



Barents 2020

A tool for a forward-looking High North policy

Oslo, September 2006

Mandate of the report

Barents 2020 was launched by the Government in a speech made by Foreign Minister Jonas Gahr Støre in Tromsø on 10 November 2005. His speech contained the following passages:

But we will also need new tools, and an overarching, co-ordinated approach will be essential if Norway is to lead the way in the development of the north. The Government has therefore decided to launch a long-term, cross-sectoral initiative for research and development in the High North. We have called this initiative Barents 2020.

We will use this initiative to find new Russian and Western partners for Norwegian-led development projects in the High North.

The purpose of Barents 2020 will be to initiate concrete Norwegian-led cooperation projects, which may involve both Russia and Western countries. It is intended to function as a link between international centres of expertise, academic institutions and business and industry in countries that are interested in the High North.

In June 2006 the Foreign Minister assigned the task of producing the present report on Barents 2020, with an emphasis on petroleum activities, to Arve Johnsen, former Chief Executive Officer of Statoil, with Sverre Jervell providing secretariat assistance. Mr Johnsen was requested to present proposals that would give the political ideas contained in Barents 2020 concrete content in terms of projects, funding, organisation and a progress plan.

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The High North (Ill: Ministry of Foreign Affairs)

Preface

In September 2005 the Foreign Minister launched the Government's long-term programme for research and development in the High North. The programme was given the name Barents 2020. With this programme the Foreign Minister put knowledge and research at the heart of Norway's High North policy. His vision was to consolidate Norway's position as the leading knowledge nation in the north.

The launch of Barents 2020 is also an adjustment of the perspective taken in Norwegian High North policy. From the mid-1990s a substantial part of Norway's efforts focused on the radioactive legacy in our neighbouring areas in the north. Through Norway's nuclear safety cooperation with Russia, which provided support for the dismantling of Russian

submarines, the Norwegian authorities contributed to the clean-up after the Cold War in the north. Trust was rebuilt across the long-closed border through people-to-people cooperation under the Barents Cooperation. Through Barents 2020, attention is being directed towards the future and the new opportunities and challenges related to the petroleum resources in the Barents Sea.

In June this year the Foreign Minister assigned me the task of writing a report on Barents 2020 with proposals for projects, an organisational model, funding and a progress plan for the petroleum activities in the north. My work on the report has particularly centred on designing concrete projects based on the principle of public-private sharing of investment costs.

Barents 2020 stresses the need to take a holistic approach to the High North, in which petroleum technology, management of living marine resources and environmental protection are seen as a whole, and in conjunction with the major societal effects of the activities. The Government's policy for building knowledge and expertise in the north should thus rest on three pillars: (1) the development of petroleum technology (discussed in this report), (2) the Integrated Management Plan for the Barents Sea and the sea areas off Lofoten, and (3) other environmental

projects and societal consequences, which are being investigated by the Government's committee of experts on the High North chaired by rector Jarle Aarbakke.

The perspective of this report is to explore the challenges related to the petroleum activities in the north. This is one important aspect of knowledge-building in the north. Other aspects will be explored by other actors and in other contexts.

This report contains proposals for 11 projects related to petroleum activities, of which five have been assigned priority for start up in 2007.

The project proposals have sprung out of discussions with relevant businesses and research institutes. For each of the projects a project manager and partners have been proposed. The project proposals are the businesses' and research institutes' contributions to the national efforts to promote technological development and research, which constitute the basis of Barents 2020. It is assumed that the State will contribute directly to the funding, making Barents 2020 a public-private cooperation programme. The report makes recommendations as to the extent and form of State participation.

Once the State has determined the extent and form of its financial participation, and the projects have been politically approved, the outcome should be discussed with the involved businesses and research institutes. It is assumed that at this point foreign partners can be invited to participate. All of the projects have been designed with a view to Russian participation founded on mutual commitment and serious commercial agreements.

The report proposes establishing a Norwegian-Russian industrial and economic cooperation zone between Kirkenes and Pechenga, straddling the border in the north, which would be known as the Pomor Zone. The idea is that Norway and Russia should cooperate on developing the extensive onshore facilities required for the exploitation of the petroleum resources in the Barents Sea. It is possible to reap considerable efficiency gains by building on the inherent strengths of the parties involved. The Pomor Zone would provide an important arena for business cooperation.

Arve Johnsen

Oslo, October 2006

1. From Barents Cooperation to Barents 2020



The Barents Cooperation
(Ill: Norwegian Barents Secretariat)

The Barents Cooperation was established in January 1993, when representatives of 13 countries attending the Conference of Foreign Ministers in Kirkenes established the Barents Euro-Arctic Council and the Barents Regional Council.

Over ten years have passed since the cooperation was established, and the Norwegian authorities have spent about NOK 2 billion on cooperation measures in the Barents Region, including cooperation on nuclear safety. Through people-to-people cooperation trust has been rebuilt across the former border between East and West in the north. An extensive network has been developed between Norwegians and Russians.

In certain areas, the goals set in 1993 have not been met. This is for example the case when it comes to cross-border cooperation aimed at creating work and economic growth in North Norway. Furthermore, the existing cooperation has hardly taken account of the development of the petroleum resources in the sea areas in the north. This is because the Barents

Cooperation, as it was defined in 1993, was focused on the land area.

The first chapter of this cooperation covers the period from 1993 to 2005, during which a sound foundation was laid for further cooperation in the north.

Barents 2020 will be the start of a new chapter in the Barents Cooperation. An important task will be to develop concrete cooperation in the petroleum sector, and at the same time implement the Integrated Management Plan for the Barents Sea and the sea areas off Lofoten. Barents 2020 contains proposals for a number of projects in which Norwegian experience and technology can be combined with Russian resources and experience. It is proposed that a Norwegian-Russian industrial and economic cross-border cooperation zone should be established to make Norway and Russia better able to facilitate common onshore industrial development based on oil and gas extraction.

2. Petroleum activities – from the North Sea to the Barents Sea

Two particular characteristics of the Norwegian petroleum activities, from the start in the North Sea over 40 years ago to the imminent start of petroleum production in the Barents Sea, should be mentioned:

First, when the petroleum activities started in the North Sea, several important political decisions were made, for example regarding the licensing system, taxation, the establishment of the Oil and Mining Department of the Ministry of Industry, which later became the Ministry of

Petroleum and Energy, the Norwegian Petroleum Directorate and Statoil, and the introduction of guidelines on the use of Norwegian goods and services in the petroleum sector. These political decisions set the direction for Norwegian petroleum activities in the following decades. This report is based on the assumption that new political decisions regarding future petroleum activities in the High North will be required as a supplement to existing legislation, rules and industrial practice.

One such new, future-oriented decision was the launch of Barents 2020.

Second, since the very start of petroleum activities, there has been great *willingness and ability to invest in petroleum technology and research*. Thanks to these investments, it has been possible to resolve a number of technological challenges and make petroleum production more efficient, for example by increasing the amount of petroleum that can be extracted from reservoirs. Research has frequently been based on partnerships involving oil companies, contractors, research institutes and the authorities. The benefits of this research have in most cases far exceeded the cost of the investments required. Investments in research and new technology will be important for the Norwegian petroleum industry in the Barents Sea as well, and may be included in Barents 2020.

In addition to the need for forward-looking political decisions and for investments in technology and research on the High North, it is necessary to apply a foreign policy dimension and to consider activities in a broader environmental and resource management perspective.

The geopolitical and foreign policy dimension

The petroleum activities in the North Sea have a *geopolitical and foreign policy dimension*. This dimension is even more evident in the Barents Sea, where Norway borders on Russia, a major power and the world's largest producer and exporter of gas, and one of the largest exporters of oil. There are also unresolved sovereignty issues in the north.

Russia's High North policy has rarely distinguished clearly between the authorities and industry, and the Russians prefer to take a holistic view of economic and political issues in their bilateral relations with Norway.

The foreign policy aspects of petroleum development have gained importance as energy is increasingly perceived and used as an instrument of power between states, particularly due to the shortage of energy resources. This leads to greater competition and increasing political interest in developing the resources in the High North. In many countries, long-term energy security is considered to be an integral part of security policy.

The environmental and resource management dimension

Norway's High North policy must take a *coherent perspective*. Petroleum activities must be considered in close connection with the environment and living marine resources. The Integrated Management Plan for the Barents Sea and the sea areas off Lofoten, which the Government presented in March 2006, must therefore be one of the cornerstones of Norway's High North policy in addition to Barents 2020.

Although this report focuses on how

Norway can position itself in the north by developing its comparative advantages in terms of petroleum technology and geography, the projects described are placed in a wider context, where concerns for the environment and living marine resources are given considerable emphasis. This is for example reflected in the project *The Barents Sea Online – real-time monitoring of the sea areas in the north*. It is in Norway's interest to involve other countries, particularly Russia, in the efforts to safeguard the environment and living resources in the north. Cooperation with other European countries is also important for Norway, particularly with those that are concerned about the environmental and resource situation in the north, like Germany and our Nordic neighbours. Norway should take responsibility for the environment, resource development and petroleum technology development in the High North in order to be internationally recognised as a responsible steward of the sea areas in the north.

The cooperation Norway and Russia have developed on the management of their common fisheries resources is of great importance. The petroleum projects proposed in this report can provide a basis for further strengthening Norwegian-Russian cooperation, including environmental cooperation.

3. Barents 2020 and Norway's High North policy

The foreign policy element of Norway's High North policy, as defined in the white paper on the High North (Report No. 30 (2004-2005) to the Storting, *Opportunities and Challenges in the North*), rests on two pillars:

- Intensified cooperation with Russia
- High North dialogues with Western countries

The rationale behind this policy is that it is in Norway's interest to cooperate closely with Russia in the north because this increases regional stability, partly by establishing a network of positive cooperative relations in the area.

Close cooperation with Russia in the north is also in Norway's economic interests, as Norway has built up considerable expertise on offshore petroleum extraction and environmental standards. This expertise may come to play an important role when the vast resources in the Russian part of the Barents Sea are developed.

Cooperation with Russia

Norway has a tradition of cooperating with Russia on management of the fisheries resource in the north. This cooperation is now being extended to cover management of the petroleum resources and the marine environment.

Russia has on several occasions proposed close cooperation with Norway in the north. The first overtures were made as early as 1986, in a speech Secretary General Gorbachev made in Murmansk, although these were of a rather general character. The joint declaration made by Prime Minister Bondevik and President Putin in June 2005 expressed the intention to strengthen bilateral cooperation in the energy sector, for example by establishing a Norwegian-Russian energy partnership. This aspect of the declaration has only been followed up to a limited extent. There have, however, been positive developments in the relations between the Norwegian and Russian petroleum industries in other areas. The effects of this have particularly been noticed by Norwegian

contractors.

Today most Western countries take a somewhat more sober view of the internal developments in Russia and of the notion of strategic partnership. The possible future cooperation on the development of the Stockman field could be an example of pragmatic cooperation based on mutual interest that would have strategic consequences.

If Norway, as part of its High North policy, is to succeed in intensifying its cooperation with Russia, it will have to present concrete proposals that are attractive to the Russians. One of the conditions must, however, be that Russian companies and institutions make a commitment to participate in concrete projects and are actively involved in research efforts and financing on a par with other actors.

Projects that can increase the Russians' level of expertise in the field of offshore petroleum technology should be of great interest to Russia. On the other hand, Russian participation in such projects should be of interest to Norway, particularly for political-strategic reasons. The projects can be a door-opener to broader cooperation with Russian companies on developing the Russian continental shelf, including cooperation on environmental issues and on developing standards for offshore petroleum activities.

So far, the problem has been finding projects that are of sufficient interest to the Russians, thereby creating the basis for true cooperation, in the sense that they are willing to invest funds and resources. This poses a challenge to our choice of partners. It is necessary to find partners who see their involvement as a commitment and who are able to deliver. An important aspect of Barents 2020 is thus to develop projects that are attractive to Russia, which

in practice often means Gazprom, and that elicit serious commitment on the part of the Russians.

The Russians have a high level of expertise in a number of scientific and technological fields. They are also very advanced as regards knowledge of Arctic conditions and expertise on under-ice drilling. The challenge will be to combine Russian and Norwegian expertise and to apply this expertise to solving concrete tasks.

Cooperation with Western countries

Western countries that are concerned about long-term energy security are interested in dialogue with Norway on High North issues.

Dialogue and cooperation on High North issues is of interest to Norway as well. Through dialogue, Norwegian authorities can explain and seek to gain acceptance for Norway's views and interests. Including energy security issues in the High North dialogues will make Norway more interesting as a dialogue partner.

Countries like Germany, France, Canada, the US and the UK are interested in using these dialogues to forward their own interests. Their interests span from the general goal of strengthening long-term energy security to specific questions regarding deliveries in connection with the development of the continental shelf in the north.

The dialogues have been through an initial phase that is intended to lead to a cooperation phase. Both France and Germany have requested Norwegian proposals for concrete cooperation projects. The Germans have also been more specific, proposing three-way projects with German, Norwegian and

Russian participation, with a preference for projects on the Russian continental shelf.

Barents 2020 should make it possible to design projects that capitalise on this interest in cooperation and thus give the High North dialogues concrete substance. This could include projects that involve foreign oil companies, or projects targeted mainly at foreign research institutes that have expertise of particular interest to Norway.

The regional and indigenous peoples dimensions

Norway's High North policy emphasises the regional and indigenous peoples dimensions.

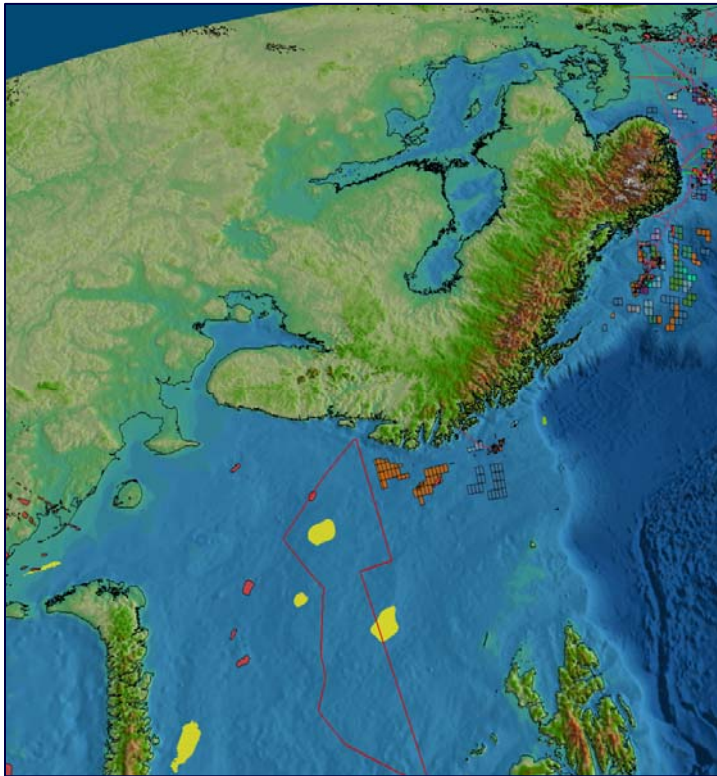
The regional dimension consists particularly in ensuring that the *national* High North policy has firm *regional* support. Through the Barents cooperation, regional authorities were involved in cross-border cooperation for the first time. In the projects presented in this report, the regional dimension is ensured for example through the proposal that Barents 2020 should be located in Tromsø and that centres of research and technology in Tromsø should be given a role in all priority projects. A Norwegian-Russian

cross-border cooperation zone in the north could be an important measure in the efforts to build petroleum-based industrial and technological expertise in North Norway.

The indigenous peoples dimension is first and foremost about integrating the indigenous peoples into the development of the north as a cross-sectoral dimension. In the development of the north it is important to safeguard and facilitate the indigenous peoples' perspective from both within and without. This perspective should be applied to cooperation and to the relations both between various indigenous peoples and between indigenous peoples and other inhabitants in the High North.

It will therefore be important to pave the way for a development that puts the indigenous peoples themselves in a position to address and benefit from the opportunities offered by future industrial development of the natural resources, *at the same time as the indigenous peoples' traditional livelihoods, cultures, languages and societies are developed in a sustainable manner.* For this reason the list of proposed projects contains one project that involves exploring the issue of indigenous peoples and resources more closely.

4. Barents 2020 and Norway's comparative advantages



(Ill: Statoil)

The strategic challenge

Norway has jurisdiction over considerable sea and continental shelf areas, and has therefore important interests to safeguard. However, as a typical small state, Norway has limited means with which to defend these interests, and this is precisely where Barents 2020 can play a role as a new, potent tool for Norway's High North policy.

It is envisaged as the core element of a strategy in which the basic idea is that Norway should position itself in the north by developing its *comparative advantages*.

Norway has comparative advantages in the three following areas:

- *technology* and expertise needed for petroleum activities in the north
- *geography* that is advantageous for building the infrastructure necessary for petroleum activities in the north
- *expertise on the environment and resources* in Arctic waters

Norway's comparative advantage in the area of petroleum technology

Large investments in petroleum technology have given Norway a leading position in the field of petroleum production in northern waters. This becomes particularly evident when compared with Russian expertise on offshore petroleum operations, where the Russians lack technology and experience in a number of key areas. While

the Russians have huge petroleum resources on their continental shelf, Norway has the expertise required to extract these resources.

The Snøhvit field is the first petroleum development in the Barents Sea, and comprises the first large-scale LNG plant in Europe. On the Ormen Lange field, new seabed technology is being tested under conditions that are not unlike conditions in the Barents Sea. This accumulated Norwegian expertise may prove valuable in the development of vast Stockman field in the Russian part of the Barents Sea. The same applies to Norwegian expertise on sustainable resource exploitation.

The major Norwegian technological breakthroughs have been made in connection with pioneering projects like Statfjord, Ormen Lange and Snøhvit. The development has been characterised by a combination of quantum leaps and step-by-step progress. A similar development is likely to take place in the High North, for example in connection with the development of the Stockman field. The experience gained from other large Norwegian development projects, combined with Arctic expertise, make Norway particularly well equipped to handle development in the Barents Sea, which will pose complex challenges related to the environment, difficult ice conditions and long distances to markets.

Cooperation between the authorities and oil companies on the development of petroleum technology is nothing new. It has been considered important to see Barents 2020 in relation to activities that are already taking place. The Barents 2020 projects are intended to supplement existing activities primarily by incorporating a Russian dimension and by forming part of a broader national effort, in which the authorities, key oil companies and

research institutes join forces.

In 2001 the authorities took an important initiative with the development of the OG21 strategy. Its purpose is to coordinate and concentrate Norway's research and development efforts in order to address the technological challenges faced by the petroleum industry and to increase value creation and efficiency.

Barents 2020 can constitute a supplement to OG21. Whereas OG21 primarily is a strategy to increase value creation on the entire Norwegian continental shelf, Barents 2020 focuses on the High North and thus has a geopolitical dimension. Where OG21 is intended to promote technological projects involving both national and international oil companies, Barents 2020 takes a more Norwegian approach. Furthermore, compared with OG21, Barents 2020 focuses more on environmental issues and the management of living marine resources.

The OG21 task force has approached Barents 2020 with a view to coordinating their respective projects. This may result in the development of projects that combine increased value creation with broader foreign policy concerns and sound environmental and natural resource management.

The Research Council of Norway has developed a research strategy for the Arctic and northern regions aimed at making Norway a leading research nation in the north. The budget is NOK 300-400 million.

The Petromaks and Demo 2000 programmes are important elements in these efforts. A number of the projects under Petromaks are relevant to the projects proposed in this report. This applies for example to projects on long-

distance transport of gas and oil, and power transmission.

It is important to coordinate Barents 2020 with the Research Council of Norway's High North efforts in order to cover a larger part of the knowledge chain and to achieve more efficient use of research funds. During the preparation of this report, meetings were held with the head of the Research Council of Norway and the head of Petromaks. These contacts will be resumed once decisions have been made regarding the proposals in this report.

Norway's geographical advantage in the north

Barents 2020 will need to focus primarily on offshore activities, but in relation to Russia, cooperation should also include onshore development. Offshore petroleum activities require substantial onshore investments in the form of base facilities, production units and infrastructure/ logistics systems to transport equipment from a variety of production sites. The geographical location of the Barents Sea gives rise to major supply challenges in itself.

Norway has broad experience of this type of logistics operations and as well-developed infrastructure in northern parts of the country. In Russia, much of this experience is lacking, and supply systems are of an inferior standard compared with those on the Norwegian side of the border.

Norway's advantage in terms of expertise on the environment and resources in Arctic waters

Norway has developed an extensive knowledge base on the environment and resources in Arctic waters, both on the current state of affairs and on development trends. This knowledge is important

in order to minimise risk.

Drawing on its knowledge and on its advanced capacity to analyse and forecast environmental and weather conditions, climate change and the development of the fisheries resources, Norway can be a responsible steward of the resources in the sea areas in the north. The implementation of the Integrated Management Plan for the Barents Sea, Norway's research in connection with the International Polar Year and the Research Council of Norway's efforts related to the High North all have an important role to play here.

It is also important to develop an integrated system for real-time monitoring of conditions in, on and above the sea in the north. The design of the system should allow it to be integrated into cooperation with Russian institutions. The exchange of data between Norwegian and Russian institutions should be a goal in the efforts to develop a monitoring system that covers the entire Barents Sea.

Environmental and natural resource management in the Barents Sea and efforts to develop technology for use in the area will benefit from close cooperation between Norway and Russia since the marine environment is not confined within national borders.

Norway's relations with Russia and developments in the Barents Sea

One key aspect of Barents 2020 is cooperation with Russia. The major task in years to come will be to give President Putin's invitation to develop a "strategic partnership between Norway and Russia in the north" concrete substance. If the partnership is to yield tangible results, Norway must pursue an active policy to show that it is able and willing to develop

such a partnership.

This partnership should be based on Norwegian expertise in the broad sense. Russia will need technology and expertise in order to operate offshore petroleum production during the next few years, but over time this need will gradually diminish. Norway will not be the only country to offer the Russians cooperation in the High North in order to gain access to the Russian continental shelf. Competition must, in other words, be expected to increase over time.

It is therefore necessary to take a targeted and long-term approach to concrete projects where Russia can be involved as a partner. *It is important to recognise that our efforts over the next 5-10 years may determine Norway's and Norwegian industry's position in the future.*

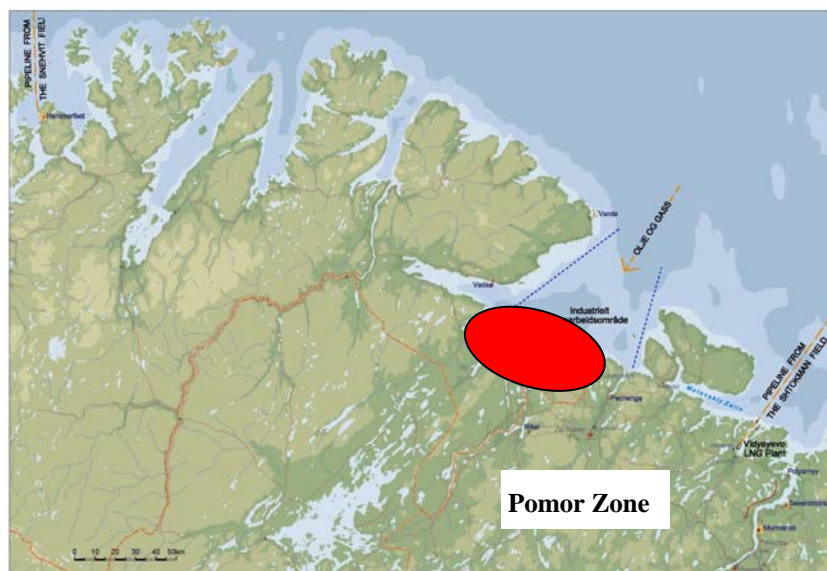
Public-private cooperation

Norway's comparative advantages in the area of petroleum technology can be most effectively developed in close cooperation between companies and the public sector.

This report takes as a starting point that closer cooperation between the public and private sectors in the north is beneficial. An important reason for this is that Norway has to take account of Russia in the north, and this in itself means that the authorities and private companies need to cooperate to meet the challenges at hand.

Several of the European countries Norway needs to take account of, for example Germany and France, base key aspects of their energy policy on such cooperation. Also in this perspective it is important that Norwegian companies and the public sector cooperate in order to achieve the best possible political and financial results. Given the size of the entities Norway will be competing with in Russia, it is desirable that the Norwegian actors coordinate their efforts.

5. Establishment of the Pomor Zone



The Pomor Zone. (Ill: Barents 2020)

It is proposed that a Norwegian-Russian industrial and economic cooperation zone should be established in the area between Kirkenes and Pechenga. The zone would accommodate the onshore infrastructure and logistics chains needed for the development of the petroleum fields in the Barents Sea. The zone could also accommodate processing plants for oil and gas.

Such a cooperation zone, with both Norwegian and Russian economic activity, should lead to significant efficiency gains. The zone could also become an important arena for Norwegian-Russian business cooperation, and a useful gateway to the Russian continental shelf for Norwegian industry.

The development of the petroleum resources in the Barents Sea will make cooperation between Norway and Russia increasingly important. Onshore cooperation is likely to be of interest to both parties due to such factors as the poorly developed infrastructure in the

region and a common goal of generating growth through regional ripple effects.

The Pomor Zone could thus become an important political tool for positioning Norway in the north, in relation both to Russian and other foreign actors, in addition to being a tool for intensifying our cooperation with Russia.

Geography as a comparative advantage for Norway in the north

Norway's geographical comparative advantage derives from its location with respect to the Barents Sea and the natural conditions in Finnmark county. The development of the petroleum resources in the Barents Sea will require well-functioning onshore infrastructure and large areas of land close to ports, railways and large aircraft airports. When the petroleum resources in the North Sea were developed, it was to a large extent possible to draw on existing structures. The development of the Barents Sea will mostly require the establishment of new

structures.

Here, Finnmark county has a number of natural advantages. Eastern parts of the county are well placed in relation to activities in the Barents Sea. It has a number of ice-free ports and well-functioning infrastructure that is well adapted to current challenges.

On the Russian side of the border conditions are less favourable. Ice conditions and water depths make the land areas on the eastern and southern shores of the Barents Sea less suitable for port development. The infrastructure is mostly inadequate, and logistics chains are inefficient.

Although there is a developed port structure around Murmansk, it suffers from severe capacity constraints. Even with good planning it is unlikely that Murmansk and the Kola Bay will be able to meet the requirements that development of the Barents Sea will pose. This means that new areas will have to be sought between the Kola Bay and the Norwegian border, and here the Pechenga Bay seems particularly promising.

In this situation, Norway can exploit its geographical advantage by at an early stage developing the infrastructure and logistics chains needed for development of the Barents Sea. By actively exploiting its advantages, Norway can get a head start on the Russians, who in any case will have to rely on Norwegian infrastructure, at least in the initial phase.

An alternative Norwegian strategy could be to exploit Norway's geographical advantage in cooperation – rather than competition – with the Russians. This is where the establishment of a joint Norwegian-Russian industrial and economic cooperation zone comes in, and

this is the idea behind the proposal for the establishment of the Pomor Zone.

Description of the Pomor Zone

The following functions would be relevant in such a zone:

- Efficient logistics operations in connection with the exploration and development of petroleum fields and the operation of oil and gas installations in and around the Barents Sea (both offshore and onshore). This will require the establishment of a high-standard, industrial logistics hub that is accessible by sea. The hub should be suitably located to support development both on the Norwegian and on the Russian side of the border.
- Industrial activities that exploit the energy resources in the Barents Sea and the raw materials in the region to produce high-value products.

Much can be achieved by combining the opportunities that already exist in the area between Kirkenes and Pechenga. Pechenga offers good harbour conditions, a railway connection and a large aircraft airport. This infrastructure is a result of the Cold War. Today it has partly fallen into disuse, but it can be converted and upgraded to serve the petroleum development in the Barents Sea.

The travelling distance to Murmansk is relatively short, and there are concentrations of local population in Nikel and Zapolyarnyy. On the Norwegian side of the border there are good harbour conditions in Jarfjorden, where there are also large areas of land that are suitable for industrial activities. This area is only a short distance from Kirkenes, which offers a good standard of services and housing. There is also a road connection between Jarfjorden and Pechenga that could be reopened.



The Pomor Zone with its two enclaves. Phase I.(III: Øystein Rø for Barents 2020)

The Norwegians can offer valuable experience gained in connection with large developments in Norway (Mongstad, Kårstø, Aukra and Snøhvit). One of the projects proposed below consists in adapting Norwegian experience to Russian conditions.

Hydro is discussing a common onshore facility with the Russians in connection with the development of the Stockman field.

The projects for the establishment of gas-based industry proposed by SINTEF in its contribution to Barents 2020 would be particularly interesting in such a zone.

SINTEF refers specifically to ULCOS (Ultra Low CO₂ Steelmaking), which is defined as an integrated project in the EU's Sixth Framework Programme. The main goal of the project is to halve the European steel industry's emissions of CO₂ compared with emissions from the current blast furnace technology. One of the key elements of both the first and second phase of the project is the switch to natural-gas-

based steel production.

The project has a budget of EUR 44 million and involves 48 partners, of which three are Norwegian (Statoil, SINTEF and NTNU).

The geographical extent of the Pomor Zone

An economic zone is characterised by the application of a set of special rules. These may include rules for the exemption from customs duties and taxation rules, or common rules for business establishments, arbitration, etc. Such special rules make it necessary to control movement in and out of the zone, which in turn means that the zone must be delimited physically.

For this reason, it is unrealistic in the short term to establish a zone that stretches from Kirkenes to Pechenga (see illustration). It would be more realistic to start with the establishment of two enclaves within the zone: one Norwegian enclave at Jarfjorden and a Russian enclave at Pechenga. These areas can be delimited physically, and a

road connection between them can be designed in such a way that it allows traffic to be controlled.

Initially, the zone would thus just consist of the two enclaves:

- **The Kirkenes enclave** would, according to the proposal, cover the area around the middle and inner parts of Jarfjorden. The maritime and industrial activities would be concentrated in the area Tårnet–Storbukt. The availability of land and the harbour conditions are excellent.
- **The Pechenga enclave** would, according to the proposal, cover the area around and south of the Pechenga Bay, with Liinakhamari as the maritime hub. The availability of land and the harbour conditions are excellent. A branch line of the railway to Nikel runs along the western side of the bay. There is an airport of considerable size at Luostari, just south of Pechenga.

This model, which consists in initially establishing one Norwegian enclave and one Russian enclave, and a connection between them, would avoid complications in relation to international law and the political complications associated with the establishment of a cross-border zone. To begin with, traffic between the two enclaves can be regulated by means of a border crossing with special visa rules and other facilitations.

The enclaves can be extended gradually as required. At a later stage, when border conditions between Norway and Russia are more similar to border conditions elsewhere in Europe, a true cross-border zone can be established.

Political issues related to the zone

The establishment of such a zone is

contingent on political agreement between Norway and Russia. Here, it is possible to build on statements made by the political leaders of the two countries. According to the joint declaration made by Prime Minister Bondevik and President Putin in June 2005, the parties will

“...facilitate cooperation on production, supplies to the petroleum sector and maintenance services.”

President Putin made a statement along the same lines in a newspaper interview in connection with the G8 summit in St. Petersburg in June 2006:

“The Norwegians have developed infrastructure in the north, but their production is on the decline. This means that we can combine our efforts and avoid duplicating infrastructure. We are prepared to share our opportunities if our partners (i.e. the Norwegians) are also ready to do so.”

Putin concluded by noting that both parties seem to be interested in such cooperation.

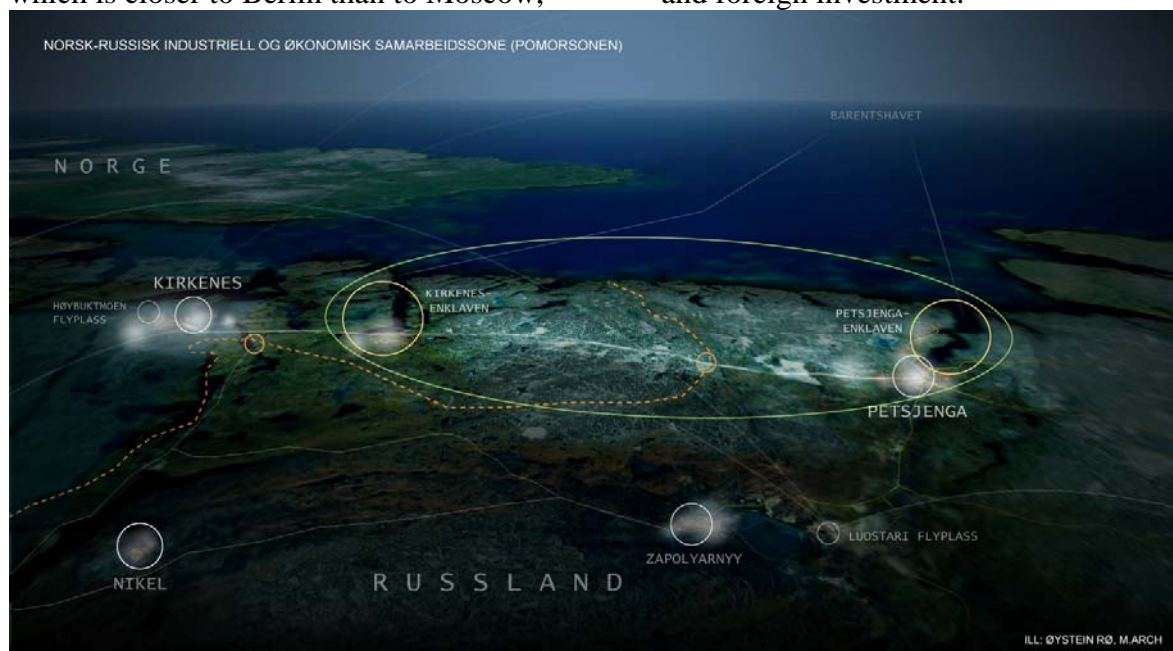
Viewed in conjunction with Putin’s earlier statements about a Norwegian-Russian partnership, these statements provide a sound political basis for relaunching the idea of the Pomor Zone.

It is an advantage that the concept of economic zones already exists in Russian legislation. In 2005, with a view to establishing a free economic zone in the Kaliningrad oblast, the State Duma, the Russian National Assembly, adopted a bill on free economic zones on its first reading. Kaliningrad currently has the status of a free economic zone.

Several more such zones are to be established in Russia. They are intended to stimulate the high-tech sector. Kaliningrad oblast is the first area in which the new act

on free economic zones has entered into force. Thanks to the new act, the enclave, which is closer to Berlin than to Moscow,

will enjoy great economic advantages, and will thus most likely attract both Russian and foreign investment.



A visualisation of the Pomor Zone. (Ill: Øystein Rø for Barents 2020)

Energy cooperation between Russia and the EU can initially be developed via the Kaliningrad oblast. A duty-free zone provides duty-free access for foreign goods into the country. The fact that Russia has created the necessary legal basis and has reaped some initial experience of a free economic zone may make it easier to gain Russian support for a similar zone in the border area in the north.

Just as the Barents cooperation is an important political symbol of the cooperation between the Nordic countries and Russia in the north, the Pomor Zone will be an important symbol of the political and practical cooperation between Norway and Russia in the north. The fact that the zone will be located on the external border of the Schengen area may give rise to problems in relation to national and international law. On the other hand, a zone that straddles this external border – and thus facilitates cooperation between

the EEA (and thus the EU) and Russia in such an important area as energy – may prove to be a major political asset. The establishment of the zone could also be considered to be a measure in the implementation of the new concept for EU's Northern Dimension.

The activity that is envisaged in the Pomor Zone will take place in the north whether the zone is established or not. The advantage of the zone is that the activity will be linked to political agreements. This increases the chances of dealing adequately with cooperation problems that arise in connection with onshore activity. It will also give politicians at the national and regional level better opportunities to influence the development.

The political structures created for the zone/enclaves will provide new political channels for conflict resolution. In addition, the establishment of the zone may in

itself prevent potential rivalry between Murmansk and Kirkenes. The international petroleum industry, including Russian oil companies, is currently investigating the opportunities for locating operations in the Kirkenes area, mainly because of the serious infrastructure deficiencies on the Russian side. If significant parts of the service industry and gas-based industry are located on the Norwegian side of the border, this could easily spark negative feelings in Murmansk, which claims to be the oil capital of the north. A solution based on the Pomor Zone may therefore be more acceptable.

Challenges in connection with the establishment of a cooperation zone

Efforts to establish a cross-border zone in the north will lead to a number of challenges. The big question is whether the Russians are ready to participate in such an arrangement in a border area that at least in the past was of great strategic importance. Also in Norway, questions may be raised about the defence aspects of such a zone.

Another question is whether such a zone would be compatible with Russian legis-

lation, which deals with national free economic zones, but not ones that straddle Russia's external border.

It is also to be expected that a solution involving a cross-border zone will be met with some scepticism in Murmansk and Kirkenes as the zone may be perceived as a rival project to development centred on the ports of Murmansk and Kirkenes. However, the scale of the expected development in the Barents Sea is vast, and this places demands on the onshore facilities that surpass the capacity of the infrastructure in Murmansk and Kirkenes. Today the port of Murmansk is congested, the city's railway connection has limited capacity and its logistics systems do not function well. There is little room for expansion in Kirkenes as the harbour is mainly used for the maintenance of Russian fishing vessels, and the adjacent land areas are not suitable for the development of large-scale facilities. Nevertheless, considerable development is to be expected in both Kirkenes and Murmansk, including in connection with the provision of services to the Pomor Zone.

Proposal

It is proposed that the Pomor Zone should be established.

6. Barents 2020. Projects

The purpose of the research and business-related petroleum activities under Barents 2020 is to further develop the expertise and technology needed to ensure the safety and efficiency of petroleum exploration, development and production in the High North by 2030.

In practice, this means developing expertise on ice and ice management and on transport in multiphase pipelines over long distances in cold waters. This will be achieved through Norwegian-led projects designed with a view to making them attractive particularly to Russian partners as well as to other foreign partners. It is emphasised that foreign partners should be involved on commercial terms, and that cooperation must be based on mutual interest.

Experience from the North Sea has shown that the most concrete technological development projects are realised in connection with field development projects led by oil companies. Major leaps in technological development are often made in connection with specific field projects that have considerable revenue potential (Statfjord, Troll, Snøhvit, Ormen Lange). Another task is to ensure that the expertise needed for day-to-day operations is continuously developed.

The development of project proposals for Barents 2020

Several of the technological projects proposed below have been designed to address real-world challenges:

- Stockman/Snøhvit phase 2: Both fields will require pressure support to

transport gas/condensate after 2020.

- Snøhvit oil field/Barents Sea North/Pechora Sea/Kara Sea: It has been determined that there is oil in the Barents Sea. The question is how to produce the oil so that it has the least possible environmental impact and provides the maximum benefits for local communities. The first step will involve the Snøhvit oil field and Goliat.

One possibility is to transfer experience from Snøhvit to Stockman; another is to start systematic research aimed at adapting Norwegian petroleum technology to Arctic conditions. Furthermore, efforts must be undertaken to develop common practices and common standards for health, safety and environment for the entire Barents Sea.

The process of developing the project proposals has included a series of meetings with key Norwegian companies and research institutes like Statoil, Hydro, Aker Kværner, Det Norske Veritas, Kongsberg Satellite Services, SINTEF, IFE, CMR, the Research Council of Norway, IRIS, INTSOK, OG21, the Norwegian Polar Institute, FFI and NORUT.

In addition, there have been meetings between the Ministry of Foreign Affairs, the Ministry of Petroleum and Energy, the Ministry of Education and Research and the Ministry of the Environment. In August 2006, a meeting about Barents 2020 was held between the Minister of Foreign Affairs, the Minister of Petroleum and Energy and the top management of key companies.

One of the purposes of the first series of meetings with the companies and research

institutes was to hear their views on the concept of Barents 2020, as presented by the Foreign Minister in Tromsø in September 2005. There was clear support for the Government's initiative. The need for a national scheme to develop petroleum technology in the north was emphasised by the participants, who welcomed the Government's initiative to launch a public-private dialogue on these matters. The initiative will pave the way for broad, concerted national efforts and will encourage cooperation among the various actors. It is particularly important to take account of Russian concerns in order to ensure Russian commitment.

The major companies involved stressed that environmental protection projects like *The Barents Sea Online – real-time monitoring of the sea areas in the north* and the health, safety and environment project should be launched as soon as possible, because they will have a bearing on the design of the technological projects. The projects could also strengthen long-term efforts to develop common Norwegian-Russian environmental policy programmes in the High North.

The idea of establishing a Norwegian-Russian industrial and economic cooperation zone in the north was also well received.

During the next series of meetings, projects were proposed on the basis of information obtained during the initial talks. Emphasis was on identifying which companies and research institutes were willing to take on responsibility for project management, and which might participate as partners. All the companies and research institutes that participated in the meetings expressed a wish to play an active role in the projects.

In the choice of project managers for the projects presented below, one aim was to get each of the major companies (Hydro, Statoil, Aker Kværner, Det Norske Veritas) to take on project management responsibility for one project. Another aim was to involve researchers and technical experts in Tromsø in all priority projects.

The projects and cooperation with other countries

The projects presented on the following pages are in part designed with a view to developing technology that is needed in the Barents Sea, but that is not available today. The intention is that it should be possible to carry out all of the projects in cooperation with other countries, particularly Russia, as a main concern is that the projects should be of interest to the Russians. This applies to all of the major technological projects proposed.

In some cases, a number of countries could be involved in a given project, for example Norway, Russia and Germany. This might apply to subprojects under one of the main projects presented below, like the Statoil-managed project for the development of GTL (gas-to-liquids) technology (i.e. synthetic diesel and naphtha based on gas). This would imply combining new technology developed by Statoil in close cooperation with SINTEF with German industrial input.

Several of Aker Kværner's projects are based on using the company's ice laboratory in Finland, while some of SINTEF's proposals are based on cooperation with Finish research institutes. This could pave the way for Norwegian-Russian-Finish cooperation.

Outline of the projects

The following pages contain an outline of the eleven projects that have been identified in the course of discussions with major companies and research institutes.

- Subsea drilling and production technology for Arctic areas
- Long-distance pipeline transport of oil, gas and condensate
- Petroleum production and ice
- The Barents Sea Online – real-time monitoring of the sea areas in the north
- Establishing a common practice on health, safety and environment

-
- Environmental protection
 - Conversion of natural gas into transportable products/liquids/a transportable
 - Onshore facilities – industrial development
 - Personnel development/training
 - Resources in the north and indigenous peoples
 - Contractors – INTSOK

The five projects listed at the top are particularly important, and it is proposed that they should be given priority under Barents 2020, and that they should be launched during the first half of 2007.

In selecting the five priority projects, importance was attached to the fact that they all enjoy broad support among the involved actors, and for four of the projects, key companies – Statoil, Hydro, Aker Kværner and Det Norske Veritas – have taken on project management responsibility.

The input from the companies and research institutes to the process of developing the projects is provided as annexes to this report, but is exempt from public disclosure.

Project 1

- **Subsea drilling and production technology for Arctic areas**



Subsea field centre. (Ill: Statoil).

A key challenge in Arctic areas is that operations that are generally performed on visible exploration and production platforms will need to be moved to the seabed. Some of the research and technological development required to develop the “subsea field centres” of the future is outlined below.

Processing facilities, transport and instrumentation

It will be necessary to develop subsea processing facilities to convert the oil and gas into a form in which it is transportable over long distances including pumping of wellstream to the onshore facility. This development programme will need to include new multiphase pumps (oil, gas and water in the same pump) capable of handling high pressure levels.

As regards instrumentation and data transfer, research efforts will need to focus on the operation and maintenance of subsea field centres and transport systems.

This requires the availability of instrumentation that has so far not been adapted for use under water. Remote operation will also require the development of new types of instrumentation and the automation of processes that are currently carried out manually. Monitoring systems for the prevention and/or detection of leaks are particularly important. Safe operation is contingent on the development of reliable systems for the real-time transfer of large amounts of data.

Power supply

Research is needed to develop alternative technologies for transmitting power from shore without significant energy loss, as well as methods for local power generation.

Maintenance

There is a need to find technological solutions for maintenance that reduce the

use of surface vessels and to develop new remote-controlled underwater vehicles and equipment. Maintenance solutions must be

designed for use in wells and in the transport system.

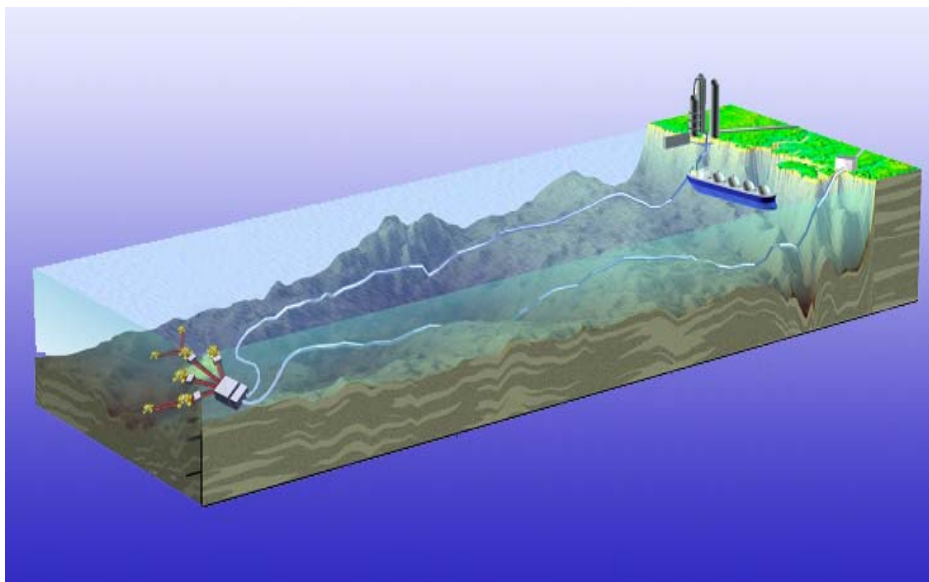
Project management: Statoil

Norwegian partners: Hydro, Aker Kværner, FMC Kongsberg, Framo, Statkraft, Statnett, IFE, IRIS, SINTEF, the Norwegian Polar Institute, NORUT

Foreign partners: IFP, Gazprom, Rubin, ABB, Siemens, General Electric, Total

Project 2

- Long-distance pipeline transport of oil, gas and condensate



Pipeline transport over 500 kilometres from the Stockman field will be a major challenge. (Ill: Hydro)

The further development of field centres on the seabed is contingent on multiphase transport (oil, gas and water in the same pipeline).

A typical gas field contains little water, and current technology can be used to transport gas with low water content over limited distances. Snøhvit's 143-kilometre multiphase pipeline is the world's longest of its kind. Oil fields tend to contain more water than gas fields. This leads to hydrate formation, or "icing", which poses a technological challenge. The problem is solved by combining insulation with direct electric heating. Finding solutions for long distances of 500-600 kilometres will require more research and technological development. This is one of the issues connected with the Stockman field. Providing adequate power supply is another major challenge in connection with the operation of multiphase pipelines over

long distances.

Developing the Ormen Lange field means operating under close to "Arctic" conditions. Seabed temperatures below freezing point, extreme wave, current and wind conditions combined with a rugged seabed topography necessitate new, innovative solutions.

Key activities in the project will be:

- Modelling of multiphase flows
- Monitoring and control of hydrate formation
- Identifying the optimal pipeline alignment
- Developing systems for process control and power supply over long distances.

Project management: Hydro

Norwegian partners: Statoil, Aker Kværner, FMC Kongsberg, Framo, Statkraft, Statnett,
IRIS, SINTEF, IFE, the Norwegian Polar Institute

Foreign partners: IFP, Gazprom, Rubin, ABB, Siemens, General Electric, Total

Project 3

- **Petroleum production and ice**



Transport through ice. (Ill: Hydro)

Oil and gas production becomes more complicated in areas that are covered with ice during certain periods or throughout the year. Operating in ice and under icy conditions requires additional know-how.

Operating surface installations and sea transport in Arctic areas include the following challenges:

- Compilation of Arctic experiential data
- Exploration and production drilling
- Construction and operation of offshore production facilities
- Working environment/health, safety and environment

For oil and gas installations that are surrounded by ice during parts of the year it is necessary to carry out detailed logistical analysis and monitor ice conditions, including icebergs, sea ice and ice formation on installations in relatively

open water.

Efforts to manage such conditions should build on Norwegian and Russian companies' expertise.

The first step should be to gather and compile the knowledge that exists in this field, but that is currently very fragmented.

Aker Kværner has built about 60 per cent of the world's icebreakers and has a particularly high level of expertise on transport solutions in icy conditions. Aker Kværner's ice laboratory in Helsinki tests the company's Arctic concepts, and the research centre possesses unique expertise on ice conditions in Russian waters.

The construction and operation of production facilities in Arctic areas must take account of a number of particular considerations, such as:

- Ice formation on equipment and constructions
- Fire water supply system
- Weather protection/increased explosion loads
- Working environment/health, safety and environment
- Remote operation/instrumentation
- Structural stress/loads
- Choice of materials/environmental stress (freezing/thawing)
- Implementation strategy, transport and infrastructure
- Operation and maintenance

Project management: Aker Kværner
Potential Norwegian partners: Statoil, Hydro, the Norwegian Polar Institute
Potential foreign partners: ExxonMobil, Shell, Morneftegaz, BP, Canadian centres of expertise like Seacore, Memorial University and Sandwell

Project 4

- **The Barents Sea Online – real-time monitoring of the sea areas in the north**



Monitoring the Barents Sea (III: SINTEF)

It is necessary to develop an integrated Norwegian system for monitoring the sea areas in the north and to establish one portal that offers users easy access to historical and real-time information about conditions in the sea area, on the seabed, on shore and in the air space above the sea. Such monitoring will constitute an effective tool for the management of the marine resources in the north. Our aim should be to make Norway a leader and active promoter of knowledge-based management of the High North. This may also give the countries bordering on the Barents Sea a head start when it comes to developing an integrated monitoring and management plan for a given sea area.

There are currently a number of Norwegian sector initiatives aimed at compiling historical and real-time information about the sea areas in the north. But these are fragmented initiatives

that cater for a variety of user groups. If no action is taken, these sector systems will remain fragmented, and will not provide an integrated national system. Nor will they provide ways of involving Russian partners.

The purpose of the Barents Sea Online project is to create an integrated system with one portal that offers users access to historical and real-time information about environmental conditions, weather conditions, the state of the fisheries resources, petroleum activities and maritime traffic. The intention is to design the portal so as to allow Russian interests to be involved at a later stage.

The intention is that the data should be stored by the data provider and be made available through the portal. To begin with, historical data will be made available, but at a later stage real-time data will be added.

The Barents Sea Online portal must be integrated in the activities of the user groups so that the information that is compiled can quickly be put to use.

Remote sensing data from buoys and satellites must be incorporated in the

project, and new technology, such as the use of surveillance drones, should be considered. It is important that Norway develops an integrated military and civilian monitoring system.

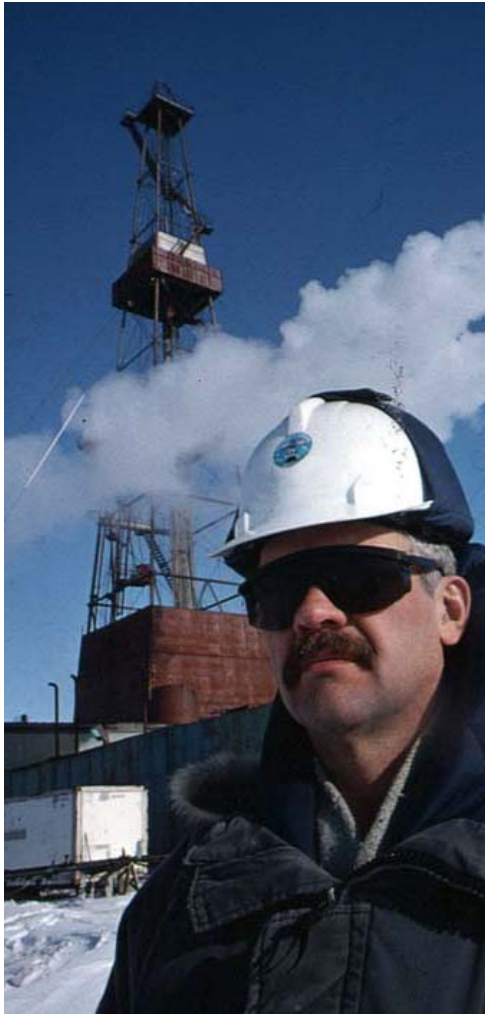
Project management: SINTEF

Potential Norwegian partners: Statoil, Hydro, IRIS, CMR, Kongsberg Satellites Services, the Institute of Marine Research, FFI, IFE, SINTEF, the Norwegian Polar Institute

Potential foreign partners: GMES (partnership between the EU Commission and ESA)

Project 5

- **Establishing a common practice on health, safety and environment**



Health and safety. (Ill: Norwegian Barents Secretariat)

There are at present no common rules or common practice that safeguards health, safety and environment in connection with petroleum activities in the Barents Sea. In Norway there are rules and an established practice, but this is not the case in Russia.

Petroleum activities on the Russian side require that the companies are governed by a framework of rules and regulations and follow agreed practice for the shelf area. This is important for the operation of exploration and production facilities and in order to ensure the safety of maritime transport of gas and oil in Arctic waters.

The purpose of the project is to lay a common basis for the development of rules and regulations in the field of health, safety and environment for petroleum activities in the Barents Sea and any other relevant Arctic areas. The project is intended to result in a proposal for common standards for design, implementation and operations.

The following elements may be included:

- Definition of “an acceptable level of safety”
- Common proposal for risk management
- Common basis for standards and rules
- Establishment of an international cooperation body
- Consultations on proposal in the cooperation body
- Developing a draft proposal for common practice
- Coordination of secretariat services

Under this project it should also be considered whether a group of experts should be established with participation from Norway, Russia and relevant EU countries to evaluate the proposals for common practice in the field of health, safety and environment management in the High North.

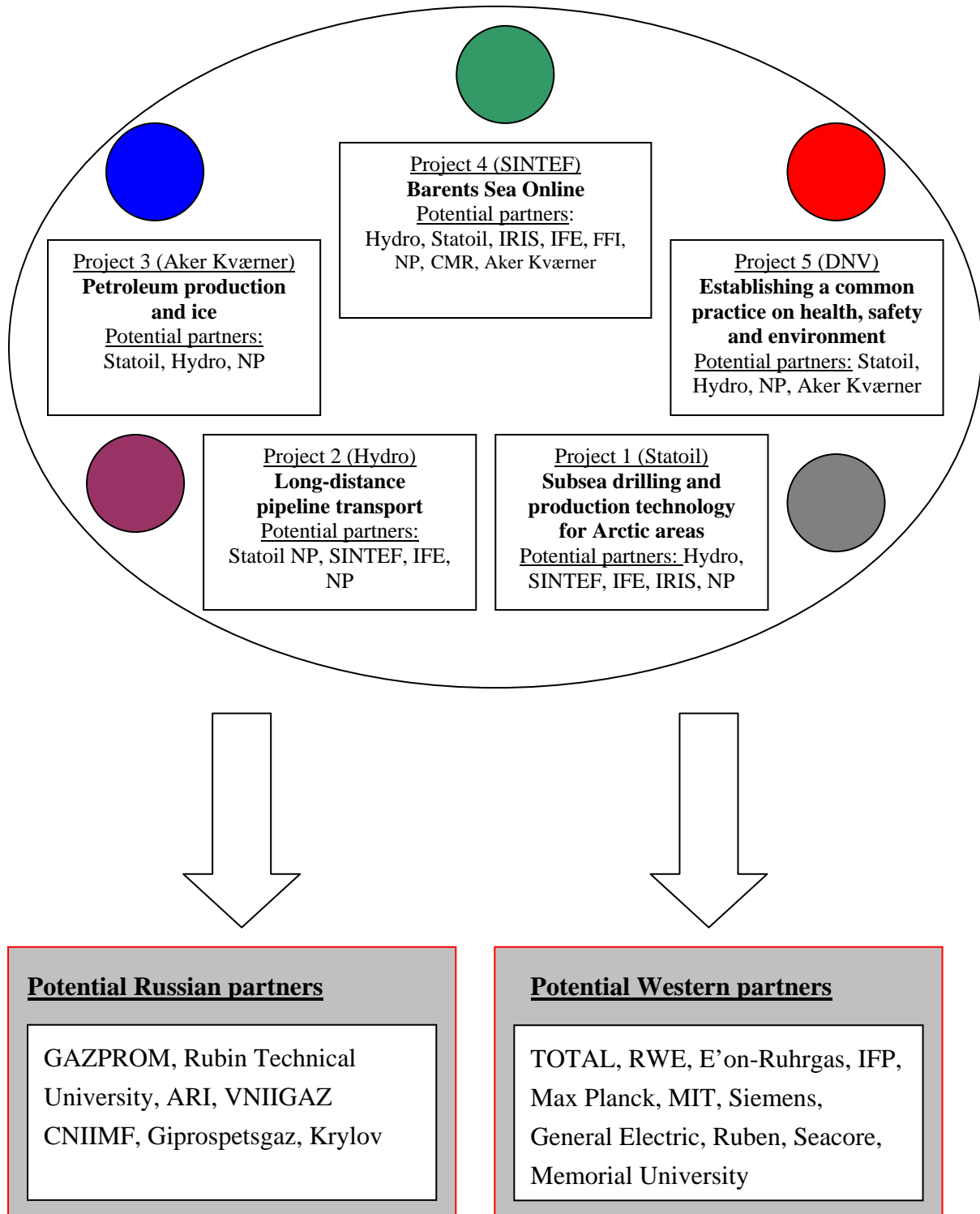
Project management: Det Norske Veritas

Potential Norwegian partners: Statoil, Norsk Hydro, Aker Kværner, IRIS, the Petroleum Safety Authority Norway, the Norwegian Maritime Directorate, the Norwegian Polar Institute

Potential foreign partners: From Russia: relevant authorities, Gazprom, ARI, CNIIMF, Krylov, VNIIGAZ; from the EU (mainly Germany): relevant authorities, industry representatives

The five priority projects under Barents 2020

(Project manager in parentheses)



Other projects

Project 6

- **Environmental protection**

This would be a joint Norwegian/Russian project for monitoring and combating oil pollution in Arctic areas. It would involve determining how to share responsibilities between the two countries' authorities and operative oil companies, and how to best coordinate their efforts. It would also consider and make recommendations on the establishment of an Arctic institute for oil spill response in Arkhangelsk.

Project 7

- **Conversion of natural gas into transportable products/liquids/a transportable form**

Gas conversion technologies (LNG, GTL, methanol)

Apart from Snøhvit and Goliat, the fields in the Barents Sea area are located far away from existing infrastructure (including pipelines). The gas extracted on the Stockman field will for example have to be converted into a transportable form.

Norway should promote the establishment of a Norwegian/Arctic institute for gas conversion technology in the Pomor Zone. The facilities at Tjelbergodden should form part of the institute.

Project 8

- **Onshore facilities – industrial development**

Transfer of experience gained at Norwegian onshore facilities (Kårstø, Mongstad, Aukra and Snøhvit) to relevant future projects in northwestern Russia. Statoil and Hydro should utilise their experience from these facilities to develop relevant planning tools.

The Norwegian authorities, particularly the Ministry of Petroleum and Energy, should *together with Gazprom* be involved in working together with relevant institutions in Russia.

Prosjekt 9

- **Personnel development/training**

Oil companies, research institutes, Det Norske Veritas and Aker Kværner have a wide range of extensive programmes for educating and training Russian personnel in a variety of fields. The Norwegian authorities should consider whether to offer long-term funding for Russians taking certain petroleum-related courses at selected Norwegian universities (for example the University of Stavanger, the University of Bergen, the Norwegian University of Science and Technology and the University of Tromsø), particularly in the fields of geology and engineering.

Project 10

- **Resources in the north and indigenous peoples**

In connection with the development of Norway's High North policy, particularly in the area of energy, it is important that information on all ongoing work on oil and gas-related issues is compiled, analysed and presented in a comparative perspective and made available to the affected indigenous peoples in Canada, Norway and Russia. The project should look into rights, legislation, environmental issues, business activity and local communities, and should particularly focus on the impact of petroleum activities on cultural and social development.

It is proposed that the project should be managed by the Sami institutions' High North network. The University of Tromsø or the Barents Institute could for example be the Norwegian partners, and the Kola Science Centre, the Russian Association of the Indigenous Peoples of the North (RAIPON) and the Reindeer Herders Union in Russia (RHUR) could be the Russian partners. Relevant institutions in Canada could also be involved.

Project 11

- **Contractors – INTSOK**

INTSOK has developed a strategy for the use of Norwegian goods and services in Arctic areas. Cooperation with Russian companies is increasing rapidly. Important Russian cooperation partners include Gazprom and Gazflot. Data has been compiled on more than 270 Russian companies that have the potential to work as contractors in the petroleum sector. In the period 2007–2009 a number of joint seminars and conferences for Norwegian and Russian companies will be held, including the 5th Russian–Norwegian Oil and Gas Conference, which will be held in Kirkenes in January 2007.

Proposal

It is proposed that the eleven projects outlined above should be used as a basis for the further development of Barents 2020. It is assumed that decisions will be followed up with meetings with foreign actors. Further development is contingent on public-private financing, with contributions from the State and the participating companies.

7. Organisation

The organisation of Barents 2020 needs to reflect the tasks that are to be resolved.

There are two main tasks:

- to initiate a public-private dialogue and strategic cooperation in which Norwegian actors pool their national and international efforts
- to organise the proposed projects, find Russian and other partners and secure the financing of Barents 2020.

Barents 2020 is not intended to engage in research or projects of its own. This will be left to existing institutions.

In deciding on the organisational model for Barents 2020, it is important that the following three concerns are taken into account:

- it must ensure political control
- it must inspire confidence among actors in the public and business sectors and among researchers
- it must be flexible enough to enable it

to “link up” Norwegian and foreign actors.

The most relevant organisational models are:

- part of a ministerial structure
- a foundation
- a limited company.

Placing Barents 2020 under a ministry would ensure close political control.

If Barents 2020 is placed under a ministry, the Ministry of Foreign Affairs would be the most natural choice, as the Minister of Foreign Affairs has overall responsibility for foreign policy.

The disadvantage of placing Barents 2020 under a ministry is that this might limit the flexibility needed in order to initiate new projects and bring together Norwegian and foreign companies and research institutes.

Proposal

It is proposed that Barents 2020 should be established as a foundation owned by the most closely involved ministries, companies and research institutes. The chair of the board should be appointed by the Ministry of Foreign Affairs.

It is recommended that Barents 2020 should be located in Tromsø.

8. Financing

In talks with the companies and research institutes, it has been taken for granted that financing will public-private, with contributions from the State and the participating private actors. The State's participation in the financing will make it possible to launch research projects that would otherwise not have been realised. State involvement should also help to improve national coordination of public sector efforts. As it is now, several institutes can be working on a single project without sufficient coordination. State involvement is also necessary to trigger the private sector's corresponding share of the financing.

There are also other arguments for state involvement. The parties involved in exploiting the petroleum resources should also be actively involved in research to ensure more efficient and environmentally friendly production. Today, the State is contributing less to research than its share of the resources would suggest. Moreover, the sharp rise in the price of oil has given the Norwegian State considerable additional revenues, and it would seem reasonable that in the period 2008-2020 part of these revenues were used to develop new technology and safeguard the environment in the High North. This will yield future environmental and economic benefits, and can be considered to be an investment that will give the oil companies and the State increased future

revenues.

As Barents 2020, which addresses future opportunities and challenges in the north, is stepped up, it should be considered whether Norway should gradually reduce its nuclear clean-up programme to deal with the cold war heritage in northwestern Russia. (The Storting has so far allocated NOK 1.1 billion to the programme.) This would shift the focus of Norway's High North policy from cleaning up nuclear waste of the past to addressing the challenges and opportunities of the future.

It is proposed that a fund for environmental protection, resource management and petroleum technology in the High North should be established, and that it should be allocated NOK 1 billion annually, split between the State and the private participants on a 65/35 basis. The fund can be used to finance the implementation of the Integrated Management Plan for the Barents Sea and the sea areas off Lofoten, which the Government presented in March 2006, for new measures designed to improve the management of living marine resources and for projects proposed under Barents 2020.

Up to 90 per cent of the fund's monies can be used yearly. Questions related to the organisation of the fund and its board should be assessed once this report has been approved.

Proposal

It is proposed that a fund for environmental protection, resource management and petroleum technology in the High North should be established for the period leading up to 2020. It is proposed that the State should allocate an annual amount of NOK 650 million to the fund in the period 2008-2020.

9. Plan for further work

Work on this report was concluded in the middle of September 2006.

If the Government decides to implement Barents 2020 along the lines proposed in this report, a new meeting should be held between the Minister of Foreign Affairs, the Minister of Petroleum and Energy and the heads of the companies and research institutes that have participated in the process described in the report. The purpose of the meeting would be to confirm that the State and the private actors have agreed to launch a national initiative and specific projects under the Barents 2020 programme.

Once these matters have been clarified in Norway, visits should be made to Russia, Germany, France, the UK, Canada and the US to present the projects and establish cooperation both with relevant institutes (e.g. IFP and the Max Planck Institute) and with interested companies. It would seem natural to begin by visiting Moscow, as consultations with Gazprom will be particularly important.

Talks in Berlin, Paris and London would seem a natural follow-up to the Foreign Minister's invitations to participate in

Barents 2020. In Berlin the talks could be organised as a follow-up to the business seminar organised by the Norwegian-German Willy Brandt Foundation in March 2006.

It will also be necessary to determine how Barents 2020, OG21 and the Research Council of Norway's High North Programme can best be coordinated. The new long-term cooperation agreement with Russia on research and higher education, which is being financed through the Ministry of Foreign Affairs' High North budget, should be viewed in connection with Barents 2020 when a new programme is to be developed.

The proposal for the establishment of a Norwegian-Russian cooperation zone in the north should be followed up in parallel with the further development of the projects. If the Russians' response to the idea itself is positive, a concrete proposal for the establishment of the zone should be developed as a basis for further discussions with Russia. Such a proposal should be developed in close consultation with Finnmark county, Sør-Varanger municipality and representatives of the involved companies.

Summary of the report

Mandate

Minister of Foreign Affairs Jonas Gahr Støre presented the idea of Barents 2020 in September 2005 as the Government's long-term programme to boost technological development and research in the High North.

The report gives substance to this political initiative by presenting a proposal for the establishment of Barents 2020, including projects that could be initiated and implemented under the programme. The intention is that Norwegian companies, research institutes and the State should cooperate on the projects.

Basis for the report

The report is based on the assumption that the operative petroleum activities that are under development in the High North will build on the petroleum activities that have taken place in Norway during the past 40 years.

However, three concerns are specific to the High North:

- The environmental and resource management challenges are greater.
- The petroleum activities are to a greater extent influenced by foreign policy concerns than was the case in the North Sea. Our common border with Russia, the world's largest producer and exporter of gas, and the unresolved sovereignty questions in the north are key factors here.
- The petroleum production is being developed at a time when petroleum to a greater extent than ever before has become a foreign policy tool. This has resulted in consumer countries, particularly in North America and Europe, giving long-term energy security a prominent place in their security policy. This has led to increased interest in the activities in the High North and in closer cooperation with Norway.

The Government's High North policy provides the political basis for the report. The policy's international dimension rests on two pillars: closer cooperation with Russia and High North dialogues with Western countries. This policy is now in the process of being fleshed out. It is necessary to define areas and projects for closer cooperation with Russia. Similarly, it is necessary to identify projects that can translate Norway's High North policy into cooperation with dialogue countries.

The aim is that Barents 2020 should become a key instrument for national and international cooperation on concrete projects in areas such as the environment, resource management and development of petroleum technology.

The strategic part of the report

The key point of the strategic part of the report is that Norway should position itself in the north by focusing on areas and activities where it has comparative advantages. Norway's policy should be to systematically develop these advantages.

As regards energy development in the High North, Norway has three important comparative advantages:

- technology developed in the North Sea that can be adapted to conditions in the High North
- geography and infrastructure in the north that put Norway in a position to effectively provide services for petroleum activities in all parts of the Barents Sea
- expertise on Arctic conditions

Norway should seek to develop its role as a leading knowledge nation in the north and further develop its infrastructure so that it can provide optimal services for the petroleum activities. Effective environmental and resource monitoring in the High North will be a key concern here.

These efforts should have both a practical and a political-strategic dimension. The practical dimension is about further developing our expertise. The political-strategic dimension is about using this expertise to promote Norway's interests.

The Pomor Zone – a Norwegian-Russian industrial and economic cooperation zone

The report contains a proposal for the establishment of the Pomor Zone, a Norwegian-Russian industrial and economic cooperation zone straddling the Norwegian-Russian border in the north. The zone would be a means of developing the advantages Norway has in terms of geography and infrastructure in the north, and would help to avoid unfortunate competition with other Russian locations such as Murmansk. Some of the institutions and projects proposed in the report could be established in the zone.

Projects

The key task facing Barents 2020 will be to develop projects that attract the active participation of oil companies, research institutes and contractors. As a general rule, the projects should be Norwegian-led. They will, however, be open to participants from other countries, particularly Russia.

During the development of the report, talks have been held with the top management of Statoil, Hydro, Aker Kværner, Det Norske Veritas, Kongsberg Satellite Services, SINTEF, IRIS, CMR, IFE, the Norwegian Polar Institute, the University of Tromsø, NORUT and FFI.

The project managers of OG21 (the Ministry of Petroleum and Energy's technology project) have made contact in order to ensure close coordination of the Norwegian efforts in the field of technology development. They have also been in touch with the Research Council of Norway with a view to aligning efforts.

The following list contains eleven projects that are proposed for development under Barents 2020. The five projects listed at the top have been identified as priority projects that should be explored at an early stage.

- Subsea drilling and production technology for Arctic areas
- Long-distance pipeline transport of oil, gas and condensate
- Petroleum production and ice
- The Barents Sea Online – real-time monitoring of the sea areas in the north

- Establishing a common practice on health, safety and environment
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- Environmental protection
- Conversion of natural gas into transportable products/liquids/a transportable form
- Onshore facilities – industrial development
- Personnel development/training
- Resources in the north and indigenous peoples
- Contractors – INTSOK

Organisation of Barents 2020

As regards organisational model, it is necessary to strike a balance between the desire to maintain political control and a sufficient degree of autonomy for the programme, in order to ensure that Barents 2020 becomes a dynamic organisation. It is proposed that Barents 2020 should be established as a foundation owned by key actors and the most closely involved ministries.

Financing

It is assumed that the Norwegian State will contribute funding that is reasonable in proportion to the contributions made by the involved companies and when seen in relation to the State's future revenues from the petroleum activities, given that most of the State's contribution can be considered to be an investment cost.

The report proposes the establishment of *a fund for environmental protection, resource management and petroleum technology in the High North*. The fund could be used by Barents 2020 and also for the implementation of the Integrated Management Plan for the Barents Sea and the sea areas off Lofoten. Such a fund could help to integrate environmental and resource management with the development of petroleum technology. It is proposed that the State should allocate an annual amount of NOK 650 million to the fund in the period 2008-2020. The participating companies' share would be NOK 350 million.

Progress plan

It is assumed that once the report on Barents 2020 has been submitted to the Minister of Foreign Affairs in September 2006, the Government will decide whether the projects are to be carried out and how much funding the State will contribute.

The next step should be further discussions with Russia in order to determine whether Russian actors, and in particular Gazprom, are interested in participating in the projects, and whether the Russian authorities support the proposal to establish a cooperation zone – the Pomor Zone – in the north.

Once Russia's participation has been clarified, the obvious next step would be to approach relevant companies and institutions in Germany, France, the UK and the US to determine whether actors in these countries are interested in becoming involved as project partners.

Abbreviations

CMR – Christian Michelsen Research

FFI – Norwegian Defence Research Establishment

IFE – Institute for Energy Technology

IFP – L'Institut Français du Pétrole

INTSOK – Norwegian Oil and Gas Partners

IRIS – International Research Institute of Stavanger AS

MIT – Massachusetts Institute of Technology

NORUT – Tromsø Group of Research Institutions

OG21 – Oil and gas in the 21st century

SINTEF – the Foundation for Scientific and Industrial Research at the Norwegian Institute of Technology

ULCOS – Ultra Low CO₂ Steelmaking