



CHARTER working paper 4

Tensional dreams – Policy option for a sustainable Arctic – Background for the policy brief



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This working paper gives background for the policy brief titled “Tensional dreams – Policy option for a sustainable Arctic”. This brief was produced by CHARTER WP6 in Nov 2024 (<https://www.charter-arctic.org/>).

There is no one Arctic, nor a single sustainability imaginary of the Arctic. Different sustainability scenarios can share aims, but there are also tensional topics. Our policy brief synthesizes the action points for balancing the tensions.

This working paper will also provide content for the deliverable D6.4 of CHARTER; after the project finishes in Jan 2025, deliverable reports will be found here: <https://cordis.europa.eu/project/id/869471/results>.

This work is based on policy analyses, scenario work, and co-production of knowledge with reindeer husbandry actors in northern Fennoscandia during the CHARTER project. CHARTER (Drivers and Feedbacks of Changes in Arctic Terrestrial Biodiversity) was a research project active in 2020-2025, involving 21 research institutions across 9 countries. It was funded by the EU Horizon 2020 Research and Innovations Programme (Grant #869471) and coordinated by the University of Lapland, Finland. Its main aim was to advance the adaptive capacity of Arctic communities to climatic and biodiversity changes.

Tensional dreams – Policy options for a sustainable Arctic

Background for the policy brief

Introduction

The Arctic context

Most of the Arctic is cultural landscape, not wilderness. Arctic biodiversity provides ecosystem services to people and livelihoods; also cultural ones. Land-based livelihoods (e.g. herding, fishing, small-scale forestry and agriculture) are important components of Arctic culture and tradition today; they also closely interact with the environment. Arctic land use links also to livelihoods like tourism and nature conservation, mining, forestry, and energy production (Markkula et al. 2019).

The Arctic region is warming two to four times faster than any other region in the world (Rantanen et al. 2022), putting stress on the environments and social-ecological systems adapted to cold conditions and seasonality (IPCC 2019; Walsh et al. 2020; IPCC 2022). Arctic biodiversity is in transition (IPBES 2012). At the same time climatic changes provide economic opportunities by opening sea routes and resource extraction, to some, meaning also increasing infrastructure development. Livelihoods and communities are challenged by climatic changes and cumulative impacts of multiple land uses (Chaturvedi, 2021; Armstrong et al. 2022; Stoessel et al. 2022). These changes create new context for local nature-based livelihoods and ways of life.

Other way round, Indigenous and local communities are not simply victims, but active drivers of change. Arctic land-use, communities, climate and biodiversity need to be seen as an interlinked whole. Humans and their natural environment are coupled; forming closely linked social-ecological system (SES; Folke et al. 2016).

Reindeer husbandry in northern Fennoscandia

The local perspective in our policy brief concentrates on reindeer husbandry in northern Fennoscandia. This is a representative social-ecological system (SES) in the Arctic context to illustrate the consequences of changes taking place.

Reindeer management area (RMA) covers large parts of northern Fennoscandia and North-West Russia (figure 1). Within this area, there is great variability in climate, pasture environment and pressures of other land-uses, and in herding practices and cultures, as well. Both indigenous Saami and non-Saami Finns practice reindeer husbandry in Finland, unlike in Sweden and Norway where it is mainly an exclusive right of the Saami. For popular description of present-day reindeer husbandry, see Rangifer reports 16, 17, 20 and 21:

<https://septentrio.uit.no/index.php/rangifer/issue/archive>

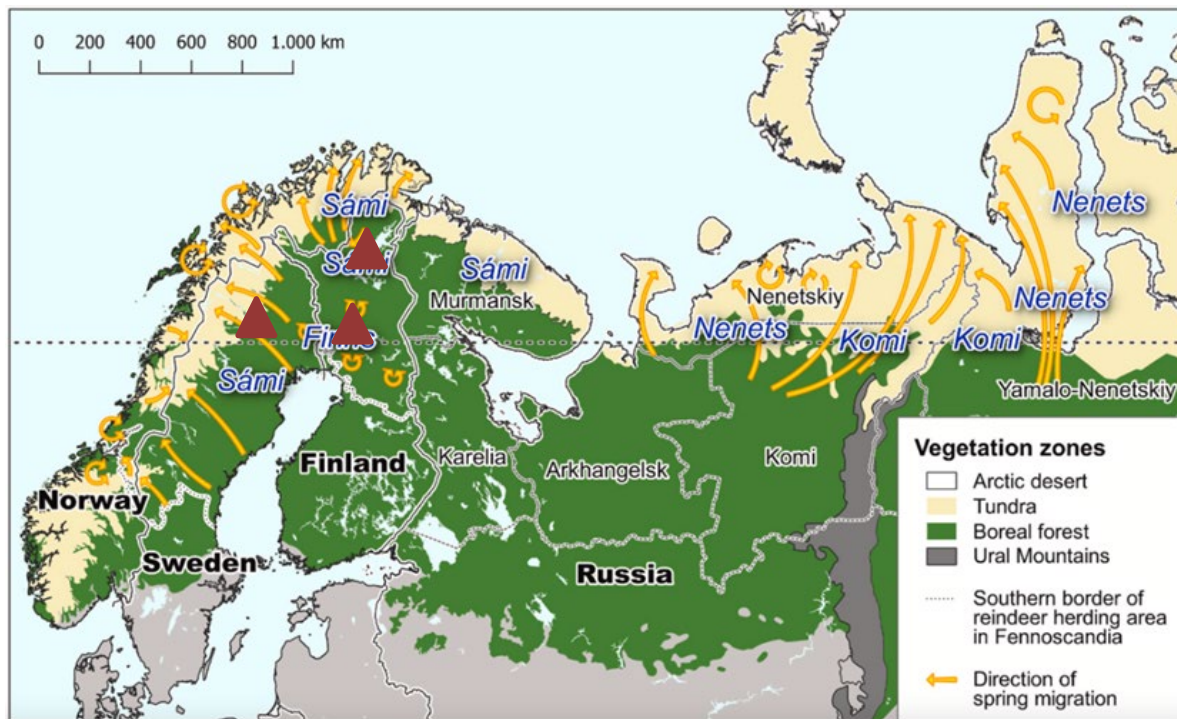


Figure 1: CHARTER study region and locations of workshops. Design: Tim Horstkotte.

In the heart of reindeer husbandry there are the dynamics and linkages between reindeer herds, herders, and pasture resources (Holand et al. 2022). Modern reindeer husbandry is based on skills and knowledge of working with semi-domesticated reindeer that have evolved by pastoralists over centuries. Ways of knowing within a given culture are passed down from one generation to another mainly orally and through learning by doing (Eira et al. 2023). This entails observing and interpreting weather, vegetation, reindeer condition and behavior. Understanding the conditions is the basis of coping and adaptation (Laptander et al. 2023). Changing climate and other changes in the Arctic set challenges to the livelihood (Rasmus et al. 2020; 2022).

Material and methods

Policy analyses

This work is based on policy analyses, scenario work, and co-production of knowledge with reindeer husbandry actors in northern Fennoscandia during the CHARTER project.

In our earlier work (Rasmus et al. 2024) **we analyzed a large sample of publicly available assessment reports and policy documents** from a sub-region of European Arctic, and across international, European Union, regional, national, and subnational governance levels. We studied to what extent these documents address two or more of these elements together: climate change, biodiversity change, land use, and local communities. We found frequent and diverse nexus approaches in the documents analyzed. On the other hand, our results indicated that across all levels, there is variation in how often the four dimensions of the climate change – biodiversity – land

use – local community nexus are considered as drivers of change, as opposed to something being impacted. We argue that nexus approach is a key for policies able to move towards sustainable Arctic of tomorrow.

We consider knowledge gaps and policy recommendations listed in the documents to represent narratives about possible and desirable futures (Pigott et al. 2018). These could be clustered into five general categories: ecosystem-specific solutions, technological solutions, co-production of knowledge, adaptive co-management, and authoritative solutions. Depending on the category, the role and agency of actors like local communities vary. From among these we endorse the co-management, considering Indigenous and local communities not simply as victims, but as active drivers of change. Also, policy makers should be aware that biodiversity is not only “impacted on” but plays a key role in shaping Arctic futures.

The analysis of EU level documents was used when drafting our interpretation of the SSP1 future that emphasizes the EU-level aims (we named this as “**Chasing green**”, trying to illustrate the ambitious aim towards green transition).

Scenario work

A scenario approach helps to critically think how the future may unfold. We link to widely used Shared Socioeconomic Pathways (SSPs; O'Neill et al. 2017; Riahi et al. 2017) that have been developed in the frame of IPCC to combine with the greenhouse gas emission scenarios (RCPs). SSPs are an example of set of exploratory scenarios. They have five narrative lines: SSP1 (Sustainability), SSP2 (Business-as-usual), SSP3 (Regional Rivalry), SSP4 (Inequality) and SSP5 (Fossil-fuel Development).

More about the global **shared socioeconomic pathways** used in IPCC scenarios:

<https://ourworldindata.org/explorers/ipcc-scenarios>

The RCP-SSP -combinations are used to simulate the future climates under certain greenhouse gas emissions and certain socio-economic development pathways. For those interested to learn more about possible climatic futures, we refer to **IPCC WGI Interactive Atlas** which is a tool for flexible spatial and temporal analyses of much of the observed and projected climate change information: <https://interactive-atlas.ipcc.ch/>

In addition, **CHARTER StoryMap** “In 2050, what will my backyard look like?” visualizes the impacts of warming in northern Fennoscandia and North-West Russia, with comments by local practitioners. For the StoryMap we discussed with reindeer herders and fishers; people who spend large parts of their lives outside. Predicted future shifts will result in a series of cascading events about which people will have little choice but to adapt. In the StoryMap these people comment the scenarios, explain good and bad conditions for their local livelihoods, and generally, give local interpretations on adaptation needs and adaptation possibilities:

<https://storymaps.arcgis.com/stories/95207a47d7bf4d5bb674a66da6a3db79>.

Most of the scenario work in CHARTER looks into the near-future, to 2050s, and the spatial region studied is the European Arctic (especially northern Fennoscandia). Here

we concentrate on the SSP1 future, and aspirations towards desired futures (Van Vuuren et al. 2022). There is a need to develop positive scenarios rather than doomsday dystopias (i.e. Falardeau et al., 2019). We also take a closer look inside a SSP1-narrative. There is variability found within any narrative. SSP1 future can for example emphasize EU-level aims, national level aims, or locally defined dreams and needs – linking these scenarios to the topic of governance (Hiedanpää, and Bromley 2011; Sarkki et al. 2023).

About presenting possible, plausible, probable and preferable futures with futures cone: <https://tech4future.info/en/futures-cone/>

Co-production of knowledge

Our co-production of knowledge has mainly taken the form of **participatory workshops**. We have stated (Rasmus & Sarkki et al.) that pressing sustainability challenges require solutions; for research methodologies this means co-producing transformative knowledge (Abson et al., 2014; Schneidewind et al. 2016; Urmetzer et al., 2020). During CHARTER year we have developed a participatory workshop method called “Dreams and surprises”. We paid a lot of attention to the process design in the development of workshop structures, procedures, and tools (Banerjee 2008). For material and how-to, see Rasmus et al. 2023 and Wang et al 2023.

This workshop framework combines 1) the systems perspective needed to understand past, present, and future dynamics, 2) plausible surprises (exploratory scenarios) that may unfold, and 3) desirable futures (normative scenarios) for individuals and communities. These different knowledges are needed together for transformative knowledge that can contribute to actual changes.

During CHARTER years approximately 20 workshops have been arranged in Finland, Norway and Sweden. These have taken several forms and used various methods; some have been very small, some joint Nordic ones. Of these, two were pilot workshop, and first tries of the method with students at Lapland University of Applied Sciences, Rovaniemi, Finland and the Sámi Education Institute, Inari, Finland. Five workshops utilized the “Dreams and surprises” method with reindeer herders and stakeholders in reindeer husbandry (August 2022 in Inari, Finland; December 2022 in Rovaniemi, Finland; August 2023, in three herding communities in the Jokkmokk-area, Sweden; Figures 1 and 2). Two later ones were built on these workshops, trying to map the next steps on pathways towards locally desired futures. In addition, “surprises” have been collected in a collective way in herder meetings. So, in total, approximately half of CHARTER workshop activities have either developed or utilized this method and provided material for our policy brief and other texts, as well. Summaries of CHARTER workshops have been collected as deliverables D3.3 (2022) and D3.7 (2024), and the last ones will be reported in D6.4.

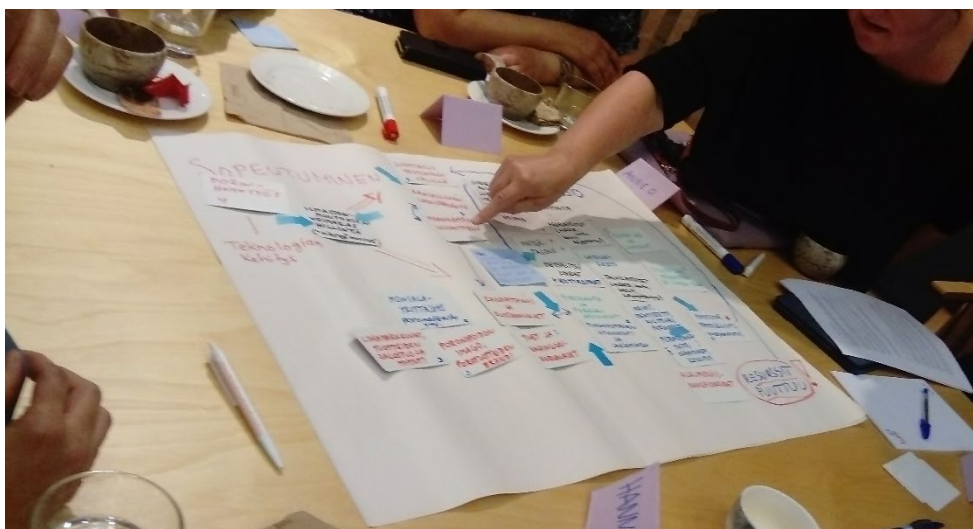


Figure 2: Pointing at a critical element in the operational environment of reindeer herding, during a Dreams and surprises -workshop in Inari, 2022. Photo: S. Rasmus

In our workshops with reindeer herders and stakeholders in reindeer husbandry we built cognitive maps of the current operational environment of reindeer husbandry using the prepared deck of cards, discussed impacts of global developments and more local surprises, and finally shared aims and dreams related to the livelihood, as well as what would have to change so that these dreams could come true or aims reached. We acknowledge that these workshops will need continuation, but already now, they have provided places for social learning (Reed et al. 2010) and co-produced knowledge utilized in this work. The aims and dreams listed by workshop participants have been used when drafting our interpretation of the SSP1 future that emphasizes the locally defined dreams and needs (we named this as “**Undergrowth**”, as we consider this as something that grows naturally as a bottom-up process, also having large local variability and is potentially difficult to manage).

Based on workshop discussions, these ten elements of the operational environment of reindeer husbandry were raised as the most important ones (Rasmus et al. 2023): Land-use planning; Pasture rotation; Knowledge and know-how; Collaboration, communality and interaction; Profitability and costs; Winter pastures; National legislation; Reindeer stock and reindeer welfare; Winter weather and snow conditions; Wellbeing of herders. Shared aim or dream of all herders who participated was that the livelihood – with its traditions and culture – will continue to future generations. But what does this require? In workshops we came up with a long list of elements of desired future, main ones being: Economic sustainability - keeping the livelihood profitable enough; Better pastures and “grazing peace”; Better legislation and governance of the livelihood; Less vulnerability towards extreme weather events; Better communality within the livelihood; Better understanding and harmony between reindeer husbandry and other livelihoods and land-users. These were guiding our work on the “Undergrowth” narrative building.

World Biodiversity Forum 2024 workshop

Another perspective was provided by a workshop organized as part of the World Biodiversity Forum 2024 in Davos, Switzerland. CHARTER partner University of Zurich (Jakob J. Assmann and Gabriela Schaepman-Strub as main organizers), together with other researchers from CHARTER (terrestrial), FACE-IT (coastal) and ECOTIP (marine) projects, planned and run the design thinking workshop titled **“Building pathways towards desirable futures for Arctic biodiversity”**. This is how the workshop was described:

“The Arctic is one of the most rapidly changing environments on the planet. Amplified warming and increasing accessibility change ecosystem processes and accelerate industrial activity in the cold-adapted systems. These changes are projected to have profound impacts on biodiversity in the Arctic oceans, along coastlines and on northern lands. Motivated by the IPBES Nature Futures Framework for developing desirable futures (<https://www.ipbes.net/scenarios-models>) and ongoing research in this workshop invites participants to consider the following questions: How can we develop desirable futures for the Arctic? What has been done? What has been missed? Where do we need to go next? We invite scientists, practitioners, Indigenous right- and stakeholders, policy makers and people from all backgrounds with an interest in the topic to share their knowledge and think about biodiversity in the Arctic of the future. We also encourage early career participation. We will start the workshop by introducing the Nature Futures Framework and presentation of case studies from the EU projects, covering the terrestrial, coastal and marine realms. We will then be joined by an industry-expert on Design Thinking who will facilitate the generation of pathways towards desirable futures for the Arctic. We intend to synthesize the outcomes of the workshop in a short opinion piece.” See also: <https://www.charter-arctic.org/how-to-envision-positive-arctic-futures/>

Although the opinion piece is not yet publicly available, the workshop provided great graphical outcomes (Figure 3). These topics and thinking have been utilized also when preparing the “Tensional dreams” policy brief.



Figure 3. Graphical outcomes of the Arctic Biodiversity Futures - workshop at the World Biodiversity Forum in Davos, Switzerland, June 2024. Photos: Irina Wang.

Results

Many entangled SSP-scenarios make the present day (Figure 4). According to many scholars, the situation at the moment can be called as polycrisis (WEF 2023), multiple overlapping crises happening back-to-back. This means that communities and individuals don't have time to bounce back to "normal", but are in constant crisis mode. This requires new ways to live and be and cope.

Within the realm of possible futures, there are ones considered as sustainable; they are within the "cone" of sustainable SSP1 futures. Based on comprehensive analysis of policy documents and our participatory work, we could distinguish several sustainable narratives, that partly but not completely overlap. To illustrate this divergence within any narrative, we present below elements of two SSP1 futures: "Chasing Green" that emphasizes EU-level aims, and "Undergrowth" that builds on views of Indigenous peoples and local communities (in our case, mainly northern Fennoscandian reindeer herders). This approach shows the tensions between the aims presented at different governance levels – which often remain unseen, or at least unspoken. This also makes visible the granularity of desired futures, The "Undergrowth" scenario we present is a rough generalization of some topics, based on limited number of discussions. There are more than one locally desired future, and there are tensions also withing these. But this does not make exercises like this pointless, on the contrary. Discussing these tensions may be necessary and productive for finding pathways to transformative action (Haraway, 2016), and without understanding the needs and priorities at local level, and of decision-makers, dialogue and finding at least some joint ground gets very difficult.

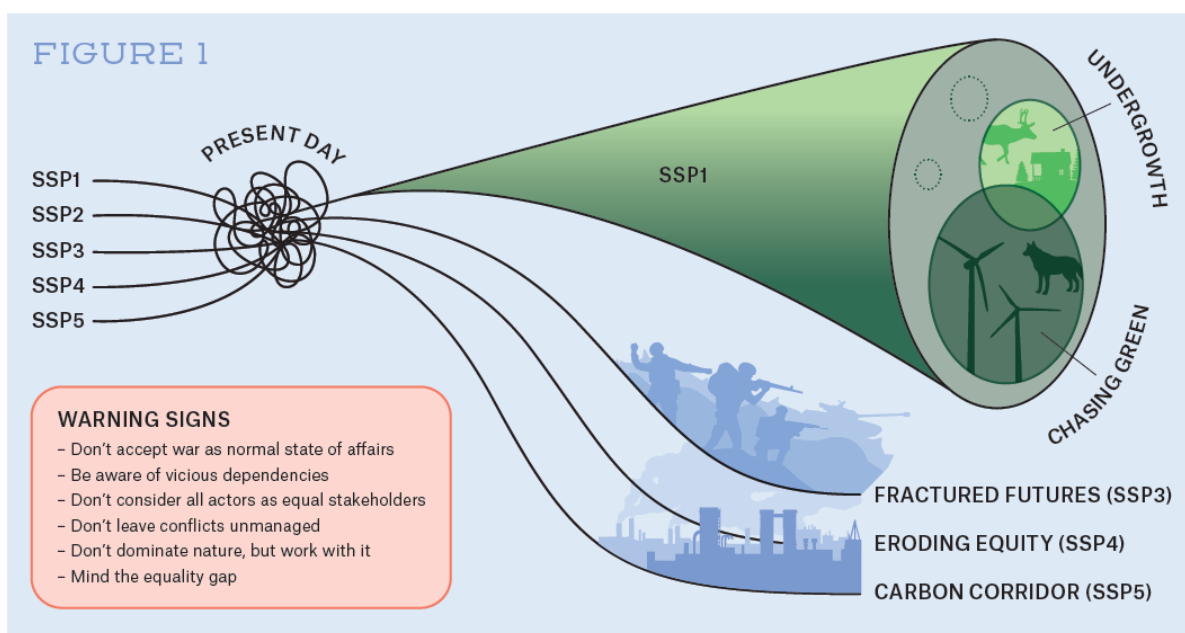


Figure 4. Many entangled SSP-scenarios make the present day. Design: Irina Wang.

Chasing green

This SSP1-scenario emphasizing the EU-level aims is characterized by following developments:

- Balancing the aims found in recent policy documents and Arctic strategies, emphasizing green growth and EU-level solutions, and inclusion of needs of local and Indigenous peoples.
- Reaching EU biodiversity goals for protecting fragile environments, while at the same time achieving green transition.
- Reaching EU climate goal
- Managing global and glocal commons.
- Increasing EU self-sufficiency in materials and energy in order to ensure economic prosperity and decreasing outside dependencies.
- Ensuring strong institutions and the rule based international order, and managing geopolitical tensions—negotiations, conflict management, and consensus building.

Sources: European commission 2021a; 2021b; 2021c; 2021d.

Undergrowth

This SSP1-scenario emphasizing the local level needs and aims is characterized by following developments:

- Ensuring genuine opportunities for local communities and livelihoods to participate in land-use related decision-making. This can happen through boosting dialogue between local communities and economic and state actors. Promising examples include forums where diverse actors come together around joint planning table. At the same time, decreasing the administrative burden and the “participation fatigue” should be considered.
- Green transition that is just; for example, addressing financial incentives driving land-use developments, emphasizing local needs in related legislation.
- Fostering dialogue and knowledge transfer; having decision-makers who have gained good understanding on local realities.
- Strengthening local and regional governance, fostering the ownership and agency regarding the decisions made, having more local views in positions of policy leadership (at various levels).
- Securing the continuity of local livelihoods and cultures; increasing local livelihood opportunities. For reindeer herding this would mean adaptive co-management and improved environmental state of pasture lands, improved work security and well-being, ensuring economic profitability and cultural viability.
- Interpreting nature conservation as inclusive for local people and livelihoods to ensure socially just nature conservation by respecting biocultural diversity. Already reindeer herders have access and right to graze within national parks.
- Recognizing the status of Indigenous peoples as rights-holders to their home lands by legal and formal institutions. Saami rights are already recognized in many policy papers, but the practice lags.

Synergies

Certain aims are shared between the two SSP1-futures studied here. This means that actions towards these both serve the EU-level aims, and also are beneficial at local level. We listed following synergies:

- Holistic coordination of land-use to avoid cumulative impacts on environment and local livelihoods. This includes energy production, forestry, mining, tourism, infrastructure and related land-uses. This will require cross-sectoral coordination.
- Recognizing and strengthening the consideration of the impacts of multiple land-use developments in land-use planning and natural resources governance; developing indicators.
- Promoting co-existence between communities and natural resource users. This requires building trust and mutual understanding, rules that are honored, and transparency. All these are needed even more now, when more military presence is experienced in the Arctic.
- Building adaptive capacity to cope with climate change and other pressures. This can be done through understanding the various elements of this capacity and strengthening the possibilities to act in the face of diverse futures, by supporting learning, education and preparedness, and with better resources.
- Nexus approach in policy and governance to enable decision-making considering biodiversity, climate change, land use and local communities & livelihoods together. This includes dialogue and interaction between and within levels and sectors. Terms like resilience, bioeconomy and one health can help to consider nexus elements together in the governance.
- Developing and managing multi-use landscapes for biodiversity and other needs (like sustainable forestry and local traditional livelihoods) – this includes the idea of permeable borders.
- Respecting multiple knowledge systems to support the continuation of local cultures, languages and practical skills, and strengthening the knowledge base needed to cope in changing climate and environment, by citizen science tools, co-creative research, and projects to support keeping and revitalizing TEK.
- Efficient mitigation of climate change.
- Keeping North educated, healthy and inhabited to ensure goals to inclusive and equal societies; security of supply, and viable local cultures; ensure continuing developments towards inclusivity and equal opportunities.

Tensions

Different sustainability scenarios can share aims, but there are also tensional topics. These topics mean balancing acts in the governance. Solutions can lead to even greater tensions, in the future – or compromises can be found, to alleviate the tensions. What is important is acknowledging the tensions between these (and several other) topics. We listed following tensions:

Tensions between externally led “Chasing Green” and locally led “Undergrowth”:

- Is the EU’s Biodiversity Strategy 2030 implemented by decisions fixed at EU level or by locally flexible and participatory way?
- How is the restoration law implemented? What are the practical implementations, and what about the local acceptance and ownership towards restoration actions?
- What kind of imaginaries of biodiversity are put into practice (e.g. nature without people vs. safeguarding biocultural diversity)?
- What kind of land uses are advanced as part of green transition (e.g. wind energy; conservation of large carnivores, infrastructure)?
- Who bears the costs of climate change mitigation?
- To what direction are compensation and subsidy schemes driving Arctic developments? (for example, supporting changes, compensating negative impacts of land-use, or nature conservation)

There are also questions about decreasing the use of fossil-free fuels and fossil-free energy production: how this actualizes in remote areas and for example in reindeer husbandry practices? Another question is finding the balance between enough and too much of infrastructure – and managing predator populations so that they remain viable, together with viable local livelihoods.

Tensions within “Undergrowth” scenario:

- Conflicts and controversies between locally beneficial livelihoods (e.g. mining, forestry, tourism, reindeer herding).
- Questions about land ownership, management, and stewardship.
- Tensions between modern development and traditional ways of life.
- Tensions between people (e.g. newcomers and people with extensive histories inhabiting the Arctic).

SSP3, SSP4 and SSP5; warning signs

We did not concentrate on less desirable and less sustainable futures, although we named them as “Fractured futures” (SSP3), “Eroding equity” (SSP4) and “Carbon corridor (SSP5). We also listed some “warning signs”, related to more or less unintentional slide towards these future pathways. Our short list of warning signs reads:

- Don’t accept war as normal state of affairs
- Be aware of vicious dependencies
- Don’t consider all actors as equal stakeholders
- Don’t leave conflicts unmanaged
- Don’t dominate nature, but work with it
- Mind the equality gap

We see that it would be important to discuss these “slippery slopes” more, as well as ways to “bend the curve” towards more sustainable ways of living.

Discussion and conclusions

All our material and results of our multi-method work emphasizes the importance of linkages between climate, living environment, and human actions, ie. The socio-ecological system as a whole. Local communities and livelihoods have a great role in managing local ecosystems, with reciprocal feedbacks to (regional) climate and environment. How Arctic biodiversity, land-use, environment and communities will develop also sets boundaries to nature-based solutions what comes to mitigating the climate change, and adapting to changes.

To govern the Arctic in an impactful way, local needs and local possibilities need to be taken genuinely into account. This means that co-production of knowledge, like presented in our policy brief, needs to continue, and involve growing number of local people, administrators, decision-makers and researchers around joint planning tables.

Co-production of knowledge is a way to co-designing policy options to inform climate adaptation and mitigation as well as practices. Co-designed policies enhance the viability and resilience of Arctic local livelihoods and can at the same time help in curbing climate change and biodiversity loss.

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The CHARTER project name is derived from the project title: Drivers and Feedbacks of Changes in Arctic Terrestrial Biodiversity. CHARTER is an ambitious effort to advance the adaptive capacity of Arctic communities to climatic and biodiversity changes through state-of-the-art synthesis based on thorough data collection, analysis and modelling of Arctic change with major socio-economic implications and feedbacks.

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