

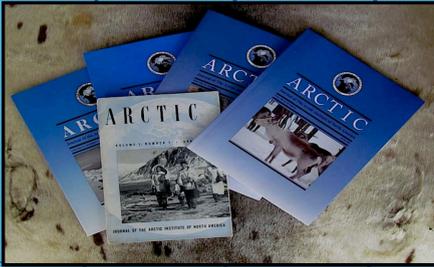


USING BIG DATA, SCENARIOS DEVELOPMENT AND GAME THEORY TO MONITOR, UNDERSTAND AND ADAPT TO CLIMATE CHANGE IN THE CIRCUMPOLAR ARCTIC

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About AINA, Aarhus School of Business and Social Sciences, and NCoE NORD-STAR
The AINA has over 65 Research Associates and over 280 Fellows, and participates in collaborative and multi-disciplinary research projects throughout the circum-Arctic. AINA manages the Kluane Lake Research Station, Research tools include the ARCTIC Journal, North America's premier journal of northern research with seven decades of publications; and the Arctic Science and Technology and Information Systems (ASTIS) open access databases which hold 77,000 records and reports, including the Canadian IPY Publications Database.
Aarhus School of Business and Social Sciences is one of four faculties at Aarhus University, with multi-disciplinary research and research-based teaching in law, economics, entrepreneurship, business engineering and management, political science and psychology.
NCoE NORD-STAR is a virtual centre of excellence, involving nine founding partners in the five Nordic countries and industry partners. The NCoE NORD-STAR focuses on two research questions:
• What constitutes a strategic approach to addressing the dual challenge of adapting sustainably to the inevitable impacts of climate change and the unintended consequences of climate policy?
• How can dialogue and innovation best be used to advance adaptation strategies in the Nordic region?



About the Adaptive Governance for Global and Climate Change in the Circumpolar Arctic
Through collaborative research projects and research tools and networks, AINA, Aarhus University, and NCoE NORD-STAR are examining the use of big data analytics, scenarios development and game theory to engage government, businesses, local residents and other stakeholders in monitoring, understanding and adapting to climate change in the circum-Arctic and polar regions. The research compares and contrasts big data analytics, scenarios development approaches and game theory to evaluate their successes in engaging all actors in monitoring, understanding and adapting to climate change, with a focus on the Nordic, Arctic and polar regions. Case studies are explored, with recommendations for best practices.

Scenarios Development

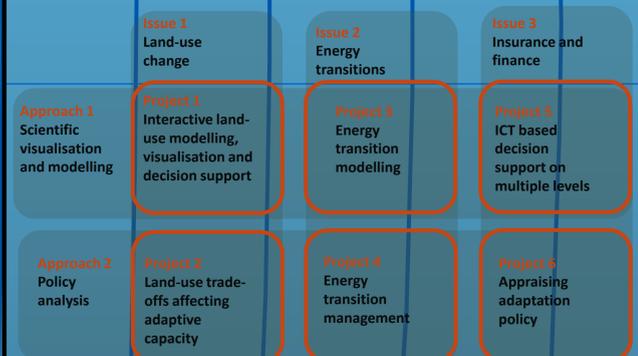
Scenarios are stories that describe a possible future. Building and using scenarios allows explorations of what the future may look like and preparation for change. Scenario development is typical of global and Arctic climate assessments. Scenarios are also useful in developing climate adaptation and mitigation strategies, including shared learnings and societal visions for future action.

Big Data Analytics

Climate monitoring (which includes personal computing devices, social media and citizen science) gives rise to significant volumes of data. As the amount of climate data and information increases, how that data and information is stored, analyzed, and underpins decision making becomes increasingly important. Big data analytics, and the modeling and interpretation of that data, clarifies climate impacts, informs adaptation and mitigation responses, and can provide unforeseen insights.

Game Theory

Game theory is the study of strategic decision making. Games provide alternative means of sharing information and knowledge and strategic interactive decision making. Games may be simple or complex, have invited or self-nominated participation, and occur in real time. Climate games have been used for meteorology, natural hazards, disasters and emergencies. Strategic war games, including role playing, can assist in understanding complex reiterative multi-stakeholder responses to disasters, emergencies, extreme situations, and other possible future events. Game theory can also combine with scenarios; for example, assisting in understanding possible responses to future CO2 atmospheric concentrations and temperatures.



Public and Private Partnerships

Adaptive governance research is being implemented in partnership with local and regional governments; indigenous organizations; industry associations for energy, mining and tourism; and public and private academic institutions. Johns Hopkins University's Master of Science: Energy Policy and Climate program actively supports this research. AINA and Aarhus University are members of the University of the Arctic, which is a cooperative network committed to northern education and research. The Centre for the North, Conference Board of Canada is a partner. The Centre's Roundtable, which includes AINA, is composed of northern representatives from government, industry, academia and aboriginal groups. Civil society organisations include the Coastal and Marine Union (EUC), an association with over 2700 members and member organisations in more than forty countries, and the largest network of coastal practitioners and experts in Europe; and Sustainable Cities International, a leader in urban sustainability with a global network of towns, cities and metropolitan regions.



Funding for attendance at ISAR3 provided by the NCoE NORD-STAR and the BSS Arctic Research Project. For further information for this poster, please see the Adaptive Governance for Global and Climate Change in the Circumpolar Arctic project at www.arctic.ucalgary.ca/research/adaptation-governance. Incorporated research includes: Arctic Resource Development and Climate Impacts, Adaptation and Mitigation; Changing Oceans in Changing World; Circum-Arctic Health Project, Parallels for Arctic and Antarctic Governance and Resource Management; Sustainable Energy Development; and Sustainable Tourism.

