

## OBJECTIVE

The programme will generate new, cross-disciplinary knowledge, of highest international quality, about the opportunities and challenges facing the Arctic region.

## FUNDING

The total budget is approximately NOK 116 million and the programme runs until 2021. It is funded by the Research Council of Norway, the Academy of Finland, the Swedish Research Council, Rannís - the Icelandic Centre for Research, Ilisimatusarfik – the University of Greenland and the Danish Ministry of Higher Education and Science.

## ACTIVITIES

Four Nordic Centres of Excellence were launched in early 2016.

## BACKGROUND

The Arctic is coming under great pressure due to changes in regional and global structures, and more knowledge about this fragile region is needed. NordForsk has developed the programme in close cooperation with high-level representatives of the main research financiers in all the Nordic countries.

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# JOINT NORDIC INITIATIVE ON ARCTIC RESEARCH RESPONSIBLE DEVELOPMENT OF THE ARCTIC



NordForsk is an institution under the Nordic Council of Ministers that facilitates and provides funding for Nordic research and research infrastructure cooperation.

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The Research Programme **Responsible Development of the Arctic – Opportunities and Challenges – Pathways to Action** was launched to expand knowledge about opportunities for and challenges facing the region. In December 2015 NordForsk decided to establish four new interdisciplinary Nordic Centres of Excellence under the programme. The programme's overall budget is approximately NOK 116 million.



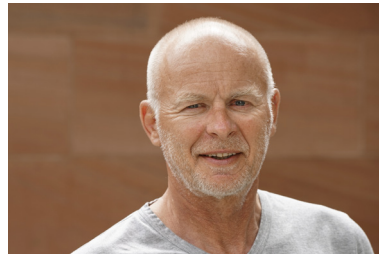
Birgitta Evengård

**NCoE CLINF:** Will be investigating how climate change in the Arctic can give rise to new medical and social health issues and how to meet challenges to come in the best possible way.

"The basis for our work at NCoE CLINF is that climate changes in the Arctic are altering the spread of plant and animal life all over the world, because plants and animals are changing along with the climate. This means that ecosystems are changing too, and in the Arctic this is happening three times faster than anywhere else," explains Birgitta Evengård, professor and chief physician at the Department of Clinical Microbiology at Umeå University.

NCoE CLINF has three project leaders: Birgitta Evengård of Umeå University, Ann Albiñ of the National Veterinary Institute (Sweden), and Tomas Thierfelder of the Swedish University of Agricultural Sciences.

The Nordic Centre of Excellence CLINF (Climate-change effects on the epidemiology of Infectious diseases and the associated impacts on northern societies) involves approximately 50 researchers from eight different countries.



Øystein Holand

**NCoE ReiGN:** Reindeer husbandry is affected by climate change and globalisation, as well as by a number of other regional factors such as the construction of cottages, mining operations, other grazing animals and various political decisions.

"The overall objective of NCoE ReiGN (Reindeer Husbandry in a Globalizing North – Resilience, Adaptations and Pathways for Actions) is to gain insight into how climate change and other processes in the Arctic will affect reindeer husbandry in Finland, Sweden and Norway. The centre will also examine ways in which reindeer husbandry can adapt to the changes taking place," explains project leader Øystein Holand, professor in Animal and Aquacultural Sciences at the Norwegian University of Life Sciences.

NCoE ReiGN is an interdisciplinary cooperation between 11 Nordic research institutions and encompasses a wide range of subject areas, from genetics and evolutionary theory to ecology, resource management and legislation.



Yongqi Gao

**NCoE ARCPATH:** The rapid rise in temperature in the Arctic poses new challenges for northern communities already under pressure. The decline in sea ice has resulted in more shipping activity which, combined with oil and gas exploration, may have an impact on both fisheries and marine mammals.

"Activities at NCoE ARCPATH (Arctic Climate Predictions: Pathways to Resilient, Sustainable Societies) will focus on socio-economic changes in specific coastal communities on Iceland, Greenland and in Northern Norway and incorporates both natural science and social science perspectives. Our objective is to combine improved regional climate prognoses with a deeper understanding of interactions between environmental, social and economic factors within these communities in order to generate new knowledge and approaches to ensure responsible development in the Arctic," explains project leader Yongqi Gao, Research Director at the Nansen Environmental and Remote Sensing Center (NERSC) in Bergen.

NCoE ARCPATH involves 11 research institutions in Norway, Denmark, Sweden, Iceland, China, the US, Russia and Canada.



Sverker Sörlin

**NCoE REXSAC:** The extraction of natural resources in the Arctic has a long history and has had a profound influence on societal development as well as the environment. Professor Sverker Sörlin of KTH Royal Institute of Technology in Stockholm is heading NCoE REXSAC (Resource Extraction and Sustainable Arctic Communities), which will be studying oil and gas activity and, in particular, mining operations in the north.

"The lower price of oil has reduced interest in new oil and gas activity in the north. Mining operations are also less extensive than they were a few years ago. But there are always plans on the table for new activity and we will look at how natural resources can be extracted in a sustainable manner," Professor Sörlin explains.

"It is often hard to decide what will be most beneficial for the development of a community and it is not a given that all resources should be extracted. This kind of problem emerges, for example, when new mining operations conflict with reindeer husbandry needs. These are difficult questions which we would like to examine more closely in order to redefine our positions and target thinking towards the future. Our ambition is to generate research findings that benefit the population in the region," says Sörlin.

Professor Sörlin is in charge of the NCoE, which involves the participation of approximately 75 researchers from 15 research institutions in Nordic countries as well as Canada and Russia.