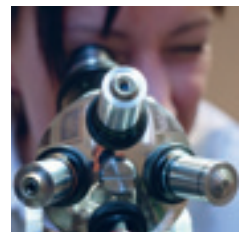
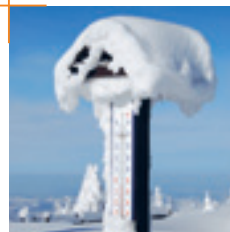


Norway – Russia Research and cooperation in the High North

Large-scale Programmes
Optimal Management of Petroleum Resources - PETROMAKS



Large-scale Programmes

The RCN initiative
to meet national
research priorities



About the programme

Optimal Management of Petroleum Resources – PETROMAKS

PETROMAKS is the umbrella for most of the petroleum-oriented research supported by the Research Council of Norway. The programme covers both long-term basic research and applied research, resulting in the development of new competence as well as innovation. Insofar as possible, the programme will implement the strategy drawn up by the Norwegian petroleum industry's strategic body OG21 (Oil and Gas in the 21st Century).

Large-scale programmes are an important tool at the Research Council towards realisation of prioritised central research policy. They shall provide enhanced knowledge in the long-term national sense, with an eye towards stimulated innovation and increased added-value or generate knowledge that contribute to solving prioritised social challenges.

Contents

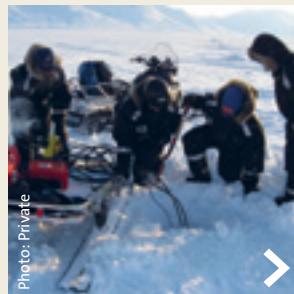
Research and cooperation in the High North	04
About the Cooperation Russia – Norway	06
Monitoring the environment in the Barents Sea with molluscs	08
Building Arctic expertise	10
Gives a detailed insight into the ice ages	12
Looks deeper, wider and further back	14
PETROMAKS project with cooperation in Russia	16



08

Monitoring the environment in the Barents Sea with molluscs

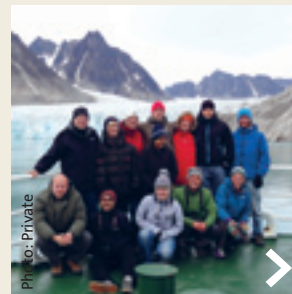
By equipping molluscs and other organisms with instruments, leakages from the oil and gas industry can be effectively monitored. A subsea edition is now being worked out for the Arctic to identify new and more organisms that could qualify as biosensors at a depth of 500 m.



10

Building Arctic expertise

New knowledge and new technology is necessary to do search for and produce oil and gas in the Arctic. The physical environment in the Arctic is very different from the one in the Norwegian Sea. Among others you need knowledge about icebergs, drifting ice and pack ice.



12

Gives a detailed insight into the ice ages

GlaciBar gives better knowledge about the geological development of the Barents Sea the last five million years, with special emphasis on the ice ages. This knowledge is important to do a better risk analysis, model calculations and search strategies when searching for oil and gas in the north.



14

Looks deeper, wider and further back

In the projects, scientists are looking much deeper into the underground than the oil companies normally do to find oil. Through large scale mapping and studies of the geological development of the whole of the Barents Sea, scientists study how the area has developed over time.

Research and cooperation in the High North

During the last ten years there has been growing international focus on the North. In this work Norwegian–Russian research cooperation is important. Resources, the environment and the climate are important problems here, but there is also a growing interest in shipping and tourism.

In 2011 the Research Council of Norway presented its revised strategy for research work in the High North. Here we pointed to the fact that both *authorities and the industry need new knowledge in several fields to be able to work out a sensible policy and a management system and also to develop value creation* and that the northern areas shall be an arena for international research cooperation. When the Norwegian government in the autumn of 2011 presented its White Paper on the High North it was emphasized that the *Strategy for the High North defines knowledge as the nave of the work in the High North*. Thus the cooperation between the Research Council of Norway and the Russian Academy of Sciences (RAS) in the field of oil and gas can be seen as an important contributor.

The cooperation in the field of oil and gas between the Research Council of Norway and RAS began in 2005 with a workshop in Moscow. Since then we have organized four more workshops in Russia and Norway. The goal has been to create a scene where researchers from both countries can come together and lay the foundations for research cooperation in the field of oil and gas. In this cooperation the PETROMAKS-program of the Research Council of Norway has been the contact point and the driver, while the Institute for Oil and Gas, RAS has played the same role in Russia. The cooperation was formalized in two agreements in 2009. Since the beginning the cooperation has focused on the oil and gas sector where both countries have common challenges and possibilities in the High North. Professionally speaking,

the focus has been on the environment, geosciences and technology for field development in the Arctic.

As off 2011 PETROMAKS has financed 24 Norwegian research projects based on cooperation with Russia. When they are finished they will have received 190 million NOK in financial support. On the next pages you will find a detailed presentation of four of these projects. A full list of Norwegian-Russian PETROMAKS-projects is to be found at the end of this booklet.



Photo: Anders J. Steensen, Teknisk Ukeblad

Siri Helle Friedemann



The cooperation covers areas such as exchange of data, students or researchers and concrete cooperation on development of methods, processes or technologies.

There are several reasons why it is important for our two countries to continue to cooperate in the field of oil and gas. These have got to do with good neighbourliness and common challenges in search, development and production of oil and gas fields in the Arctic. The Treaty on Maritime Delimitation

PETROMAKS – A program for optimal use of the Norwegian oil and gas resources

This program is one of the seven large programs of the Research Council of Norway and embraces a large part of the oil and gas research of the Research Council. PETROMAKS includes both long term pure research, competence training, applied science and development of new technologies. Through reinforced development of knowledge, development of the industry and of international competitiveness, the program shall contribute to creating an added value for society when using the oil and gas resources.

The program started in 2004 and will continue until the end of 2013. During that period it will have had 2 billion NOK allocated to it. More information: www.rcn.no/petromaks

and Cooperation in the Barents Sea and the Arctic Ocean between Norway and Russia is a new incentive and gives us new possibilities for the use of natural resources. Cooperation in order to find environmentally sound solutions becomes ever more important. It is also important to underline that the world is facing big challenges when it comes to cheap energy for an ever growing population. In this picture oil and gas from our two countries is an important factor. This will demand new technologies and new knowledge and the best solutions are often to be found in cross border cooperation.

This is why the Research Council of Norway also in the years to come will accentuate research cooperation between Norway and Russia in the field of oil and gas and in other well established field. At the same time we will seek to broaden the cooperation to other themes and topics of common interest.

Siri Helle Friedemann
Director

*The Research Council of Norway
Department for Petroleum*

About the Cooperation

Russia – Norway

The Cooperation between the research organisations in Russia and Norway started a long time ago. This was due to the geographical location of two neighbouring countries and the understanding of our common interests.

The main historical directions of the cooperation are the following: research of biological resources of the Barents Sea and fresh water systems of the region, protection of natural complexes from anthropogenic pollution, and conservation of biodiversity.

The broadening of the scientific cooperation the last 10 years is very noticeable. Besides our mutual interest to conservation of the bio resources on the continental shelf of the Barents Sea, we can see an increasing interest to other natural resources. First of all there is an interest in hydrocarbons, in the development of new oil and gas fields and innovation of new technologies.

Together with strengthening of the Barents Euro Arctic cooperation we see cooperation developing between the environmental institutions of our countries as well as between the Russian Academy of Sciences and The Research Council of Norway, together with their subordinate organisations and institutes.

Scientific seminars are conducted and new projects are outlined, for example in the framework of the NATO-Russia Council and the Arctic Council with questions related to oil spill prevention. Our experts work on synchronization of regulatory requirements for the evaluation of natural complexes and they discuss innovation technologies in the sphere of efficient use of resources and other questions.

It is impossible not to mention the widening of the “geography” of the cooperation – more and more research organisations from different regions of Russia and Norway are now involved in it.

How should the researchers in Norway and Russian continue and expand their cooperation?

First of all, we must actively form working groups for scientists and specialists within the spheres of mutual interest and of research, and facilitate exchange of information. It is also important to use departmental, national and international financial resources as support for work and projects conducted in the interest of our countries.

Joint applied research must play an important role. Taking into consideration that the result of such work could be commercialized (it has a value and can be used for business purposes) it would be advisable to form Russian-Norwegian companies on the basis of joint research groups, hence utilizing the scientific output. This might be a new level within the Russian-Norwegian research cooperation.

Further cooperation

The Norwegian Research Council does without any doubt very much to activate the scientific cooperation between our countries. The signed agreements with a number of Russian institutions, included the Russian Academy of Sciences have given us direction, rules and terms for future interaction.



Vladimir Pavlenko

Although we still have some more to do before we reach the expected level of cooperation in certain areas.

The first effort that could be taken in order to move things ahead is to form Russian-Norwegian advisory groups to implement the signed agreements and to include official representatives, scientists and specialists from the areas of interest. With appointed coordinators from both sides we can establish mutual plans for our joint work. Special attention must be paid to the development of financial support of the joint projects.

It is also important to establish tendering committees, consisting of scientists, business people, representatives of regional and executive authorities from Russia and Norway. These tendering committees will select the projects of joint scientific groups to be financed.

I think that the constructive and mutually beneficial good neighbourly relations between our countries, made by the leaders of Norway and Russia, are the basis for making joint research work more active.

Vladimir Pavlenko
Professor

Deputy Head of Oil and Gas Research Institute of RAS

The Oil And Gas Research Institute (Ogri) Ras

The oil and gas research institute (OGRI) is part of the Russian Academy of Science (RAS). As the name says its main tasks are research and evaluation of the oil and gas resources in the country and development of functional and environmentally friendly technologies.

The Institute coordinates the research work of the other institutes of the RAS working in the oil and gas sector.

The Institute works out recommendations and proposals

- For the strategic development of the oil and gas resources in The Russian Federation;
- Concerning the energy aspects in the sustainable development policy of Russia.

The Institute was established on May 8th 1987 and has its offices and laboratories in Moscow.

Oil and Gas Research Institute
Russian Academy of Sciences (RAS)
3 Gubkin street, 119991 GSP1 , Moscow
www.ipng.ru



Photo: Biota Guard AS



Photo: Colourbox



Photo: Private

Project

Biota Guard Arctic - A Real time environmental effect monitoring system for offshore drilling and production operations in the Arctic

Project responsible

Biota Guard AS

Project leader

Eirik Sønneland

Period

01.09.2009 to 31.12.2012

Photo top left: Blue mussels and other organisms are being equipped with sensors for environmental monitoring.

Photo bottom left: Eirik Sønneland is the project leader for Biota Guard Arctic and general manager in Biota Guard AS.

Monitoring the environment in the Barents Sea with molluscs

By equipping molluscs and other organisms with instruments, leakages from the oil and gas industry can be effectively monitored.

Biota Guard Subsea are live organisms in the sea that are equipped with instruments to carry out continuous monitoring of leakages. A subsea edition is now being worked out for work in the Arctic.

– We are primarily trying to identify new and more organisms that could qualify as biosensors at a depth of 500 m. We have found out that blue mussels, black clams and horse mussels can be used, says Eirik Sønneland, project leader in Biota Guard Arctic and general manager of Biota Guard AS.

Good environmental indicators

The heartbeat of the mussels and their opening/shutting frequency is influenced by chemical changes in the water and can be measured. The Biota Guard-sensors are placed in clusters together with conventional sensors. This gives us many different parameters and a good overall picture of the environment. The information is integrated in the management plan for the oil field. The final goal of this Arctic project is to qualify the technology for use subsea in Arctic waters.

– We have done a three month long test with new biosensors at a depth of

500 m. It was a success. We are almost ready to commercialize, says Sønneland.

Common interests

Cooperation with the Russians is important because they have a good understanding of biosensors. In Saint Petersburg the freshwater is being monitored i.a. to avoid pollution of the drinking water.

– We have the same interests as the Russians and can benefit from each other's competence. They help us find new candidates for biosensors. In Saint Petersburg there is a whole new world of possibilities, Sønneland explains.

He thinks that the cooperation has given Biota Guard the possibility to do almost everything better.

– You are not able to see all the positive effects before you start. New ideas and suggestions arise when you look at things through the eyes of others. The cooperation has been exclusively positive.

The Russians have also profited from it, Sønneland claims. – They have learnt much about the gap between research and commercializing. The oil companies in the steering-group of the project are

focused and demanding. The demands are tough when it comes to delivering on time and to follow the planned schedule.

Have to sit together

If international cooperation is to be useful you have to set aside enough time and people and sit together, Sønneland says.

– You must have workshops that last for more than one day. Regular specialist meetings and professional discussions in informal settings can be really constructive.

He recommends to have only one project manager, to abide by the reporting requirements and to follow closely what has been written down.

– Everyone has to understand clearly that what you agree upon is binding and not simple guidelines.

Building Arctic expertise

New knowledge and new technology is necessary to do search for and produce oil and gas in the Arctic.

The physical environment in the Arctic is very different from the one in the Norwegian Sea. Conventional technology for extraction of oil and gas can be used to a great extent, but there is also need for quite a lot of new knowledge and specialized technology. This is where the project Petro Arctic comes in.

– The work has consisted of acquiring basic information that can be used when considering field development, both in the design and operation phases. We have stressed the differences between the Arctic and the Norwegian Sea, such as icebergs, drifting ice and pack ice, says project leader Sveinung Løset from the Department of Civil and Transport Engineering at the Norwegian University for Science and Technology.

Arctic engineers

Petro Arctic has educated engineers and PhD-engineers with in depth knowledge about the problems of the Arctic. They hold key positions in Norwegian industrial companies and can i.a. calculate ice load, the risk of an iceberg colliding with an installation and the role drifting ice plays for floating installations and their positioning, either if they are anchored or kept in place by dynamic positioning.

Petro Arctic has developed simulation tools to calculate all these things. Those experts who have educated in our Department should also be able to sit out on the field and make their own simulation tools adapted to the needs of the particular area, Løset says. Knowledge from Petro Arctic is already in use to a high degree in the industry.

Russian environmental studies

The common features in the Barents Sea especially in the border areas, is the reason why the Russians have been invited into the project.

– Both countries can benefit from cooperation. The Russians have studied the physical environment. We would like to get access to their studies. The best way of implementing this, is to take part in the project, Løset thinks.

He also says that it is difficult to send Norwegian PhD students into the Russian areas to gather information. A Russian student from the project has much easier access. – During project meetings it is also valuable to have a Russian that has been educated at our Department and who speaks both English and Russian.

Problems related to the climate

The Russians can, from the project, learn about the effects of global warming on the reduction of permafrost in Russia in the future. When the permafrost thaws, the erosion grows and there might be unstable masses in areas where there are Russian oil pipelines.

– The Russians have also gained a better understanding about the use of advanced technology in the Arctic and new knowledge about oil and gas activities offshore, something they know little about compared to Norway. In addition they have learnt much about floating concepts of different types, Løset says.

Education is the key

The project leader thinks that exchange of students is decisive in order to be successful in such cooperation projects.

– It is important to work with the educational level when building the future together with the Russians. Many Russians have been invited to Norway to train here. The best are invited to our Department, he says. His advice is also to have as much direct communication with specialists in the project as possible and to avoid using too much energy on the administrative level.



Photo: Private



Photo: Colourbox

Photo top right: Sveinung Løset from the Norwegian University for Science and Technology, leads the PetroArctic project.

Photo bottom right: PetroArctic-engineers getting in depth knowledge about the problems of the Arctic.



Photo: Private

Project

PetroArctic. Offshore and coastal technology for petroleum production and transport from Arctic waters.

Project responsible

Department of Civil and Transport Engineering at the Norwegian University for Science and Technology.

Project leader

Sveinung Løset

Period

31.12.2010 to 31.12.2011

Gives a detailed insight into the ice ages

GlaciBar gives better knowledge about the geological development of the Barents Sea the last five million years, with special emphasis on the ice ages.

Knowledge about changes in the environment in the Arctic the last five million years gives us useful information about areas that so far have been almost unknown to the oil and gas industry.

Thus it will be possible to do a better risk analysis when searching for oil and gas.

– The results we have achieved can contribute to strengthening the model calculations and search strategies of the oil companies. They are also a basis for many scientific publications and Ph.D.

dissertations in the years to come, says professor Karin Andreassen from the University of Tromsø. She is leading the GlaciBar-project.

In need of Russian information

During the earlier ice ages, the ice covered both Norwegian and Russian parts of the Barents Sea. In order to understand how the ice cover has influenced the sea bottom, the layers below and the deeper oil and gas reservoirs, it is necessary to have data and results both from Norwegian and

Russian areas. This the project gets through cooperation with Russian colleagues.

– If we had only investigated the Norwegian part we would only have had a part of the answer. Our colleagues in Russia have a large amount of good data about the Russian part of the area. We also get access to students with a different background, something with is useful, she says.

Andreassen says that such a complex project requires a high degree of

Project

Glaciations in the Barents Sea area

Project responsible

The Institute for Geology,
University of Tromsø

Project leader

Karin Andreassen

Period

01.01.2010 to 31.12.2013



Photo: Private



interdisciplinary competence. Therefore it is necessary to cooperate internationally with those who have the competence we do not have ourselves.

Joint expeditions

The researchers have collected available seismic information and data about drilling from the Barents Sea. In addition they have themselves collected new data where they were lacking. GlaciBar has also participated in a joint Norwegian-Russian scientific expedition to the so called "disputed zone" in the Barents

Sea. The expedition was financed by Statoil. The project participants took part in the planning and the realization of the expedition. Russian and Norwegian students participated actively in the collection and interpretation of data.

– In addition, Norwegian GlaciBar-participants take part in Norwegian-Russian working meetings where results from the Barents Sea are being discussed for mutual benefit, Andreassen says.

Beneficial network

International cooperation is necessary in such large research projects. In order to establish such networks it is important to present scientific results in international publications and at conferences, Andreassen thinks.

–We have been lucky to be able to draw upon the existing Statoil-network in Russia, she says.



Photo previous page: Karin Andreassen from the University of Tromsø is project leader for GlaciBar.

Photo this page: GlaciBar-scientists at an expedition near Spitsbergen (Svalbard).

Looks deeper, wider and further back

In PETROBAR, and the subsequent projects, scientists are looking much deeper into the underground than the oil companies normally do to find oil.

PETROBAR gives the oil industry a better basis for searching for oil and gas. Through large scale mapping and studies of the geological development of the whole of the Barents Sea, scientists study how the area has developed over time. This knowledge is then passed on to the oil companies.

– But we do not give any direct assessment of the possibilities to find oil and gas. That is up to the oil companies, says project leader Jan Inge Faleide from the Department of Geosciences at the University of Oslo.

The former disputed area in the central part of the Barents Sea contains

enormous structures, but many pieces of the puzzle have to fall into place before it will be possible to prove large resources of oil and gas, Faleide thinks. – It is important to be patient while waiting for new data. In a couple of years the oil companies will get information allowing them to start searching very actively for oil in this area, he says.

Impossible without cooperation

The professor underlines the importance of having a common understanding between Russia and Norway of the area. A real exchange of data and competence is important. Researchers must sit together in order to understand the data of the other part, their methods and concepts.

– It is impossible to develop understanding without access to Russian data. We have used much time in studying Russian publications. But the information is difficult to get. The Russians do not have the same tradition as we have when it comes to publishing results in international journals, he says. Faleide is excited about the fact that new data are now being collected on both sides of the delimitation line. With this line in place, the cooperation

with the Russians is now closer than ever before.

– Earlier we were not allowed to do research in the so called "disputed zone". Now we will get access to new data and get a better understanding. Knowledge is needed both on the Russian and the Norwegian side in order to throw light on areas we know little about, says Faleide.

Language profit

Young Russian research talents have been recruited to write their PhD dissertations in Norway through PETROBAR. This has proven useful in several ways.

– The Russian students have been very valuable for us during meetings in Russia where language problems easily can occur. There is also much interesting literature in Russian, and the students help us to understand it better.

The Russians on their side have had a possibility to access a broader range of scientists through international journals.

– The final proof of the Norwegian-Russian cooperation will be to publish



Photo: Colourbox

the results of the work in joint publications. We are almost ready with several such publications, says Faleide.

The project leader hopes and believes that the cooperation also will lead to growing understanding in Russia about the usefulness of sharing of resources and data between academicians, government bodies and industry. This is the way we have been doing it in Norway for a long time.

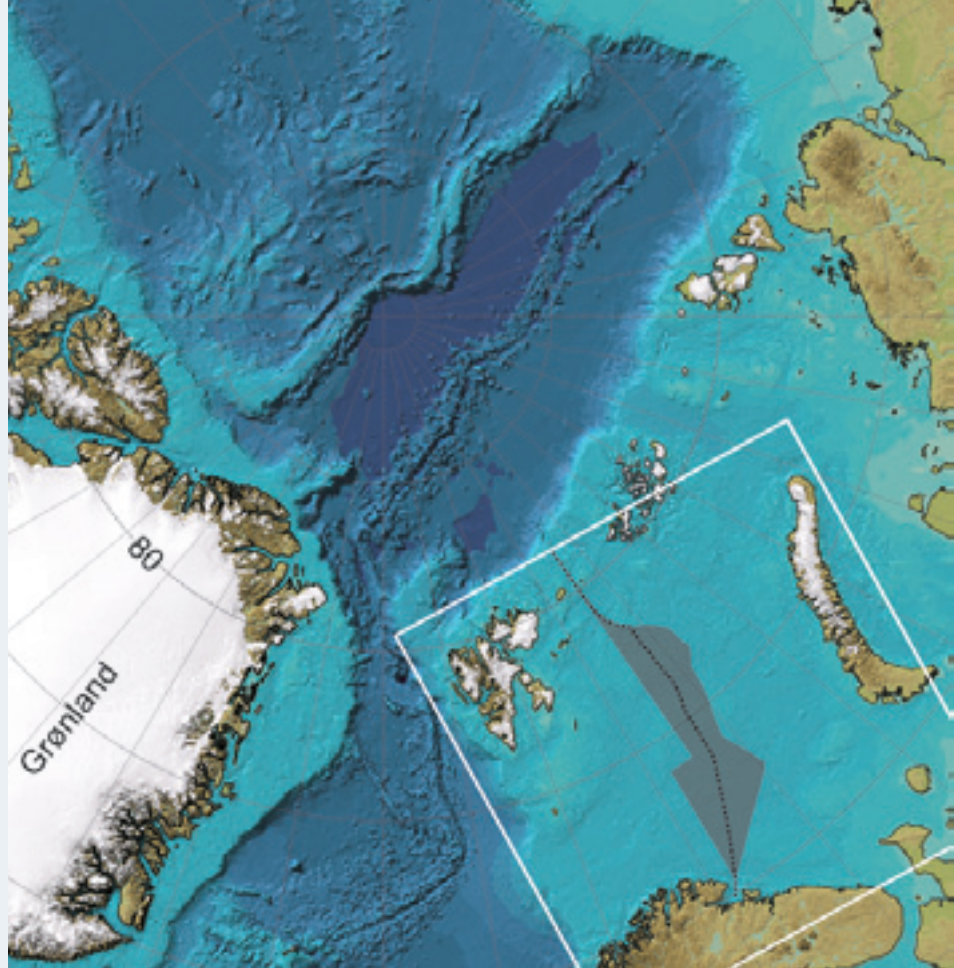
Respect is important

Professor Faleide underlines that cooperation has to be based on mutual respect.

– This must be the starting point if one wants to reach common understanding through discussions.

The Russian data have been analysed according to Russian methods and the Norwegian data according to Norwegian methods.

– By sitting together we see new possibilities. It is therefore important to spend time together.



Project

Barents Sea Tectonic Basin Modelling (BarMod) with focus on potential petroleum systems in the Central Barents Sea Region

Project responsible

Faculty of Mathematics and Natural Sciences at the University of Oslo

Project leader

Jan Inge Faleide

Period

01.01.2011 to 31.12.2013

Photo: Jan Inge Faleide from the Department of Geosciences at the University of Oslo is project leader for PETROBAR.



Photo: Private

PETROMAKS projects with cooperation in Russia, up to December 1st. 2011


Ongoing projects		
Project:	Partners:	Period:
Depositional models for Cenozoic sandy systems	University in Tromsø Lomonosov State University (Ivanov)	2007-2013
Biota Guard Arctic - A Real time environmental effect monitoring system for offshore drilling and production operations in the Arctic	Biota Guard AS Center of Ecological Safety, RAS, St. Petersburg	2009-2012
Barents Sea Rock Properties	University in Oslo VNIIOkeangeologia GIN RAS (Geological Institute RAS)	2010-2013
The Neogene uplift of the Barents Sea	Tector AS VSEGEI (A.P. Karpinsky Russian Geological Research Institute)	2010-2012
Glaciations in the Barents Sea area	University in Tromsø Moscow Lomonosov State University, Ru: A. Stuoapakova (Tectonic evolution) Shirshov Inst. of Oceanology, Ru: S. Korsyn (Biostratigraphy, palaeoecology)	2010-2013
Innovative efficient and survivable electric drive systems for subsea and downhole applications	Smartmotor AS MPEI (Moscow Power Engineering Institute)	2010-2014
Decision support tool for marine oil spills - numerical modelling of fate, and spill response strategies for spilled oil in near-shore water	SINTEF Materialer og Kjemi, Miljøteknologi HydroMet	2010-2014
Acid Gas Removal with no damaging Effect on the Environment in offshore applications	SINTEF Materialer og kjemi Topchiev Institute of Petrochemical Synthesis	2010-2014
Risks during hydrocarbon exploration and production in cold offshore regions	The Norwegian University of Science and Technology (NTNU) Moscow Institute of Physics and Technology State University Polytechnical University St. Petersburg State	2010-2013
An Impact Analysis Modeling System for the Petroleum Industry	Akvaplan Niva AS PINRO (Knipovich Polar Research Institute of Marine Fisheries and Oceanography)	2011-2014
Barents Sea Tectonic Basin Modelling (BarMod) with focus on potential petroleum systems in the Central Barents Sea Region	University in Oslo VNIIOkeangeologia (All-Russian Research Institute for Geology and Mineral Resources of the World Ocean) MAGE (Murmansk Arctic Geology Expedition)	2011-2013
Energy Efficiency of Field Development: IOR, System Analysis and Risk Evaluation	Iris-Software AS Gubkin Russian State University of Oil and Gas	2011-2013

Completed projects

Project:	Partners:	Period:
Production optimisation and model predictive control for improved reservoir management	International Research Institute of Stavanger AS Gubkin Russian State University of Oil and Gas	2007-2011
eControl, drilling simulation and control for extreme conditions	Aker MH AS First Interactive	2006-2011
Multiscale-Streamline Simulation of Highly Heterogeneous and Fractured Reservoirs	Harris Norge AS Schlumberger Moscow Research	2006-2008
Hydrocarbon maturation in aureoles around sill intrusions in organic-rich sedimentary basins	University in Oslo Institute of Geochemistry, Siberian Branch of Russian Academy of Sciences	2005-2010
Ice ages: subsidence, uplift and tilting of traps - the influence on petroleum systems	NGU Russian Academy of Science, Petrozavodsk Herzen State University, St. Petersburg ROSNEDRA (Russian Federal Agency for Natural Resources) VSEGEI, (A.P. Karpinsky Russian Geological Research Institute) St. Petersburg	2005-2010
Geological Evolution of the Barents- and Kara Seas hydrocarbon provinces	NGU (Norges Geologiske Undersøkelse) Russian Geological Research Institute – Federal Agency of Mineral Resources	2006-2010
Petro Arctic. Offshore and coastal technology for petroleum production and transport from arctic waters	The Norwegian University of Science and Technology (NTNU) Gubkin Russian State University of Oil and Gas	2006-2011
Gas Hydrates on the Norway - Barents Sea - Svalbard margin	University in Bergen Moskva State University Polar Ekspedition, St. Petersburg	2006-2011
Petroleum-related regional studies of the Barents Sea region (PETROBAR)	University in Oslo VNIOkeangeologia, (All-Russian Research Institute for Geology and Mineral Resources of the World Ocean) Moscow State University, VSEGEI, (A.P. Karpinsky Russian Geological Research Institute) UIPE (United Institute of Physics of the Earth RAS)	2006-2010
Norwegian-Russian collaboration on deep seismic studies of the crust and upper mantle in the Barents Sea	University in Oslo State company “Sevmorgeo”	2009-2010







This publication can be ordered at
www.forskningsradet.no/publikasjoner

© The Research Council of Norway 2012

The Research Council of Norway
P.O.Box 2700 St. Hanshaugen
NO-0131 OSLO

Telephone: +47 22 03 70 00
Telefax: +47 22 03 70 01
post@forskningsradet.no
www.forskningsradet.no/

Oslo, January 2012
ISBN 978-82-12-03029-9 (printed version)
ISBN 978-82-12-03030-5 (pdf)

Design: Agendum
Print: 07 Gruppen
Number of copies: 200

English translation: Stein Larsen