University of the Arctic (UArctic) community engagement to ICARP IV process

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Background

UArctic builds and strengthens collective resources and collaborative infrastructure, thereby enabling member institutions to better serve their constituents and their regions. UArctic members cooperate with each other on multiple levels, focusing on faculty, institutional leadership, and international collaboration. UArctic represents its members' interests internationally by promoting their diverse and shared capacity to serve northern communities and interests. UArctic is the North's only truly circumpolar higher education network and one of the world's largest education and research networks.

UArctic Thematic Networks (https://old.uarctic.org/thematic-networks/) and Institutes form a natural framework for development of UArctic education and research providing an optimal structure for increasing the knowledge generation and sharing across the North. UArctic Institutes are self-governing units devoted to research, monitoring, and education throughout the Arctic. Empowered by local knowledge and international level academic expertise, they facilitate development of multidisciplinary solutions for challenges in the Arctic.

UArctic is one of the ICARP IV partner organisations contributing to the process leading to both ICARP IV and IPY 2032-33 and for making sure that UArctic's contribution considers its diversity, gender and geographical balance a task force was created. Task force has planned UArctic's community events for gathering the input on research priorities to be developed further in ICARP IV Research Priority Teams.

UArctic aims to engage with all of its about 200 members (https://www.uarctic.org/members/member-profiles/), which vary from large universities to small local colleges, from research institutions to Indigenous organizations. In addition to contacting UArctic members, a specific discussion was done with UArctic Thematic Networks and during their annual meeting in late April 2023 and with UArctic member representatives at the annual assembly meeting in May 2023.

Community engagement process

The starting point of the community engagement was an open online survey which collected personal opinions of people's most pressing challenges in their lives. The survey asked respondents to relate those to the northern "region of interest", and in addition to thinking about the current time, it also asked them to think about the 10 years ahead. The region of interest could be the area of the Circumpolar North where they live, work, originally come from, do research in/about, or have any another connection. The survey was launched on March 1 and kept open until April 11, 2023. The survey received 46 responses. The results were compiled and analysed by looking at the results based on a) region, b) age group as we are interested to see particularly youth perspective, (c) gender, and (d) interdisciplinary clusters of challenges.

The results were analysed, presented and discussed in the UArctic Thematic Networks (https://old.uarctic.org/thematic-networks/) leadership team meeting held in Rovaniemi, Finland in April 25-27, 2023 and were discussed in a pre-meeting and networking session organised during the UArctic Assembly meeting in Quebec city, Canada in May 22 – 26, 2023. The results were compiled into the graphs and presentations which were also presented at ICARP IV session at the Arctic Circle Assembly in Iceland in October 2023 and graphs were available for feedback at the UArctic website until December 2023. The compilation of these community engagement survey and feedback is attached in Annex 1.

Results of the UArctic community engagement

UArctic is a membership organization committed to creating better lives for people in the North. Through cooperation in education, research, and outreach UArctic enhances human capacity in the North, promotes viable communities and sustainable economies, and forges global partnerships. Keeping all this in mind, UArctic's community engagement and research needs and priorities are centered around the people in the Arctic and neighboring regions.

People, regardless of their origin, country, or culture, are affected by the biggest global threats: climate and environmental change and globalization. Climate change affects people and communities directly and indirectly, it affects environment, lands, waters and biodiversity surrounded by people, economy and livelihoods, traditional ways of living and modern cities, infrastructures, and transport and in so many other ways. The challenges (Figure 1) faced are local but often have global consequences and it is well known that Arctic amplification affects global climate and its weather patterns. Main climate change effects identified were permafrost thaw and infrastructure failures caused by it, biodiversity loss, new and invasive species introduced to Arctic, and how climate change affects Indigenous cultures and their livelihoods. Food and water security, quality of life, cultural preservation, socioeconomic pressures were listed. There is growing concern about biosecurity: microviruses and contaminants released due to permafrost thaw needs biosurveillance and monitoring, including human security perspective. Research with holistic view is needed and different mitigation and adaptation measures are needed for resilience. There is a need to understand the rate and scale of change and feedback processes.

Globalisation with growing trade across the Arctic Ocean and interest for natural resources can have major influence on Arctic communities. Current geopolitical situation needs views on security from inside the Arctic, not from the outside.

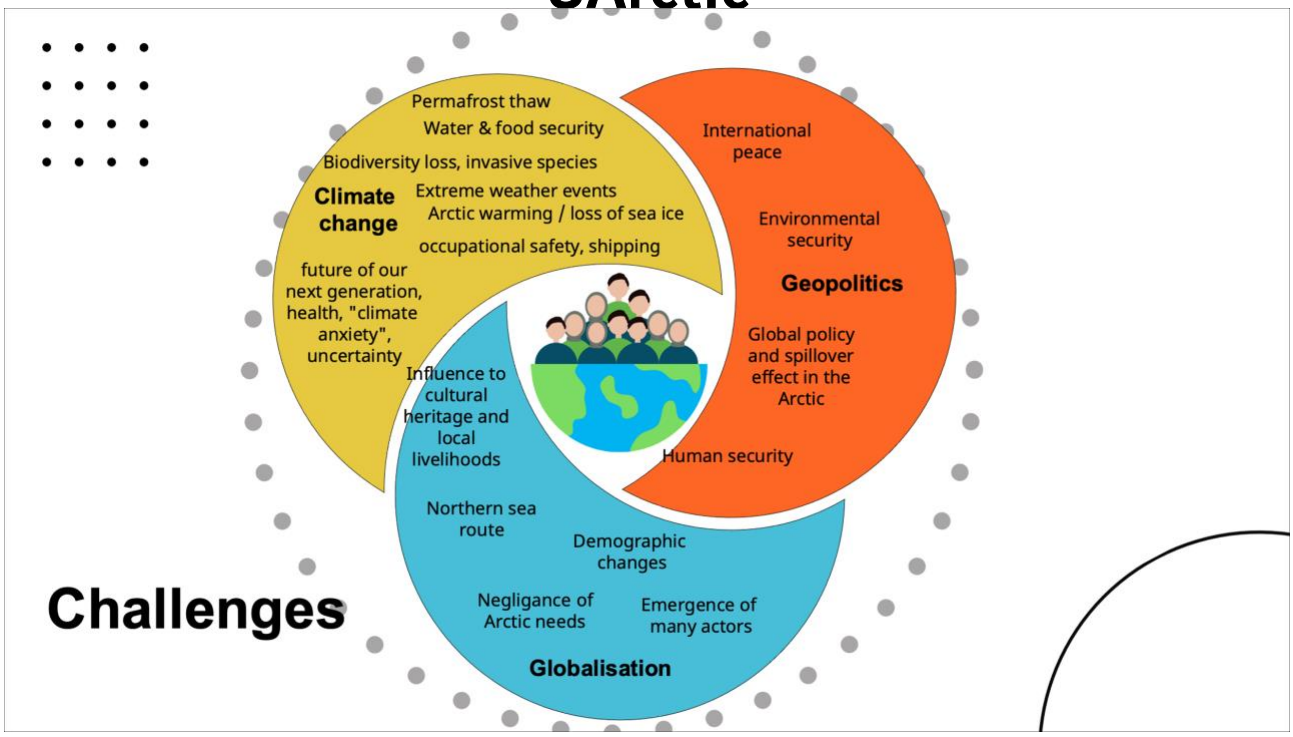


Figure 1. Examples of challenges faced by people in the Arctic due to climate change, globalization and current geopolitical situation.

Education creates a global view of the World, but how and what to educate should not be globally decided but based on local needs (Figure 2). The relation between education and capacity building is important. There are different needs in different regions, different ways of communicating which sometimes need for innovative solutions. Skill building is needed for training personnel in the North as there is often mismatch of education and demand. Training of trainers and teachers te, passing the knowledge to new people, foot paths of ancestors were mentioned. Local training in local languages, skills training developed and enrollment of local and Indigenous communities were considered meaningful. Important question is how can education serve Arctic and where are possibilities in western education for Indigenous education? Digitalization can be a tool in places where digital tools can be reached, but online teaching resources and education must be co-created with Indigenous communities. Equal access to higher education in all regions needs increasing online offerings.

, eEducating stakeholders and connecting socio-economic thinking to education was stated. This is important for creating critical Arctic studies which would be available for global markets, business, tourism companies and tourists. Sustainable, respectful of Indigenous cultures and nondisruptive tourism should be offered to everyone, including through means of A massive open online courses (MOOCs).

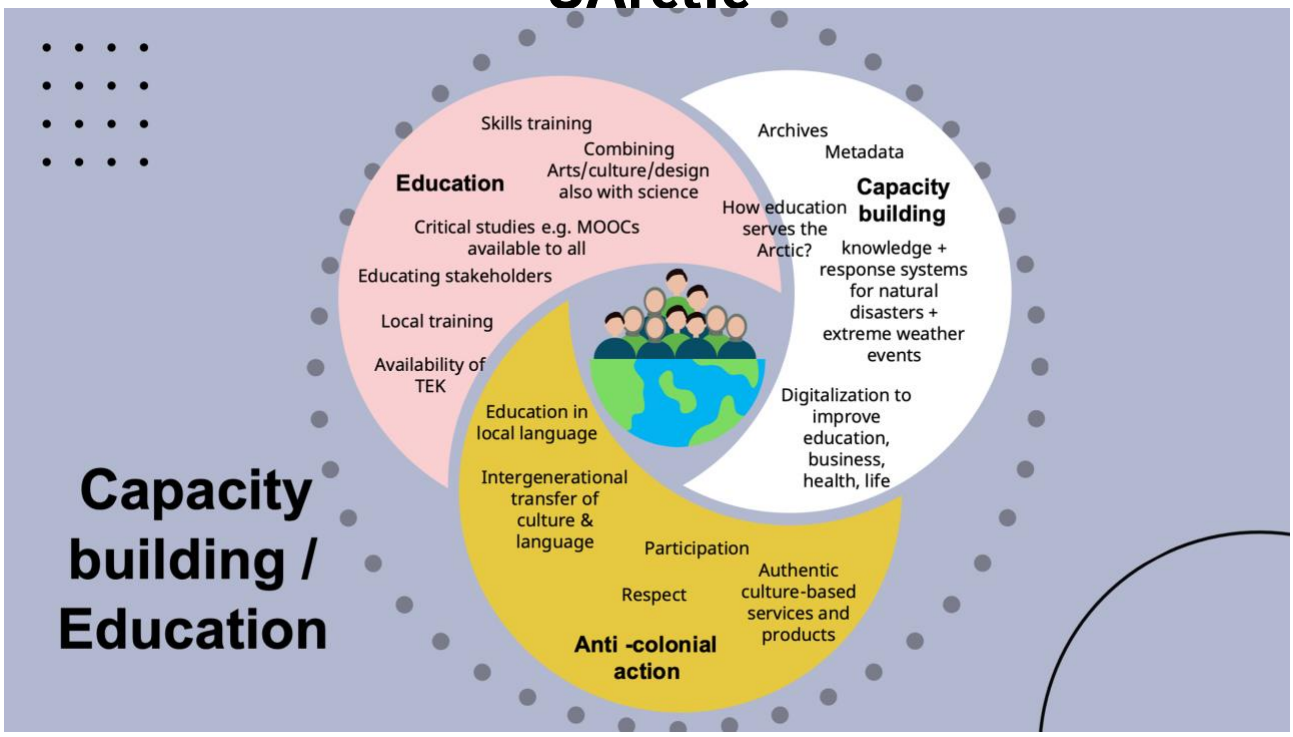


Figure 2. Examples of needs in education and capacity building and ways of doing education and capacity building with anti-colonial actions.

Thirdly, mitigation and adaptation are needed, but how to do those in sustained way without hampering people's lives and cultures? Can the same action be acceptable and sustainable in one region and the opposite in another? Everyone who lives in the Arctic knows that Arctic is not homogenous and therefore globally acceptable actions, such as windmills or electric cars, can be a labeled as green colonialism as they threaten the Indigenous Peoples culture and livelihood. This is particularly a case in Nordic countries, in Sápmi, Sámi homeland where reindeer husbandry is threatened by windmill farms and mining, also for those rare minerals needed for electric car batteries. This has created conflicts, very often because there are no two-way dialogues, no respect, and no understanding of the needs of either side. Critical perspective on economy; growth versus non-growth, how to ensure the extractive industries do not decrease the quality of life in the Arctic? There is a need to understand and learn and to do research on alternative ways of mitigation against climate change. Sustainable use of natural resources, including mining, is important. Restoration and climate-friendly processes and responsible tourists are needed. Reusing and recycling, circular economy and how can environmental challenges be turned into circular economy business opportunities? Figure 3 gives examples of issues raised in green transition, use of natural resources and what kind of socio-economic measures must be taken into account.

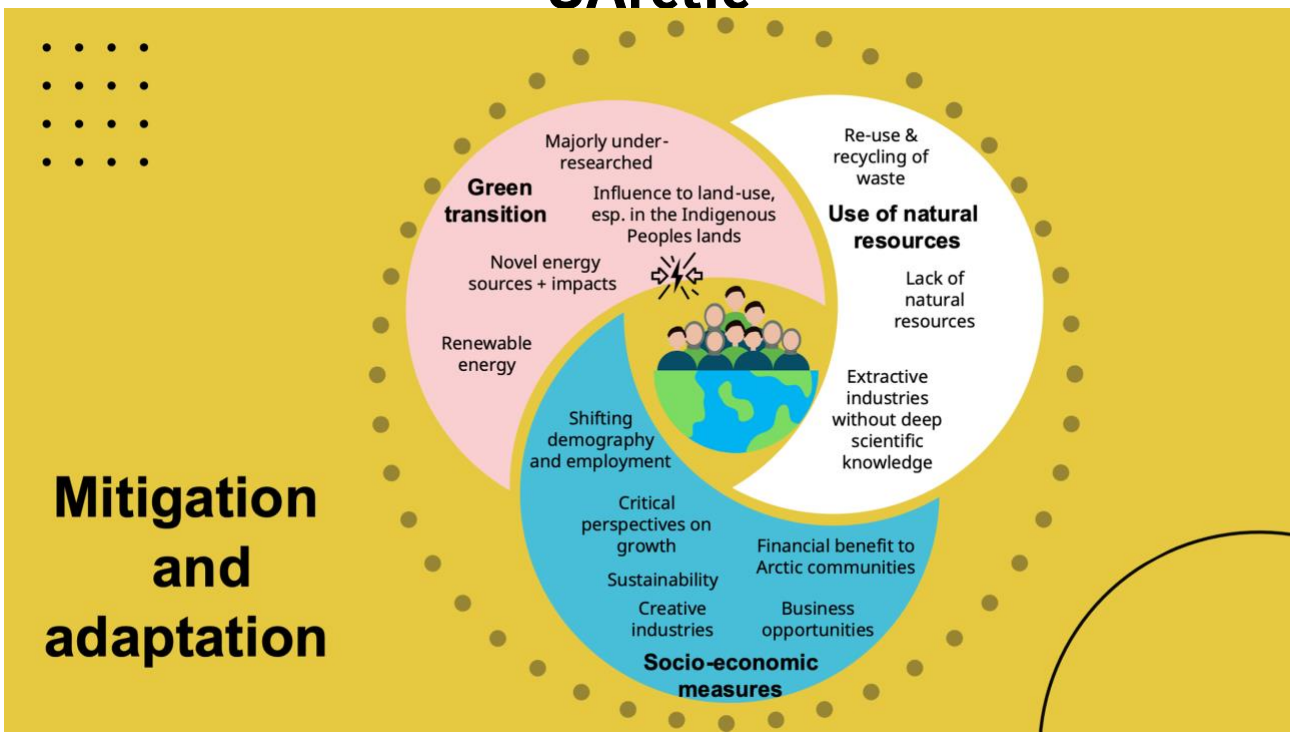
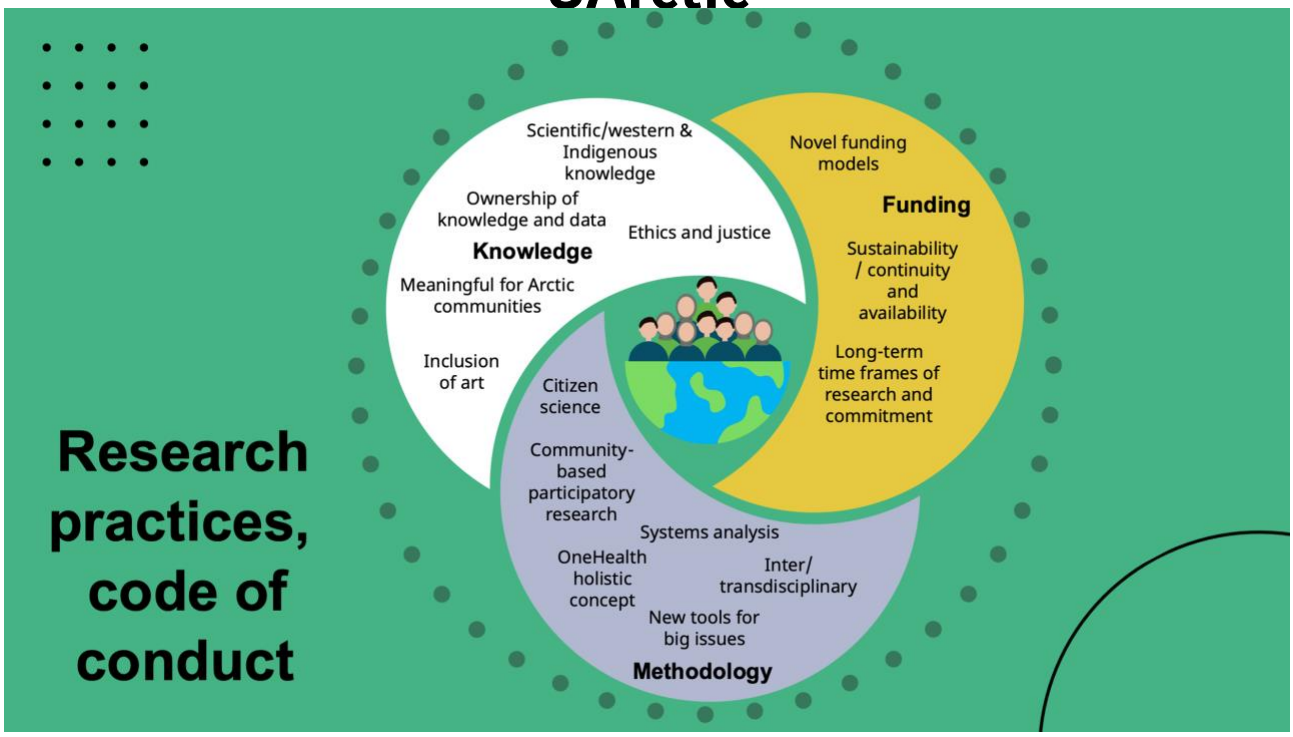


Figure 3. Examples of mitigation and adaptation actions related to green transition, use of natural resource and in socio-economic measures.

Research cannot be planned without thinking how to do it ethically (Figure 4). This is particularly true in the Arctic where lands and waters have been occupied for thousands of years by Indigenous Peoples. Research has to respect different ways of knowing and it has to consider/include all knowledge systems, Indigenous and local Knowledge and western science. Interdisciplinary, transdisciplinary research , citizen science and/or community-based monitoring are needed for finding ways to adapt and mitigate against climate change and globalization related challenges. Efficient detection and monitoring of changes in biodiversity is needed. For that, engagement of stakeholders, decision-makers, citizens and Indigenous People (citizen science) is required. A holistic system approach cutting across the existing categories and disciplines has to be adopted by funding agencies calling for novel and sustainable funding models. Ethical and inclusive research is very important. The problem is that the short-term funding system doesn't enable long-term relationships as one never knows if one can get another funding and continue working with a community, where one has built relationship and trust. There are great ethical frameworks and collaborative, decolonial methodologies are also being developed but there is need to develop more.

UArctic



Key questions related to ICAPR IV process:

- How do we create a pan-arctic approach to research and use research on pressing challenges, especially at times of geopolitical tension and exclusion of the Russian Arctic?
- How can ICARP IV Research priorities have the greatest impact? And what are the metrics of progress? What processes enable impact (local to global)?
- How do we develop processes that integrate and couple economic wellbeing, governance, resources allocation, human preparedness and resilience, and environmental sustainability challenges?
- What types of awareness and education are needed at a local level? And how can this be enabled for broader and more nuanced understandings? And how are the processes and knowledge mobilized?
- How are these priorities different or differently prioritized from region to region?
- What are the kinds of generational solutions that will prove valuable 30 to 50 years from now? And considering immediate urgencies as well as circular timelines?

Annex 1

The compilation of answers collected in online survey

Main challenge/driver of a change	
Permafrost thaw	coastal erosion infrastructure failure flooding loss of cultural heritage sites food and water security intersectionality, gender, age, ethnicity, permafrost thaw > housing, collapses of infrastructure, cultural issues, economic factors, ALL effect to health
Loss of sea ice, warming Arctic and cons of all of that, biodiversity loss, invasive species, migration patterns etc	climate migration future of our next generation, health, ”climate anxiety", uncertainty impacts of climate change on Arctic flora and fauna, and human communities - how to adapt and survive Ecological degradation and pollution, loss of species, habitat, occupational safety, shipping tics risks of migration of new species fate of N. Atlantic - collapse of overturning (Golf stream) current Climate warming and changes in biodiversity (e.g. due to invasive species and loss of Arctic species). The changes in soil surface and vegetation have major impact on climate through changes in albedo and carbon fluxes.
Increase of heat waves/exctreme weather events	impact of climate factors on occupational health and safety, esp. rapid changes (slippery conditions, weak ice) and how the management responds and gets prepared to this Occupational safety among construction workers and other outdoor workers. Extreme weather will increase the risk of injuries due to accidents or cold injuries. Construction workers have already begun showing snow more and more each winter, increasing their heavy physical workload. Also slipperiness will be more common due to more warm weather and cold surfaces during winter.

Cultural assimilation, loss of heritage, livelihoods	how does climate change influence Indigenous cultures and livelihoods as conditions change? How can they still thrive and maintain Traditional Knowledge and traditions? Indigenous Peoples - sharing - cultural preservation > creating new cultures > sharing > etc Challenges to identity and cultural heritage future mobilities? Ageing populations, ageing workers, physical health growing inequity: socioeconomic status, healthcare, education, gender, ethnicity, ability old folk - creative aging Continued depopulation (ageing, out-migration), future life of youth in the Arctic. Decrease in quality of life (losing purchasing power, inflation, deterioration of health care, education, increase in crime rates, poverty etc), educational sector under-resourced how can the applicability of locals in the Arctic be improved in the region? Mental health, health care in rural and remote communities. how to fight loss of youth / brain drain? dealing with complexity and messiness
Globalisation & geopolitics	growing trade across arctic ocean International peace and security, global political situation and spill-over effect in the Arctic, wars, emergence of many actors and their negligence of Arctic needs, Human Security as an alternative to the traditional security concept articulated by center economies Northern sea route not available > ec loss? > not developing the potential critical geopolitical approaches needed keeping broad understanding of security; everyday concerns views about security from inside the arctic, not from outside North-Atlantic security, role of islands, island as geopolitical hot spots - vulnerability geopolitical dimensions and impacts of climate action vs inaction need for better cross-border co-operation in specific areas for security/defense responses environmental security in the Arctic (broad understandings of the environment, incl wildlife, not only human built environment) Negligence of Arctic needs in combination with the emergence of many actors
Capacity building and education	

	the role of Arctic people in climate action eg. Climate intervention knowledge + response systems for natural disasters + extreme weather events developing local training &skills in energy + environmental solutions importance of arts & culture & design connecting socio-economic thinking to UArctic educational "affordances" to create critical Arctic studies available for "all" - MOOCs etc to educate global makers and educational programs transdisciplinary integration skills Ownership of education and how education serves the Arctic. DIGITALIZATION: availability of TEK, knowledge, data, archives, language skills, metadata > appropriate + decolonized - participation how to see the value of living in the North > different relationships - resilience how digitalization can be used to improve things in business, education, health, life.. Development of online teaching resources, that are co-created with Indigenous people Online education is aimed at small and medium size companies so they can implement measures due to changing climate for workers safety. Education of stakeholders such as Occupational Health services. INCLUSION: giving equal access to higher education to all regions, even the remotest, and age groups. That means providing increasingly online offers.
anti-colonial action	intergeneral transfer of cultural practices > interethnic transfer of language/cultural heritage education in local language, respect Cultural heritage > enhance wellbeing, belonging, having a voice, sense of self sustainable, authentic culture-based services and products for tourism, respecting Indigenous cultures, nondisruptive experience tourism > cf. new type of mobilities and problems with the concept of authenticity, rethinking the whole idea of tourism Indigenous self-government, sustainable relations between people in the Arctic inclusive dialogues
Mitigation and adaptation measures	
Green transition	challenges in sustainability due to green transition (windmills, hydropower, solar) as they influence land-use and communities in the Arctic (+/-) green transition as a major research area (winners, losers, impacts, matrix, governance)

	research needed on novel energy sources + impacts
	Transitions to renewable energy and effect of peoples life, energy development in the indigenous peoples lands
Climate change	Climate change mitigation isn't going well at all. We are not on track to the Paris agreement levels. There is an increase of good adaptation research, and researchers have informed policymakers rather well, too - of course this should be continued and encouraged. But also, climate interventions (geoengineering) needs to be studied. It is important to consider Arctic communities (indigenous or not) viewpoints in this, to avoid colonialism.
	Adaptation to climate change on the one hand, and mitigation of development issues (exploitation of natural resources) and (over-)tourism.
Use of natural resources	reuse & recycling/management of mining waste
	lack of natural resources, mineral resources extraction without deep scientific knowledge, lack of human interactions with the natural environment.
	how to ensure the extractive industries don't decrease the quality of life in the Arctic. E.g. By biodiversity loss of reindeer pastures, pollution etc
	conflict between local cummunities & need of wider society - loss of local agency
	Sustainable use of natural resources, including mining, is important. Restoration and climate-friendly processes. Responsibility also from tourists is needed. How to promote sustainable work places that will lower the risk of injuries among workers and cost for companies and society at large. Many workers will fly into new environments into arctic cities, how to adapt the knowledge gap among them regarding occupational safety in arctic is a challenge.
Socio-economy	connecting environment & economy for example natural resource extraction > reconsidering how the economy is driven
	Demographics > shifting employment & education opportunities
	Critical perspectives on economic issues, "growth" de-growth non-governmental subsidized development
	creative industries can contribute to for example sustainable tourism opportunities > diverse economy approaches celebrate and maintain cultural heritage in innovative ways, also helps with jobs & education potential of art/science projects to develop sustainable services &p products

How can Arctic communities benefit financially from extractive industries and tourism in their area?

how can environmental challenges be turned into business opportunities, eg circular economy, climate solutions?

micro-entrepreneurship and Arctic business development, independent new traditional economy combining modernity with the traditional economy

operating short-to-long term (for example, addressing Indigenous well-being now and across generations)

Financial benefit to Arctic communities

Research practices and code of conduct

respect different knowledge systems

One Health approach, environment -animals - humans

more research on regional scale

need to consider/include ALL knowledge systems: Indigenous Knowledge + scientific

climate adaptation and climate intervention + mitigation research with Arctic communities (justice, ethics, sustainability)

climate services for better climate adaptation (=long/medium/seasonal predictions for Arctic regions) e.g mosquito predictions

a problem focus - eg climate change connected to all clusters > identifying some key issues and their connection & implication

Indigenous sovereignties, a general concern and how it plays in different areas of other concerns

interdisciplinary, transdisciplinary approaches to research, knowledge exchange, citizen science

need a holistic approach: health- youth - migration

a system approach, holistic - that cuts across the existing categories, respecting difference of approach

Novel funding + sustainability models

use of new technologies

Place appropriate development

continuity and availability of funding

ownership of data, what to do with it (usage)

CBPR/CS involvement/implementation of solution

western & traditional knowledge (meaningful for communities)

Arctic level of science is not representative without Russia

Inclusive open science, cooperation with Russian scholars, data collections problems, lack of rapid data processing and forecasting/modelling

arctic - non arctic interactions (economical, environmental..)
new methodologies and tools for big issues
wicked problems, polycrises
focus on youth and futures
time frames of research - long-term commitments
participation in practice? Stakeholder fatique
science &art working together
ethics > collected data - published or not? Ethical dilemma of research
history of colonialism influencing also inclusive research on climate solutions including climate interventions
Ethical and inclusive research is very important. The problem is that the short term funding system we have these days doesn't enable long-term relationships as you never know if you can get another funding and continue working with a community you got to know. There are great ethical frameworks and collaborative, decolonial methodologies are also being developed and need to be developed more.

research into action (for example, understanding that data from research is different than evidence for decisions by institutions, but recognizing data and evidence both originate with questions)
Efficient detection and monitoring of changes in biodiversity is needed. For that, engagement of stakeholders, management, citizens and indigenous people (citizen science) is required.

Funding agencies must understand the changing climate and its challenges for companies and occupational safety in the arctic. Scientist must co-create with local companies on their needs and demands to understand the challenges they have with climate change and occupational health.

Respect of individual and collective identity/privacy; informed consent; co-constructing research and sharing results.