



norden

Top-level Research Initiative

The Arctic  
within the

Top-level  
Research  
Initiative

# Adaptation of Arctic Communities to Climate Change

Possible themes for cooperation



## Possible themes for cooperation on Adaptation of Arctic Communities to Climate Change

Suitable themes for future Arctic research activities related to the theme of Adaptation of Arctic communities to Climate Change have been developed within the framework of the Top-level Research Initiative. The themes are recommended by a working group under the Top-level Research Initiative, which analysed the legacy of the International Polar Year in the Nordic Region and the possibilities for integrating these Arctic activities under the Top-level Research Initiative.

The presented themes all require an integrated interdisciplinary approach and involvement of several scientific and societal sectors in order to form a strong foundation of future Nordic engagement in the vast circumpolar region.

### 1. Resilience of the Arctic

A comprehensive mapping of existing knowledge, existing tools and needs on Arctic research in Nordic countries

- Utilising existing data and databases as well as the best local practitioners and regional and global pioneers
- Based on large-scale communication processes across Arctic communities and sectors to identify what people need and wish for
- Developing Integrated Arctic Zone Management: balancing and integrating different objectives and instruments to include both environmental and societal goals

Results could be utilised both for research and political purposes

### 2. Societal change in the Arctic

Building scenarios based on past experience to predict how society will change in the future

- Using local examples from different countries in order to identify the drivers, critical factors, and change agents for constructing scenarios from bottom-up
- Issues to be addressed are, for example, values, perception and behaviour of people and societies

Results would help to understand how societies change in stress situations

- Need to know how society acts under pressure to be able to adapt to climate change

### 3. Building bridges between science, policy & people

Building a process whereby researchers, policy-makers and communities are brought together to

- Discuss existing and potential incentives
- Analyse this process in order to learn from it
- Fine-tune the framework when needed

Based on a reflective process of problem solving, i.e. action research, assisted by professional researchers and connected to a real policy process

Well-designed framework for building adaptive capacity and resilience for green economic efficiency

### 4. Nordic Integrated Model of Climate Change and Adaptation

Building an atmosphere-ice-ocean-land model coupled with ecosystem models, economic models and human behaviour models

- Establishing two reference sites for the coupled modelling of major climatic change
- Later, similar transects could be done in pan-Arctic studies

The work would provide a toolbox of models for further work in all the Nordic countries

This would improve the potential for statistical projections to be used in formulating adaptation strategies

### 5. Proactive adaptation to multiple possible land-use futures

Supporting adaptive management and decision-making by:

- Identifying causes of past change in both environment and policy
- Identifying current land-use in different regions and comparing the different governance institutions / management systems
- Refining models of ecosystem change by including social drivers
- Developing future scenarios of land-use and identifying incentives for preferred future uses (i.e. adaptive management)
- Identifying human and biophysical feedbacks

### 6. Large-scale industry meets small-scale communities

Comparative studies on the impacts of large-scale economic activities using case studies including a historical as well as a contemporary dimension

- How have they developed?
- What were the environmental impacts?
- What have been the long-term consequences?

Results will help to ensure more sustainable economic development in the Arctic region in the future

## The VIP Project 2010-2011



The Monaco glacier, Svalbard. Photo: Gail A Johnson/Stockphoto

**The project 'Continuation of the International Polar Year (IPY) as an Arctic theme under TRI' called VIP (2012-2011) was established in order to promote the Arctic region as a cross-cutting theme in the Top-level Research Initiative, and also to promote the development of the TRI as a platform for further international cooperation.**

The project has used IPY results and through interviews and workshops mapped and identified a range of joint Nordic interests in Arctic research, in addition to exploring ways of structuring joint Nordic research on these issues.

### **Working Group**

- Harry Zilliacus, NordForsk Coordinator
- Karen Edelvang, Geological Survey of Denmark and Greenland - GEUS
- Helgi Jensson, Environment Agency of Iceland
- Carina Keskitalo, Umeå University, Sweden
- Olav Orheim, Research Council of Norway
- Jostein K. Sundet, Research Council of Norway
- Louise Simonsson, Swedish Defence Research Agency
- Monica Tennberg, University of Lapland, Finland
- Fredrik Melander, Nordic Council of Ministers Secretariat (observer)
- Michael Andersson, NordForsk



## The Top-level Research Initiative

### - A major Nordic venture for climate, energy and the environment

The Top-level Research Initiative (TRI) is a joint effort on the part of the Nordic countries to find solutions to global climate challenges - the largest-ever Nordic venture of its kind.

The Nordic countries have created a platform for cooperation with central players from research, innovation, business and industry.

The TRI is one of the Globalisation initiatives declared by the Nordic Prime Ministers in 2008, intended to increase competitiveness and promote the Nordic region as a pioneer in tackling globalisation. With a programme budget of 53 million Euro, the initiative currently funds 31 Nordic projects amounting to a collective value of some 94 million Euro.

#### Joint governance across sectors

Three Nordic institutions - NordForsk, Nordic Innovation and Nordic Energy Research - act as secretariat for the initiative, contributing with their combined competencies in the fields of research, innovation and technology. The three organisations are all under the auspices of the Nordic Council of Ministers.

TRI is governed by a Management Board consisting of 15 members representing public financing bodies for research and innovation, as well as the private sector.

The various funded activities involve participants from the whole Nordic region and a range of sectors. Expertise within research, education and innovation is brought together and coordinated in collaboration projects with hundreds of participants from all the Nordic and Arctic countries.

#### The Top-level Research Initiative addresses six primary thematic areas:

- **Climate (ADAPT)** = Effect Studies and Adaptation to Climate Change
- **Cryo** = Interaction between Climate Change and the Cryosphere
- **Nano** = Energy Efficiency with Nanotechnology
- **Wind** = Integration of Large-scale Wind Power
- **Bio** = Sustainable Bio-fuels
- **CCS** = CO<sub>2</sub> Capture and Storage

Within the framework of these areas, the initiative also includes:

- Advanced climate modelling
- Social sciences and humanities
- Focus on the Arctic

#### Overall objectives

- To promote the Nordic region as a pioneer within climate, energy and the environment
- To ensure research and innovation of excellent quality by joining the strongest Nordic environments
- To promote Nordic business
- To promote professional environments across sectors and enhance mobility of competence
- To create platforms for international cooperation and to strengthen the Nordic region within EU programmes

#### Content and results

The TRI has established six Nordic Centres of Excellence (NCoE), one Nordic competence centre, 11 integrated research and innovation projects and 13 thematic networks within climate and energy issues. The projects contribute to enhancing society's knowledge about climate change and to better prepare us for them, such as through technology development and sustainable energy solutions.

#### Participation from industry

One-third of all the TFI projects have active business participation. This participation gives an opportunity to realise long-term investments and to build strategic networks.

#### International perspectives and dialogue with the EU

Through various projects and networks, the TRI links research, innovation and industry together, by acting as a platform for further international collaboration. Examples of such collaboration are a project dealing with the continuation of the International Polar Year (IPY) and Arctic issues and involvement in the Joint Programming Initiative (JPI Climate) Connecting Climate Knowledge for Europe.

#### Result-oriented

The Top-level Research Initiative aims to obtain results through effective plans, organisation and processes, and evaluations are carried out in order to document its results.

#### Outreach and communication

Communication and dissemination of results through various channels is a priority. The initiative participates on various arenas in Europe, and organises a large annual conference gathering many categories of professionals and receiving international attention.

See [www.toplevelresearch.org](http://www.toplevelresearch.org) for more information about the initiative.