings of community-engaged research.

Decolonial transformation refers to understanding community needs. It also refers to building solidarity to protect the rights of Indigenous and minority communities and to promote justice, such as advocating Indigenous land-back movements and protecting Indigenous land-water rights, Indigenous language, and culture.

Last but not least important, the decolonial meaning of transformation is to rethink Research as Action, to reclaim research tools for the community to solve its everyday challenges. Rethinking and relearning should be continuous. Decolonial transformation is the responsibility to rethink and relearn who we are and who we need to be.



Instances of transformation



Blending tradition with innovation in Greenlandic hunting practices

Leneisja Jungsberg
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The Arctic is warming at a rate four times as fast as the rest of the world. This warming has resulted in a decline in sea ice, a critical habitat for many marine mammals hunted by the Inuit people. The melting of sea ice has also increased travel and hunting challenges due to thinner and less stable ice. Climate change has altered animal migratory patterns, further complicating hunting efforts. Overall, climate change significantly affects traditional Inuit hunting practices in Northern Greenland, leading to a steady decline in the number of professional hunters over the last decades. The decrease is particularly visible in younger age groups, which is at least partly linked to the fact that the younger generation prefers to pursue education (which among other things paves the way to wage labour) and mainly go leisure hunting in their free time

Greenland's northernmost town is Qaanaaq, which people still describe as the town of hunters and trappers town. Despite climate change, fishing and marine mammal hunting deliver significant income to and direct subsistence for local households. Many professional hunters still hunt in the traditional way, using kayaks and harpoons to catch whales, and can then sell their catches in town via their social network. When they fish halibut, they can sell the fish to the local fish processing plant. In spring, they can sell the fat (mattak is a Greenlandic speciality) from Narwhale to the fish factory. A big share of the meat is consumed locally in the community; however, politicians are looking into the options of processing whale meat at Qaanaaq's fish factory to sell to other parts of Greenland. Although there are fewer professional hunters today than there were 30 years ago, almost all households go out for leisure hunting and fishing and use the catches as a supplement for the household income and diet.

Greenland's government has emphasized the need for its citizens to adapt in order to survive and thrive amidst the impacts of climate change. For instance, the Inuit people have been modifying their hunting practices by utilizing new technologies and techniques like drones. They have also been collaborating with scientists to monitor animal migration patterns and better comprehend the effects of permafrost thaw on infrastructure. The socio-economic effects of permafrost thaw in North Greenland are particularly significant, especially when the thaw poses threats to key infrastructure such as roads or airstrips. Efforts to adapt to climate change in North Greenland will continue to require innovative approaches for sustaining life and working in the changing environment, while also preserving the traditional way of life of the Inuit people.

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Cold transformations: The culture of cold in times of global warming

Matilda Marshall
Umeå University

The imaginary of Sweden as a cold country with Arctic winters is present in both national and international representations of Sweden and Swedish culture. Even though the Arctic region is difficult to define, normally only the most northern part of Sweden is included. The climate differs between south and north parts of the country, which suggest differences of meanings and experiences of cold within Sweden. Nevertheless, how climate change affects the north has ripple effects for the whole country. Rising temperatures challenge previous norms, perceptions, and the ways people live with and manage cold.

While previous research has identified how cold and the lack of cold have affected indigenous lifeways and people and places connected to the tourism industry, less is known about how people in their everyday lives live with, understand, and manage cold, and more precisely, how aspects of cold are enmeshed in everyday life. Departing from this research gap, I wish to explore how climate change has and will affect the culture of cold.

With culture, I refer to the shared norms, perceptions, traditions, routines, etc. within a group of people. The culture of cold could thus be understood as the different ways that people in different times and locations live with cold in their everyday lives, for

example, how people dress, participate in winter outdoor activities, manage indoor temperatures, and store food. My research connects to the increase of research and emerging fields within ice humanities, cryo-history, and Arctic humanities.

For example, I have previously studied food storage practices and how refrigeration has influenced Swedish food culture. In the shift from utilizing natural cold and the surrounding environment (e.g., through ice, cold water and root cellars) towards electrified storage, the food culture has become more dependent on freshness and (artificial) cold. Refrigerators and freezers have an inconspicuous presence in almost every Swedish kitchen and affect the way people think about and manage food. Although the appliances are involved in unsustainable practices associated with climate change – e.g., energy consumption and food waste – they are rarely challenged. Through refrigerators and air-conditioning, cold has become commodified and individualized. The many ways people live with cold and cooling through refrigeration in different times and places is thus cultural.

For my future research, I am interested in how people in Sweden understand and experience cold, how they live with or avoid cold weather, and, more precisely, how cold is integrated into people's daily practices. By ethnographically investigating the presence and absence of cold in people's everyday lives, I want to get closer to how people and their practices are affected by a warmer climate.



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The challenge of “just” Arctic low-carbon energy transitions

Hanna Lempinen
University of Lapland

Humanity is faced with an urgent need to decarbonize its energy systems, economies, and societies. Continued reliance on fossil fuels not only comes with serious environmental, economic and sociocultural impacts, but through its direct contribution to global warming, it also puts the future of the whole planet at risk. The challenges posed by the low-carbon transition vary across different national, political and sociocultural contexts, and in this matter, the heterogeneous Arctic region with its diverse communities and societies is no exception.

As a part of their national and international climate commitments, many states across the broader Arctic have committed to implementing their national low-carbon transitions in a socially just manner. However, both what “just” entails and how justice can be implemented and achieved remain open to political and academic debate. In scholarly literature, energy justice is often understood in terms of fair distribution of benefits and losses and in terms of being heard and included in policy planning and implementation. For these reasons, correctly identifying the vulnerable individuals and groups that are suffering losses, as well as understanding what kind of losses are being experienced, is required for justice to take place – both in the forms of explicitly acknowledging the experienced losses and compensating for or restoring them. However, political and administrative systems often struggle to identify values – and, as a result, losses – that cannot be objectively measured or quantified. A loss of income quite effortlessly translates into monetary terms, but how to even begin to compensate for a loss of a way of life, or for a landscape?

In lived and experienced realities, Arctic energy transitions take diverse forms: as the cessation of local livelihoods dependent on the extraction of fossil fuels, as construction of large-scale renewable energy installations, as new mining sites supplying the materials required to electrify societies and as infrastructure projects and transmissions lines crisscrossing what was left of pristine northern landscapes. In the Arctic context, large-scale renewable energy projects also uncomfortably sit on the long continuum of extracting and utilizing peripheral lands and resources for the needs of the state in the south. Renewable energy projects in the north are not so much a response to the energy needs of the north and northerners themselves, as much they are intended to cater to the needs of global industry and the achievement of states’ climate policy goals.

Of course, the need for a transition towards low-carbon and more sustainable ways of living and being is both real and urgent, even if the benefits of low-carbon policies adopted today will only be visible in the distant future. However, the impacts of climate change are not yet felt in Arctic everyday life in their full force, unlike the local negative consequences of transition policies, which are. Successfully tackling the challenge of implementing more just energy transitions and securing broad societal support for climate policy measures will require a deeper acknowledgement of both the frictions between various aspects of energy justice and the values and meanings that individuals and communities attach to their everyday lives and surroundings. I am striving to push forward these themes in my own scholarly work.

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Anthropological notes on transforming transport infrastructures in Canada

Philipp Budka
University of Vienna

Infrastructure can be understood as a system that enables the functioning of technological objects and things. However, infrastructure is not a purely technical or technological phenomenon. It also includes the social relationships people establish in the course of creating connections and networks to operate technological objects. And this is where anthropology – the study of humans as social and cultural beings who communicate, interact, share beliefs, and transfer knowledge – comes in. In my current research for the European Research Council project InfraNorth, I am exploring how people in the small Subarctic town of Churchill, Canada, engage with transport infrastructures, how people perceive the transforming of transport infrastructures, and the meaning of these transformations for sustaining the community.

As anthropologist, I understand transformation processes as ongoing processes that include both change and continuity. So while transport infrastructures (like the Hudson Bay Railway, Churchill's only overland connection) have been changing through disruption, modernization, and renovation, they have not been replaced by other transport infrastructures (such as airports or roads). The railway continues to be the town's lifeline by transporting people, groceries, (bulky) goods, fuel, and mail at comparatively low costs. Recent geopolitical developments related to the war in Ukraine will bring new changes to transport infrastructures in Churchill. In summer 2022, the governments of Canada and Manitoba agreed to invest up to Can\$147 million to renovate and upgrade the Hudson Bay Railway and the Port of Churchill to develop a new trade corridor. And in spring 2023, it was announced that these investments should also enable the export of resources such as liquefied natural gas, particularly for the European market.

Transport infrastructures do not exist and transform in isolation. The transforming of the Hudson Bay Railway cannot be separated from the transforming of the Town of Churchill and other settlements and communities along its tracks. It can also not be separated from other local transport infrastructures, such as the Port of Churchill, which is the only harbour in the American (Sub)Arctic with a direct link to the North American railway system. And there are also close entanglements with Churchill's airport, which was constructed after the Second World War by the US's and Canada's militaries and which now supports the town's growing tourism industry. These entanglements become particularly visible when transport infrastructures are disrupted, when infrastructures fail. As in 2017, when flooding washed out

several sections of the railway's track bed and people and goods had to be flown in, and the port had to be closed.

The port only exists because of the railway. The Hudson Bay Railway has traditionally been transporting goods, particularly grain from Canada's prairie provinces, to be shipped through the port since the 1930s. At the same time, the railway only exists because of the port. The port provides facilities not only to harbour ships, but also to store and move large amounts of grain and similar goods. It is not surprising at all that the Hudson Bay Railway and the Port of Churchill have been owned, sold, and bought in a bundle. Since 2021, and for the first time in history, both are owned by a consortium of 41 communities along the line. Or to put it another way: local residents now own key parts of the transport infrastructure in Northern Manitoba. These recent developments certainly look like the start of a new and exciting chapter in Churchill's entanglement with transportation and transport infrastructures.

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Batteries for the world?

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Northern Sweden is becoming a hot spot for industries seeking access to clean energy to manufacture so-called green technologies. One example is the establishment of the large battery factory Northvolt, which is currently being built in Skellefteå. It has been argued that Northvolt will decrease fossil fuel emissions and contribute to a sustainable society through the increased use of batteries, powered by local renewable energy sources. Electric cars are decreasing dependence on oil, but are also creating a new dependence on critical materials including lithium, cobalt and graphite that can be extracted in only a few places worldwide.

Supplying materials to resource-intensive battery manufacturers is viewed as an opportunity by the mining industry as demand is projected to increase. Lithium and cobalt are mostly imported and have long been perceived as critical because supply is limited and potentially insecure. The mining industry is eyeing potential deposits across the world. Another critical material for battery manufacturers is graphite. In 2022, China, Mozambique, Brazil and Madagascar accounted for over 90% of the production of the material. Import of such a valuable and critical resource is viewed as a potential risk for industries and states, and there is a narrative that we need to extract such resources domestically instead.

The Swedish north is becoming a hot-spot also for mining industries seeking access to critical metals. An Australian mining company, Talga, has applied for mining permits to establish a graphite mine in Nunasvaara outside of Vittangi, in Norrbotten. Industrial and state actors are encouraging mining – for instance, Northvolt encourages mining locally because it wants to secure its supply, and the Swedish state also views mining as profitable for society and the economy. The graphite mine outside Vittangi could, according to Talga, account for about a fifth of the projected demand for graphite in Europe in 2025. The deposit has been known since 1918, but it only now with the transition to green technologies that there is a sense of urgency in mining it. Locals are protesting because the mine is on contested land – a place that the Samí use for reindeer herding that is close to rivers and sensitive environments.

This is not the first time such global logics or resource extraction have manifested in the Arctic. Resources for cars have been viewed as essential for society and crucial to mine domestically. One example is lead, which was used in gasoline and car batteries until the late 20th century. Access was particularly problematic during the Second World War, and resulted in the opening of a lead mine, Laisvall in Västerbotten. In addition to ore, the mine provided jobs. However, lead is a toxic metal, and a large polluter of the local environment. Mineworkers suffered from numerous health problems, a direct consequence of the toxic environment they worked in, and the area is still polluted.

While it is argued that mining in Sweden is more environmentally sound than in other countries with different environmental legislation, mining has long-lasting effects on the local environment and the locals using the land. I hope to contribute by using a historical approach to achieve new perspectives and understandings about how local resistance and concerns in urban and rural areas can be addressed and considered when and if planning large scale industrial operations, and whether there are feasible alternative pathways.

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Dimensions of transformation



Room for human rights in the Arctic “green transition”?

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In a democracy we uphold the rule of law and human rights because these are core aspects of what defines a democracy. As a concept, the rule of law has been considered one of the key dimensions that determine the quality and good governance of a country. Thus, a democratic state secures protection of minority groups so as to ensure that decisions are not only made for “the greater good”, i.e. rule of the majority on behalf of minorities. The pertinent, specific human rights in the Arctic “green transition” are those protecting Indigenous people’s rights and cultures, who in Scandinavia are the Indigenous Sámi people. As a people, under international law, the Sami have the right to self-determination, the right to protection of their property and culture, and the right to influence natural resource management decisions. The last-named right involves a specific course of action that takes time, despite the urgency and seriousness of the climate change crisis. Processes and protocols need to be followed in decision-making – based on domestic laws and international human rights standards that our states are bound by. History shows, all too well unfortunately, that the Sámi paid a high price for former industrial developments in northern Scandinavia, such as waterpower developments with dams that flooded grazing areas, large mining developments, and modern logging with deforestation that made reindeer herding in these areas almost impossible.

Today, the Scandinavian courts are more willing to apply human rights in relation to Sámi claims that the Swedish Girjas case attests to. The matter concerned exclusive Sámi hunting and fishing rights, and the Girjas community won this case against the State. Here, the Supreme Court declared, among other things, that Sámi customs and customary laws must be considered in applying Swedish laws, in line with the ILO Convention No. 169 concerning Indigenous and Tribal People in Independent Countries of 1989. It must also be noted that Sweden has not ratified this Convention. In the Norwegian Fosen case, the Norwegian Supreme Court, referring to the “green transition”, unanimously held that the permit decisions and expropriations of land for two wind power developments on the Fosen peninsula in Trøndelag County (at the time, part of the largest wind power project in Europe) were unlawful. The Court relied on Article 27 of the United Nations’ International Covenant on Civil and Political Rights of 1966 that protects the right of minorities to enjoy their own culture, with reindeer herding determined to be a cultural practice, declaring that the wind power development would have such a substantial negative effect on the reindeer herding that Article 27 would be violated.

The “green transition” today regards re-industrialization of a sort, requiring lands, extraction of natural resources, and an influx of labour in the areas where Sámi have practiced reindeer herding, hunting, and fishing for thousands of years. Indigenous leaders worldwide, including Sámi politicians, even refer to present-day practices as “green colonialism”, causing a new wave of marginalization and disrespect of Sámi communities. The EU’s determination to accomplish the green transition has led to proposals to fast-track the permitting processes of “green” industries, which implies time-saving by cutting corners. Consultations with and seeking the Free, Prior and Informed Consent (FPIC) from affected Sámi in permitting processes will take time if performed “by the book”, as will appeals of decisions by Sámi and other parties. If the EU does cut these corners, it risks not only violating the human rights of the Sámi people but prolonging the transition itself due to the inevitable litigation.

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Time horizons of transformation – hydropower in Greenland

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Before any change takes place in the present, the timeline for future change is drawn up. My current research looks at large-scale energy infrastructures in Greenland, and as an environmental historian, I am not so much examining the physical or economic parts as much as the ideas that shape the politics, the science, and the business plans long before anything is built.

Greenland is inhabited by a vast majority of Indigenous Greenlandic Inuit. Large-scale energy infrastructures, and the corporate investments that have come with them, have the potential to materialize the hope of political and economic independence from Denmark, the former colonial power. The call for global sustainability provides a further entry point for these interests. As the Arctic cultural scientist Lill Rastad Bjørst wrote, politics and public debates are increasingly about living up to the name of a “green” land. These debates frequently revolve around Greenland’s ability to contribute to global sustainability transformation by providing minerals and materials and possibly capturing carbon dioxide using Greenland’s abundant clean energy, namely hydropower. I approach this current transformation by looking at the historical visions that were tied to hydropower over the past century, even before hydropower stations were built. Corporate actors and economic interests have long played a vital role in building visions in Greenland. Against the background of a changing colonial administration, up until Home Rule and an autonomous Greenlandic government, these visions have, in their respective phases, highlighted goals of economic and cultural development, state revenues, social modernization, and global sustainability. The geographer Marcus Nüsser used the concept of “hydroscares” to describe how both environments and social relations are shaped by technologies, funding, and discourses in connection with the development of hydropower. The scope of the plans and infrastructure that Nüsser studied in the Asian context is not entirely comparable to Greenlandic hydropower; however, a key similarity is the fact that hydropower makes it easy to think about the distant future in a way that goes beyond political and legal terms. Long-term goals of self-sufficiency and economic and political autonomy for Greenland are important prerequisites to decolonization. The goal of global transformation is noble, and possibly critical, to human survival.

Many researchers have pointed out that the long-term visions that hydropower make possible and unlock are tied to corporate and geopolitical visions. As a historian of ideas, I look at how these ideas fit into other agendas (of independence or of

economic and societal development), what plans they fueled, and what changes they stopped. But also, the temporal horizons shaping these visions radically change. What if Arctic transformation has less to do with well-planned, large-scale infrastructures and more to do with sudden changes and communities being ready to handle sudden crises? We live in a time when our sustainability agendas and goals, carefully crafted for decades with a focus on 2050 and beyond, are losing their relevance. We thought that change could be managed just as well as the long-lasting physical infrastructure that provides the technical solution for sustainability. Exploring the history of hydropower in Greenland, and the current effects of climate change, is an opportunity to rethink the time horizons of Arctic sustainability transformation.

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“The goal of global transformation is noble, and possibly critical, to human survival.”



Indigenous and immigrants perspectives on women-led climate change solutions

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Developing women-led climate change solutions is a collaborative process that involves policymakers, community members, scholars, activists, and decolonial, anti-racist feminist educators in a collaborative commitment to secure a sustainable future for all. In my research, I aim to create a Women-led Community Climate Solutions Space that is based on principles of equity, utilizing practices, and fostering community resiliency to climate change, in order to address climate change risk and the vulnerability of women. My research focuses mainly on Indigenous, transnational immigrant, and refugee women. It provides concrete recommendations to policy-makers for creating socially-inclusive climate adaptation policies and practices at local, provincial, and federal levels. My work revolves specifically around three research questions: 1. What does it mean to think of women-led climate change solutions as a source of learning, knowledge, and understanding for Indigenous, transnational immigrant, and refugee communities? 2. How can women-led climate change solutions bring empowerment to Indigenous, transnational immigrants, and the women of refugee communities? 3. How can the knowledge gained be used to identify viable options for applied women-led climate action tools, policies, practices, and plans for a long-term collaborative research initiative that links policy and practice?

Indigenous and racialized immigrant community members have been raising their voices to find the causes of and solutions to climate change. The preliminary findings of this research are that settler colonialism has been affecting Indigenous ways of life, and that everyday practices have been affecting our daily lives and the ecological system. Humans are separated from Land and Land-based practices, and there is also a lack of Land-based education and a monolithic knowledge system to contend with. In addition, colonial history is ongoing through a neo-liberal economic model (an excessive profit-making system) that is based on extractivism, racism, the changing of traditional diets, the imposition of colonial and market-dependent food systems, colonial Land ownership, colonial ways of Governing Land, and a settler monoculture. The promotion of industrial farming implies a lack of consultation between the community and policymakers, the restriction of traditional Indigenous hunting rights, the creation of dams and control of natural water flows, and the transference of Indigenous lands and resources to the province without consultation.

Anti-racist and decolonial scholars and researchers claim that all of these actions are happening through the colonial education system and that Western education/science dominates. There is a knowledge gap between that Western outlook and Indigenous ways of development, relationality and spirituality, and Indigenous meanings of Land, water, fire, rocks, and non-human species. We need to understand and educate others in ways of communicating across knowledge systems, decolonizing epistemologies, Indigenous ways of knowing and understanding Nature and human existence, and values, value judgements, and ethics. To find the solutions to today's climate change and environmental racism and degradation, we need to introduce decolonial education as well as anti-racist and feminist education. Community voices need to be heard, and we need to



rigorously establish community consultations with governments, policy-makers, and multinational corporations, and then follow up on those consultations. Environmental resource management policies need to be changed. Indigenous knowledge must be included in management and mainstream curriculum. We must respect Indigenous Sovereignty. It is important to listen to Indigenous Elders. “Take what you need,” which means we need to reduce consumption. We must respect women’s leadership, caring roles, and women-led solutions to climate change. We need to engage with environmental justice movements, and we also need to think collaboratively for the betterment of the community, environment, and future generations. The crisis of intercultural communication needs to improve through community engagements and the creation of a common platform for transnational solidarity and environmental justice.

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A more-than-human perspective on the transformation of social-ecological systems in the Arctic

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In the era of Arctic resource boom and space-consuming renewable energy development, the human footprint in shaping landscapes becomes visible as a spatial and temporal pattern of the supply, demand and infrastructure connected to energy development. Wind power installations, mines, water dams and power lines are among to the most conspicuous constructions in these energy landscapes. But is there more to these things than meets our eyes?

The diversity of animals that share these landscapes with us perceive the world with a multitude of senses beyond the human. Animals live in their own energy landscapes, where food provides energy, shelter saves energy, and movement and social interactions require energy. Animals do not merely experience their environment, but they also shape and inhabit meaningful worlds that intersect with, but also differ from, our own: a powerline running across the tundra is ablaze with UV light to a reindeer's eye, undetectable to the human vision. The response of reindeer to this phenomenon has not been clarified entirely. However, anthropogenic land use changes clearly influence and re-define relationships between the human and non-human.

That influence is particularly evident in the circum-arctic relationship between herding and hunting societies and Eurasian reindeer / North American caribou. Hunters and herders describe these animals as active participants, both as individuals and as social beings, in shaping human-animal relationships. Reindeer/caribou express their own agency, through their complex species-specific, yet adaptive behaviours originating from their lived experiences and cognition. To understand animal agency, observations by experts who witness animals' experiences, interests and moods are essential. This intimate knowledge is particularly important for hunters whose subsistence depends on a rich understanding of animal ecology and behaviour, and for reindeer herders for their daily work with the reindeer. In those cultures, a rich body of terminology exists to describe the animals' habitus and behaviour. This knowledge is needed to succeed morally and materially as hunter or herder.

For reindeer herders, a functional grazing landscape where the knowledge and practices of the livelihood are applicable and continuously developed contributes to a valued way of life, allowing sustained practices of cultural self-conceptions through their animals. Nature is a home shared by active agents who have interconnected social lives. Power relations influence these cultural expressions between human and non-human actors, but also within the human dimension: for instance, state policies impose borders as barriers on previously fluid reindeer movements. Herders and reindeer may perceive these constructs as arbitrary compared to "borders in nature: rivers, certain mountain chains... We who use the land use the natural borders – it is the reindeer that use the land." Similarly, extractive forms of land use for raw material and energy production change (path)ways of interaction that have worked previously but now are blocked by industrial barriers. These (path)ways are lost to dammed, uncrossable rivers or replaced by motorized transportation of reindeer between seasonal grazing areas, replacing migration on foot through the land, which enables herders to learn from and with the herd. These landscape transformations grow into transgression of cultural practices when animals are bereft their own agency.

The opportunities for animals to live their agency can expose how and why changes in the Arctic can maintain or erode social-ecological systems as functional units. Animal agency is therefore a suitable reference frame for identifying new strategies or adaptations for a shared life between human and non-human beings in a rapidly changing Arctic.

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**“Nature is a home shared
by active agents who have
interconnected social lives.”**



Transforming ecosystem services in Arctic coastal communities

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Arctic coastal communities are a part of co-evolving marine social-ecological systems, which support livelihoods, provide sustenance, and underpin cultural identity. Arctic sustainability transformations cannot occur without detailed information about how climate change is influencing the distribution and abundance of resources on which the region's coastal communities depend, and the implications of this knowledge for human well-being. A key focal point of future research aimed at sustainability transformations should thus be to link climate change modelling data – from the past and projections – to likely changes in the distribution and abundance of fish species and cetaceans. There is a specific need for better understanding of the impacts of temperature and biogeochemical changes on species distributions in the Nordic Arctic. How biophysical change plays out in terms of impacts to local communities could be informed by an ecosystem services perspective, necessitating the formation of links among climate, ecological and socio-economic data.

A core aim of ecosystem services work in the Arctic should be to pinpoint how Arctic coastal communities can adapt and become more resilient to changes and risks, which can simultaneously affect livelihoods, the availability of sustenance, and community identities. In the same vein, the increasingly popular “doughnut economy” framework has been advocated by academics, governance institutions, and policymakers as a tool for delivering economies that fulfil the social needs of all people, are safe and socially just, and respect planetary boundaries. Thus far, the role of ecosystem services in contributing to the doughnut economy's ambitions has been underexplored, in the Arctic and elsewhere. This is surprising considering the wealth of ecosystem services literature addressing the theoretical components of “a good life” and relationships between social-ecological systems, resource use, sustainability, and human well-being.

Gaining enhanced understanding of all these topics is especially important in relation to the Arctic's Indigenous peoples. Indeed, it has been argued that Indigenous peoples are disproportionately affected by climate change due to their close traditional connections to marine and terrestrial resources. For example, Indigenous peoples eat more traditional food than non-Indigenous, indicating a stronger subsistence culture relating to use of land and the sea. Despite this fact, Indigenous peoples in the Arctic are more than the practitioners of what is often called traditional livelihoods and holders of traditional and indigenous knowledge. They are also participants in global processes of adaptation to the changing environmental conditions in the Arctic, be it as rein-

deer herders, oil and gas extraction workers, miners, or administrators and environmental stewards.

The future of Arctic economies and sustainability transformations must involve building on the emergent economies that have resulted from a more globalised world. Arctic coastal communities have increasingly embraced tourism opportunities, or at least they did until the COVID-19 pandemic in 2020-2022. The expansion of the tourism sector has been especially prominent in Iceland, the Faroe Islands, Alaska, parts of Arctic Fennoscandia, Greenland, northern Norway, and Canada. Seaborne tourism, especially involving whale watching, is a major ecosystem service that has become one of the fastest growing segments of Arctic tourism. Indeed, whale and seal watching now form a substantial part of the economies of several Arctic coastal communities, providing income and employment, and in some cases realignments of community identities following the collapse of traditional industries, such as fishing. Continuing with these new economies and likely expanding them, while at the same time decarbonising fossil fuel reliant activities and adapting them in the presence of climate change, will be major sustainability challenges for Arctic nations in the years ahead.


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A blurred image of a wind turbine against a clear blue sky. The turbine's blades are in motion, creating a sense of energy and sustainability. The text is overlaid on the upper half of the image.

“The future of Arctic economies and sustainability transformations must involve building on the emergent economies that have resulted from a more globalised world.”







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