

# Russlandprogrammet

## 1 Study of Russian Air Pollution Sources and their Impact on Atmospheric Composition in the Arctic

Prosjektansvarlig:

**Norsk institutt for luftforskning**

Prosjektleder:

**Stohl, Andreas Seniorforsker**

Prosjektnr: 184696/S50

Bevilgningsperiode og finansiering fra Norges forskningsråd:

**1.1.2008-31.12.2010**

2008: **1,000,000** 2009: **1,000,000** 2010: **1,000,000**

RAPSIFACT objectives are to

Strengthen relationships between Russian and Norwegian researchers in the environmental sciences

Quantify emissions of greenhouse gases and air pollutants from the oil and gas industry, e.g., leakages from pipelines, refineries and oil production sites

Compare the emissions from the oil industry with other emissions in Russia, including those from agricultural fires in western Russia and boreal forest fires in Siberia

Explore the frequency distributions of concentrations of greenhouse gases, gaseous air pollutants and aerosols in the atmosphere above Russia, especially in air masses moving across the Barents Sea into the Arctic

Investigate the impact of the Russian emissions on the atmospheric composition observed in Svalbard. In particular, quantify the Russian contributions to the black carbon and ozone load

Explore Russian options for rereducing black carbon and ozone concentrations in the Arctic

RAPSIFACT will interpret existing and conduct new measurements of greenhouse gases, gaseous air pollutants, and aerosols in Russia, which is the most important source region for Arctic air pollution. This has especially high relevance and is extremely urgent because climate change is proceeding the fastest in the Arctic, and reducing the emissions of short-lived pollutants in the source regions affecting the Arctic is probably the only feasible short-term strategy for slowing Arctic climate change.

The proposal builds on the combination of a unique Russian measurement platform - the instrumented TROICA railway carriage -, data from several Russian air chemistry measurement stations, the FLEXPART

Lagrangian tracer transport model, as well as measurements obtained at the Norwegian Zeppelin research station in Svalbard and other sites in northern Scandinavia. Three new TROICA missions will be conducted within the project, two of which will use the railroad from Kislovodsk to Murmansk, the country's only all-weather northern port and an Arctic pollution hot spot, the third will travel along the Trans-Siberian railroad. When interpreting the data (also from previous missions), the focus will be on the measurements taken in air masses travelling across the Barents Sea into the Arctic. The data will be compared to measurements obtained at Svalbard to assess the impact of Russian sources onto the Arctic. A sectoral focus will be on the oil and gas industry whose emissions in the Arctic are expected to grow considerably in the future.

## 2 MAritime REsources of the BArents SEa: Satellite data driven monitoring in the context of increase of commercial efficiency of the fishery

Prosjektansvarlig:

**Nansen Senter for Miljø og Fjernmåling**

Prosjektleder:

**Sandven, Stein Forskningsssjef**

Prosjektnr: 184778/S50

Bevilgningsperiode og finansiering fra Norges forskningsråd:

**1.1.2008-31.12.2010**

2008: **1,000,000** 2009: **1,000,000** 2010: **1,000,000**

The overall objective of the proposal is to advance our capability to monitor the Barents Sea maritime resources in the context of increase of the commercial efficiency of the fishery.

This will be achieved through the following specific objectives:

- Identification of the governing marine physico-chemical factors/parameters and dynamical process governing fish behavior and distribution in the Barents Sea.
- Development and validation of the satellite SAR and optical data driven method for detection and monitoring of the marine processes and phenomena (e.g. fronts, current convergence and divergence) associated with zones of enhanced biological productivity.
- Performance of the pilot monitoring of the Barents Sea based on the satellite and aircraft data, hydrodynamic and ecosystem modeling, and in situ observations on hydrological and biological (zooplankton, fish) parameters.
- Development of a prototype of the satellite data driven monitoring system

The main objective of the four-year project is to advance our capability to monitor the Barents Sea maritime resources focusing on the increase of the commercial efficiency of the fishery. It is anticipated that implementation of the developed monitoring system will result in significant reduction of fishing-boats waste of time spending on the searching of the fish shoals. Proposed monitoring system is based on the data available from the operating ENVISAT, RADARSAT, NOAA, MODIS and planning (e.g. TERRA-SAR) satellites. The main activity will be achieved through the progress in solution of the following tasks:

- Identification of the governing physic-chemical factors/parameters and dynamical process governing plankton and fish behavior and distribution over the Barents Sea.
- Development and validation of the satellite SAR and optical data driven method for the detection of the marine processes and phenomena (e.g. fronts, current convergence/divergence) associated with the zones of enhanced biological productivity.
- Performance of the pilot monitoring of the Barents Sea based on the satellite and aircraft surveys, in situ hydrological and biological (zooplankton, fish) polygon survey by the research vessels, and hydrodynamic and ecosystem numerical simulations with use the operational models;
- and finally, development of the prototype of the monitoring system, demonstration and promotion of this system to the potential users.

The project consortium consist of 4 Norwegian and Russian teams (NERSC, Bergen; NIERSC and RSHU, St.Petersburg; PINRO, Murmansk) of the world-wide recognized expertise, and possessing all the necessary resources for the execution of the proposed project. This research project includes also the element of educational activity: involvement of four RSHU master degree students and three PhD students (two at RSHU-NIERSC, and one at NERSC) will be directly linked to the project.

### **3 The role of protected nature in sustainable local development in North-West Russia and Northern Norway - a comparative analyses**

Prosjektansvarlig:

**Nordlandsforskning**

Prosjektleder:

**Sandberg, Audun Førsteamanuensis**

Prosjektnr: 184781/S50

Bevilgningsperiode og finansiering fra Norges forskningsråd:

**1.1.2008-31.12.2010**

2008: **700,000** 2009: **700,000** 2010: **700,000**

The objective of this project is twofolded:

- 1) -to compare Norwegian and Russian system of organisation and use of nature conservation areas with aim to develop recommendations for their sustainable management directed to benefits for local communities and improving of living condition for residents; and
- 2) - increase knowledge of socio-economic aspects of protected areas organisation to enhance competence of Russian and Norwegian stakeholders (environmental authorities, NGOs, indigenous peoples, entrepreneurs and local communities) when it comes to conflict resolution and local/rural development related to the areas.

Sub-goals

- a. What characterize the Norwegian and Russian legislative and management system, as well as conservation processes?
- b. Are the conservation and management processes designed to facilitate local development?
- c. How can Norwegian and Russian communities benefit from each other when it comes to protected areas as resource for local development

The research project intends to increase understanding and knowledge in the field of interconnection of nature conservation process and development of local communities. The study will be carried out on the base of comparison of different protected areas management systems and institutional framework in Russia and Norway. The research tasks is planned to achieve by using, in particular, qualitative methods (interviews, focus groups, workshop), involving participation of different stakeholders from both countries, as well as quantitative data/numbers on economic figures.

Expected results are:

- 1) enhanced and shared knowledge about Norwegian and Russian nature conservation policies
- 2) improved methods conflict resolution and local development in relation to nature protection, on a bilateral scale
- 3) scientific recommendations within the field of nature protection for the benefit of local communities
- 4) long term relations between Norwegian and Russian academics.

The results are expected to contribute to both authority bodies and NGOs, economical agents and other representatives of local communities. The comparative approach will most likely give feed back on how different conservation strategies within Norwegian and Russian environmental policy facilitate local participation and development which includes civil society and indigenous groups. The consortium represents researchers from both natural (biology/ecology) as well as social sciences (economy, political science, and sociology).

### **4 "Neighbourly Asymmetry: Norway and Russia 1814-2014"**

Prosjektansvarlig:

**Det samfunnsvitenskapelige fakultet, Universitetet i Tromsø**

Prosjektleder:

**Nielsen, Jens Petter Professor**

Prosjektnr: 184848/S50

Bevilgningsperiode og finansiering fra Norges forskningsråd:

**1.1.2008-1.6.2011**

2008: **400,000** 2009: **1,400,000** 2010: **1,200,000**

The primary objective of the project is to research the historical relations between Norway and Russia / the Soviet Union in the period 1814-2014, and publish two comprehensive, richly illustrated volumes adapted to a broad circle of readers, as a timely contribution to the 200th anniversary of the Norwegian constitution. The secondary objective is a noticeable increase in competence and recruitment to the field of Norwegian-Russian historical relations, both in Norway and Russia, and this will be achieved, i.a. by including doctorates and postdoc scholarships in the programme. A series of dissertations are going to be written that will raise the professional level significantly.

The purpose of "Neighbourly Asymmetry: Norway and Russia 1814-2014" is to research the historical relations between Norway and Russia / the Soviet Union in the period 1814-2014. It will result in two richly illustrated volumes, which will be an important contribution to the 200th anniversary of the Norwegian Constitution (2014). The objective is twofold; 1) to increase the knowledge about Norwegian-Russian relations among the general public and 2) to achieve a noticeable increase in research competence and recruitment to the field, both in Norway and Russia. The Pomor State University in Arkhangelsk and the Institute of General History, Russian Academy of Sciences, will be the main cooperative partners on the Russian side, the Norwegian Institute for Defence Studies on the Norwegian. The editorial board will also consist of representatives from both countries. The research is going to comprise the entire field of Norwegian-Russian bilateral relations, but with a special emphasis on the northern dimension. There are two complementary, overarching perspectives inherent in the conception "neighbourly asymmetry": The first and most obvious is Russia's role as a great power, versus Norway's position as a small state, a disparity that has been decisive for Norwegian security orientation for a very long time. If we turn our attention from the inter-state level to civil society a converse picture appears: On this level weakness is characteristic of Russia, while Norway for historical reasons has a stronger organization from below and a more even dispersion of social assets. The disparities in this regard at the Norwegian-Russian border were striking already in the 19th century, and are even more so today. A central, overarching question is how the long-lasting Norwegian-Russian stability can be explained, in spite of this twofold asymmetry? The project will be carried through in the period 2008-2014.

## **5 Public health without public trust? Governance of HIV/AIDS prevention in North-West Russia**

Prosjektansvarlig:

**Norsk institutt for by- og regionforskning**

Prosjektleder:

**Aasland, Aadne Forsker 2**

Prosjektnr: 184931/S50

Bevilgningsperiode og finansiering fra Norges forskningsråd:

**1.1.2008-31.12.2010**

2008: **1,000,000** 2009: **1,000,000** 2010: **1,000,000**

Primary objective:

- to produce knowledge on the degree to which HIV/AIDS prevention is perceived and treated as a public health issue, requiring a broad, multi-sectoral response, among various actors in North-West Russia.

Secondary objectives:

- to contribute to empirical and theoretical knowledge on trust/social capital, governance, health models and professionalisation of health and social work.
- to continue and develop sustainable collaboration between research and higher education institutions in Norway and North West Russia on public health.
- to disseminate the results of the project to national policy-makers, international donors and local authorities and professional groups.
- to contribute to knowledge that improves HIV/AIDS prevention strategies in Russia.

The project examines the extent to which HIV/AIDS prevention in North West Russia is perceived and treated as a public health issue, requiring a broad, multi-sectoral response. Using multi-level analysis, the project studies processes and perspectives among four types of actors: i) authorities (at federal, district and local levels), ii) professional groups, iii) risk groups, and iv) the general public. It also emphasises processes taking place in the intersections between these actors.

The project builds on - and has ambitions to contribute to - theories on trust/social capital, governance, health models, and professionalisation of health and social work. In addition to analysis at the national level, six case studies (located in three federal districts in North-West Russia) will be undertaken. In each case study different types of qualitative interviews will be carried out with policy-makers, professional groups (doctors, nurses and social workers), as well as HIV positive people. Provided additional funding is obtained, we will also conduct two quantitative surveys (among the general population and among risk groups) in order to obtain bottom-up perspectives on HIV/AIDS prevention.

The academic output will consist in academic articles and conference papers. The project also pays much attention to the dissemination of results of the project findings. There is already a regional network of actors (policy-makers and professionals) working on HIV/AIDS under

the Barents Health Programme, which will be primary users of the project findings.

## **6 NATURAL AND SOCIAL SCIENCE RESEARCH COOPERATION IN NORTHERN RUSSIAN AND NORWAY FOR MUTUAL BENEFITS ACROSS NATIONAL AND SCIENTIFIC BORDERS**

Prosjektansvarlig:

**NINA Hovedadm.**

Prosjektleder:

**Hofgaard, Annika Seniorforsker**

Prosjektnr: 185023/S50

Bevilgningsperiode og finansiering fra Norges forskningsråd:

**1.1.2008-31.12.2010**

**2008: 1,000,000 2009: 1,000,000 2010: 1,000,000**

### **OVERALL AIM**

Develop long-lasting scientific and educational collaboration network between Norwegian and Russian institutions with focus on development in northern regions through combined natural- and social science approaches.

### **PROJECT THEMES**

The overall aim will be reached through emphasis on three focal research themes, based on ongoing nationally funded research projects. These scientific components making up BENEFITS jointly seeks to generate comprehensive information on, and tools for characterizing and monitoring of i) environmental status and spatiotemporal changes of northern forest-tundra ecosystem; ii) distribution and change of human land use and underlying environmental and social drivers; and iii) subsequent consequences to human societies and the environment.

The proposed cooperation project is linked a newly started IPY research project PPS Arctic funded by RCN which focuses on Present day processes, Past changes, and Spatiotemporal variability of biotic, abiotic and socio-environmental conditions and resource components along and across the Arctic forest-tundra zone. This region/zone is internationally recognised due to its exceptional importance in terms of climate feedbacks, global vegetation, and settlements by indigenous people. Large scale changes in the structure and location of this zone (as predicted) will affect the total northern environment with its people, landscapes and sustainability of resource use. PPS Arctic includes Russian field sites but with limited funds for bilateral or international collaboration and network building. Accordingly, the current proposal for bilateral research cooperation emphasise needs for Russian partners.

The project is organized into four work packages integrating the three research themes:

WP I Exchange of visiting scientists and graduate students

WP II Joint workshops held in Russia and Norway

WP III Joint fieldwork activities in Russia

WP IV Communication and dissemination of progress and results

This organization will ensure scientifically and nationally mutual and integrated research cooperation to be formed during the project period and for the future, based on sound ecological, remote sensing and socio-economical experience.

## **7 Emerging persistent organic pollutants (POPs) in the high North and North-Western Russia**

Prosjektansvarlig:

**Universitetssenteret på Svalbard AS**

Prosjektleder:

**Kallenborn, Roland**

Prosjektnr: 185104/S50

Bevilgningsperiode og finansiering fra Norges forskningsråd:

**1.1.2008-31.12.2010**

**2008: 1,000,000 2009: 1,000,000 2010: 1,000,000**

The proposed educational and scientific program is designed to build upon the success of several previous endeavors as the successful scientific cooperation between UNIS, the Tromsø University, NILU and St.Petersburg State University (SPbSU). Based upon a wealth of experience the project group will develop a comprehensive program allowing the exchange and joint supervising of MSc, PhD students or postdoctoral scientists from the respective Russian and Norwegian partner Universities and institutions. The scientific and research focus of our educational program will be encircle various aspects (methods and processes) within environmental chemistry with the aim to develop a long term co-operation and scientist exchange program between the partners.

The aim of the proposed initiative is to develop a mutual scientific exchange program within environmental chemistry based upon transfer of scientific knowledge, MSc, PhD students and personnel. The main activity will be medium-term research visits (3-12 months; 6 months in average) of M.Sc., Ph.D. students and Post-doctoral researchers from the Russian Partner Universities/ institutions to Norway and vice versa. SPbSU. Research visits will be an integrated part of each M.Sc., Ph.D. or post-doc project. Usually, MSc. or PhD students from Russia will plan one visit during the second year of their project. Norwegian hosts and Russian home institutions will all mutually benefit from the scientific achievements. It is expected that also an equal number Norwegian Students on a MSc and PhD level will visit Our Russian partner institutions within their respective educational programs. It is planned that there will be 1-2 M.Sc., Ph.D.

students or post-doctoral researchers in Norway and Russia similarly. This means, total of 5 M.Sc., and 5 Ph.D students as well as 2 post-doctoral researchers will take part in the program. We are expecting to perform between 10 student projects in Russia and Norway with (at least partial) support of the here presented project initiative. Thus by the end of the program The NORTHPOP Russian-Norwegian co-operation program is expected to deliver important scientific information about the levels, fate and distribution of various POPs in Russia and the European north. Already during the final stage of the project, the established network will seek actively support and funding for continuation at potential Norwegian and Russian institutions within science, industry and academia. The project will hopefully contribute to a better awareness of environmental problems of High North will deliver important results for both nations.

## **8 IMPACT ASSESSMENT OF ELEVATED LEVELS OF NATURAL/TECHNOGENIC RADIOACTIVITY ON WILDLIFE OF THE NORTH**

Prosjektansvarlig:

**Statens strålevern**

Prosjektleder:

**Brown, Justin Seniorforsker**

Prosjektnr: 185134/S50

Bevilgningsperiode og finansiering fra Norges forskningsråd:

**8.1.2008-31.12.2010**

2008: **800,000** 2009: **800,000** 2010: **800,000**

The main aim of the project is to develop a system for assessment of the radiological impact on wildlife of the North from technogenically enhanced natural radioactive materials (TENORM) and man-made radioactivity. This will be achieved through the development of radiological impact assessment tools and through the derivation of appropriate criteria and standards.

The major research objectives are:

1. Development of a methodology for assessing the radiation impact on natural biota of the North.
2. Evaluation of radiation dose loads to representatives of terrestrial, freshwater and marine biota in the areas of enhanced levels of radioactivity.
3. Derivation of dose-effects relationships for wildlife, inhabiting the areas with enhanced levels of radionuclides.
4. Development of criteria ensuring the radiation safety of vulnerable northern ecosystems

In recent years, considerable international efforts have been undertaken to develop scientifically correct and practically acceptable methodologies for assessing the possible radiation impact on the environment. Three innovative EC projects can be named in this respect :

FASSET (Framework for Assessment of Environmental Impact), EPIC (Environmental Protection from Ionizing Contaminants in the Arctic) in the period 1999-2003 and most recently ERICA (Environmental Risk from Ionising Contaminants: Assessment and Management), 2003-2007. Focus has been predominantly on temperate ecosystems. The proposed activity will build on these earlier projects and adapt methods for use in vulnerable northern environments.

The ecosystems of the North are particularly vulnerable to toxicants and stresses because of extreme climatic conditions placing the living organisms on the edge of their survival capacity. Recovery of injuries in northern populations and ecosystems can be a highly protracted process. This may reflect the slow growth and development of many northern organisms. Ionizing contaminants are present in the Northern regions and constitute an existing exposure hazard to wildlife. Non-nuclear industries dealing with TENORM; nuclear power and reprocessing plants; civil and military nuclear powered vessels, etc. are situated in (or near) northern environments and form a present-day and potential source of environmental contamination. At the same time, the understanding of radiobiological effects in northern organisms is very limited, and there is still no system of assessing the impact of ionizing radiation on wildlife of the North. Such a system is needed in order to evaluate the radiological safety, as part of the licensing process, of the technological solutions, currently under development, to the radiological problems and hazards existing in the North.