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Arctic ahead!

EU, Greenland and Finnmark

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No guarantees for the Arctic peoples

What guarantees for the future? Here Melkøya in Hammerfest. Photo:StatoilHydro

In October 2006 the Norwegian Minister of Foreign Affairs Jonas Gahr Støre visited Brussels to present what he called the strategy of the High North. His message was that the seabed of the Barents Sea is a potential European Region of Energy and the whole of Europe should be interested in the responsible and environmentally sound development of this region.

Mr. Støre's presentation was given just after Russia had once again sought to restrict the supply of gas to a neighbouring country. It was clear for all to see the disadvantages attached to the European Union's continuing reliance on an external country like Russia for its energy supplies. 'Little' Norway could never use energy as a political tool like the big brother in the East, he implied.

Mr. Støre used the occasion of the 'Open Days of the European Regions' to present his message to an audience of at least 300 well-informed listeners. European Commission President José Manuel Barroso was also there to comment on the statement of the Norwegian Foreign Minister. He reacted very positively to what he heard and talked warmly about a joint future. In fact, in February this year, Barroso himself visited Norway and invited further close cooperation between this non-Union member country and the European Commission, with the goal of further developing the supply of oil and gas from the High North to central Europe.

Even before this, the Norwegian oil-and gas-company Statoil, now StatoilHydro, began the most expensive industrial development ever in Northern Norway, namely the production of Liquid Natural Gas (LNG) from the Snøhvit field deep below the Barents Sea. Via tubes on the seabed the gas is brought ashore at Melkøya in the harbour of the small Norwegian town of Hammerfest. What used to be a rocky island has been ´planed` downed into a large plateau upon which huge storage tanks, processing equipment and quays have been built.

Total investment here has been approximately 60 billion NOK. On the one hand this must be recognised as a really significant investment while on the other, the number of permanent jobs will not be all that sizeable. In fact only around 300 people will work directly in the LNG-processing plant, more or less the same number as are engaged in the fisheries sector in the municipality.

For people living in sparsely populated areas like Hammerfest future job security is of the utmost importance. However, perhaps more than anything else here, the lesson of history is that there are no guarantees even if the resources are more or less just outside your door. Much of the production of oil and gas in the North Sea is offshore, and with further technological developments this can also become the case for the High North. The mayor of Vardø Rolf E. Mortensen (see p. 7) has long observed the economic vagaries of such developments and will therefore not bet the future of 'his` town on oil and gas exploration.

Many people in Finnmark also use fish as an example for this type of development: – What we have learned is that control of the fish resources off the coast of Finnmark has over the years been taken away from us by large companies with international operations. In addition, fish quotas regulated by the Norwegian state have undoubtedly worked more to the benefit of the large trawlers than to the local inhabitants. In terms of jobs and opportunities therefore small costal communities have been the losers, they argue.

Classic notions of state sovereignty cannot adequately address the issue of the sovereignty of peoples, argues Rasmus Ole Rasmussen in his article debating the future role of the EU in the Arctic (see p. 23). Similarly Anita Dey Nuttall and Mark Nuttall ask if the Arctic states' new Arctic policies are heading towards the exclusion of indigenous peoples (see p. 29).

Increasingly, the international media is now carrying articles about the huge store of "untapped" resources in the Arctic. In late July for example the BBC told us that the US Geological Survey (USGS) had estimated that the Arctic holds 13% of the undiscovered oil, 20% of equivalent natural gas liquids and no less than 30% of the remaining gas in the world.

The regional impact of oil and gas in the High North is becoming increasingly significant though seasoned observers would be excused for thinking that this is something of a déjà vu moment. In the 'high North' there are never enough resources waiting for exploitation and, given the costs of exploitation, local control will always be problematic. Addressing these issues is perhaps the ultimate future challenge for the Arctic.

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Leaving the port of Vardø. Note white ´radar-ball` to the left. Town-hall with pyramide-roof in the centre. Photo: Odd Iglebaek

Uncertainty in the High North

East-Finnmark, Norway: There is currently an economic boom taking place in Kirkenes, Norway's most easterly town. Support services for the Russian king crab fishing fleet are providing jobs and income. On the other side of the Varangerfjord, particularly in Vardø, the situation is however as bleak as ever. The new filet-factory closed down after less than twelve months in operation. That was five years ago. Still there are no plans to reopen it. In Vadsø public jobs including reception-programmes for refugees make life somewhat brighter.

The climate of Finnmark, the most northerly county of Norway, is tough. The Varanger-peninsula points out into the Barents Sea. No trees grow on the coastline. There are hardly any islands. To the north, the mountains roll down into the sea. To the east there are many beautiful beaches and endless wind. Maximum water temperature in summer is said to be eight degrees Celsius. Sailing further to the North you meet the Polar-icecap.

The availability of natural resources, first and foremost the fish in the sea and the possibility for reindeer to find grazing, has enabled people to live here over the centuries. It has also, at least until very recently, been fishing together with mineral resources (mines) that have been the economic bedrock of any larger community in the region.

In recent years more and more fish are being caught by large trawlers and frozen at sea. Via the huge freeze-store in Kirkenes fish is transported to China, de-frosted and processed. The low wages paid makes the process cheaper. There-after it might be re-frozen and re-exported to the European market. In the 1960s and 1970s Finnmark used to have filet-factories in almost every port. Today there are only a few left. The rest have closed down or gone bankrupt.

Mr. Oddgeir Danielsen is the Port Director of Kirkenes. As a municipal employee for him it is also an important task to promote the town as an excellent place for trade and investment. He makes no secret of the fact that he really enjoys this part of the job:

– Yes, it is fascinating and we are in many ways at the centre of events. Contact with the Russians has generated a lot of jobs and trade, the king-crab fishing trade has grown rapidly, there are also plans to reopen the iron-ore mines at Sydvaranger, and finally there is a good chance that we well become a major port for the supply and servicing of the Shtokman gas-field.

The area around Kirkenes was a common Norwegian-Russian district until 1826 when borders were settled. In 1906 the iron-ore mine at Bjørnevatn (AS Sydvaranger) opened. At that time, Kirkenes only had a few houses and a church (*kirke*) but it quickly grew into a town of several thousand inhabitants.

Historically, it was the discovery of nickel in Petsamo in 1921 that generated the most devastating developments in this part of the high north. The ore was some 30-40 km south of Kirkenes, at that time on the Finnish side of the border. It soon became clear that Petsamo had the largest deposits of nickel in the world, and through the war the Soviet Union made certain it gained control over Petsamo. That is a control Russia still maintains. To extract the precious metal the mine-town Nikel was developed. Even today the nickel-mines continue production at high speed and still generate huge profits.

Russia's only ice-free harbour in the west is Murmansk, some 200 km east of Kirkenes, This, combined with the

availability of the area's precious metals, was (and still is) of course of the utmost strategic interest. The discovery of oil and gas in the region has placed these issues even higher on the international agenda.

During the later stages of World War II Germany had some 300 000 soldiers in Finnmark, four times the population of the county. Kirkenes alone had 30 000. In the autumn of 1944 however the town and most of the surrounding county experienced the full ravages of war. Soviet bombers flattened Kirkenes. To make matters worse, almost every building in the county was burned in the scorched earth policy employed by the retreating German troops.

After the war Finnmark was rebuilt, partly with the help of the US-Marshall Plan. Demand for the iron from AS Sydvaranger was rapidly increasing. The 1950's, 1960's and 1970's proved to be ´a golden era`. Kirkenes received asphalted streets before any other town in Finnmark, built a large indoor swimming pool, as well as a hospital and an airport. It also became a key centre for the Norwegian military.

In the 1980's, however, the mining of iron-ore in Kirkenes, even with continuing state-subsidies was no longer profitable enough. From a workforce of some 1200 people, the large open-air mine was significantly scaled down. In 1996 mining came to an end completely.

– All that was left was basically a huge hole in the ground. The future indeed seemed bleak, but the collapse of the Soviet Union was soon to change all this. The borders which had been more or less sealed during the cold war were opened and localised trade mushroomed, explains Mr. Danielsen.

– *Kimex* the new shipyard built in the centre of the town is very important in this context. They specialise in repairing Russian fishing-vessels. We daily have 30-40 Russian trawlers here. They come to change crew and to buy food and fuel. We also have the largest warehouse for frozen fish in the north. In total this generates trade to the value of one billion NOK every year.

– Why do the Russians come here? First and foremost, because Norway has so little bureaucracy compared to Russia. In Kirkenes we can start unloading a Russian trawler twenty minutes after it has moored. In Murmansk they will have to wait for two days, maybe two weeks. Think of an oil-rig in need of a service. The cost to hire these rigs is 700 000 USD per day. Guess what waiting-times mean to these guys? And with construction soon starting at Sthokman, well you see what we are planning for he says laying out maps of the massive planned expansion of Kirkenes harbour- and port-facilities.

To develop Sthokman will take time. Probably production-start will be earliest in 2020. The process calls for vast amounts of steel, cement equipment and manpower. All of this has to be transported, supplies re-fielded, vessels repaired etc. Sthokman is also too far off-shore for ordinary helicopter-flights. Logistics issues will be very important.


Port Director Oddgeir Danielsen of Kirkenes

At least three communities thus far hope to gain from the fruits of the new industry. In addition to Kirkenes, the Russian village of Teriberka and the small Norwegian town of Vardø have also declared their new Barents-ambitions.

Vardø is probably one of the most windswept towns in the world. The history of the place goes back to 1307, when what was the most northerly fortress in the world was built there on the island of Vardøya. By 1700 it had developed into a trading centre. Both Finnish and Russian merchant ships called at this ice-free port. The fortress was extensively rebuilt during the course of the 18th century. Today all of the tourists on *Hurtigruten* are taken on a half hour guided tour to study the stronghold, while the ship waits at the quay. Like the rest of Finnmark, Vardø was extensively damaged at the end of World War II.

The military role of Vardø has continued into the modern era. In 1998 a major US radar system was installed. The huge balls protecting the equipment are easily

▶▶


Beautiful beaches but very cold water. Photo from Ekkerøy on the Varangerfjord. Photo: Odd Iglebaek

visible on top of the towns' hills. Officially the US has claimed that the purpose of the radar station is to track space debris. Most people, however, see it as a spy-system focused on Russia.

In 1982, Vardø was connected to the mainland by Norway's first underwater tunnel, more than three kilometres long. The population about half of which is of Finnish decent had risen to 2600 by the turn of the twentieth century. By 1970 it had increased again to 4500, while today it is back down to around 2250.

– It has been downhill for a long time now, explains veteran-fishing Social-democrat politician Thor Robertsen. – Every year, in fact 2-3 million kilos of fish is landed here in Vardø only to be sent along the coast to factories in neighbouring Båtsfjord. It is ironic particularly in light of the fact that there was a brand new 100 million NOK fish-factory opened here in 2003, only for it to be closed 12 months later. Robertson is also a member of the Expert committee for the High North appointed by the Government of Norway a couple of years ago. In particular the committee is tasked with contributing to ideas for growth and jobs in the region.

– Are the central authorities contributing enough, do you think?

– Yes and no, I think the Ministry of Foreign Affairs has done a good job in creating interest at the European Union level in the challenges up here. On the other hand, in terms of concrete investments they are plainly not doing enough. In neighbouring Northwest-Russia, plans are being laid to build new roads and infrastructure to the tune of 100 billion NOK. On our side of the border, there is however nothing of that scale planned.

The latest news regarding the closed down fish-factory and the land surrounding it is that an investor-group from Southern Norway have been given an option to rent the area. In the glossy brochure they have produced they call the Vardø Barents Baset – Your closest point. They refer to the aerial distance from Vardø to Shtokman compared to that from Kirkenes and Hammerfest. The public face of the investor-group is Bjørn Dæhlie, the previous Norwegian ski-champion.

Kimex shipyard to the left. In the centre king-crab pots. Photo: Odd Iglebaek

The fish-processing factory in Vardø has been empty for five years. Photo: Odd Iglebaek

The fishing village of Vestre Jacobselv. Photo: Odd Iglebaek

Mayor Rolf E. Mortensen of Vardø

– What does Vardø town itself think of the plans for the Vardø Barents Base? – Let us not forget that Shtokman is a Russian field, and that, thus far, no major oil or gas discoveries have been made in the Norwegian sector of this part of the Barents Sea. In terms of future jobs I still think that we have to concentrate on fish and tourism. People will always want food and enjoyment, says Rolf E. Mortensen, the mayor of Vardø.

– Anything oil and gas can bring us, we must therefore regard as a bonus, he continues at the same time explaining that Vardø has an excellent location for future operations in respect of high sea security and oil-protection: – The Norwegian Coastal Service is already located here, with a 24-hour Maritime Safety Watch station, following traffic at sea from Trondheim to the Russian border, and that ought to be a good start to build an environment for such knowledge, he underlines.

At the supermarket in Kirkenes the cashier is speaking Russian with the customer in front of me. Probably ten percent of the town's population are recent Russian immigrants. In many parts of Eastern-Finnmark large sections of the population are ancestors of the Finnish immigrants who arrived in the early part of the twentieth century. Elderly people in the area still speak Finnish with each other.

Almost one in five grown-ups in Finnmark is not in paid employment (see article on pp12-14). Do they constitute a potential labour force or not? – More no than yes I would say, answers Bernt-Aksel Larsen, head of East-Finnmark Regional Council. He is, to a large extent, reflecting the general opinion: – The point is that our settlements are very widespread. In Kirkenes there lack of labour, while here in Vadsø we have unemployment. The trouble is that there is some 200 km between the two towns. Secondly, since Kirkenes is at present experiencing a boom, housing has become very expensive. Thirdly, I guess it is also fair to say that most Finnmarkers are what you could call home-lovers.

Finnmark is a very thinly populated part of the world. The total area is 48 637 square kilometres, a little more than Denmark's 43 094. For Norway as whole the population has grown approximately 50 %, from 3.5 to 4.5 million over the last fifty years. Finnmark on the other hand reached its population zenith in the 1960s with around 78 000 inhabitants. Since then it has been declining and today has around 72 000 inhabitants. The largest populations in Finnmark are to be found in Alta (18000), Hammerfest (10000), Kirkenes (9500), Vadsø (6100), Honningsvåg (3250) and Vardø (2400).

– The three largest communities have at least managed to retain their populations but one should be aware that in recent years approximately 1000 Russians have settled in Kirkenes, and without them the population would have been 8500. Similarly here in Vadsø we include the 600 refugees living here on a temporary basis in our figures, explains Bernt-Aksel Larsen.

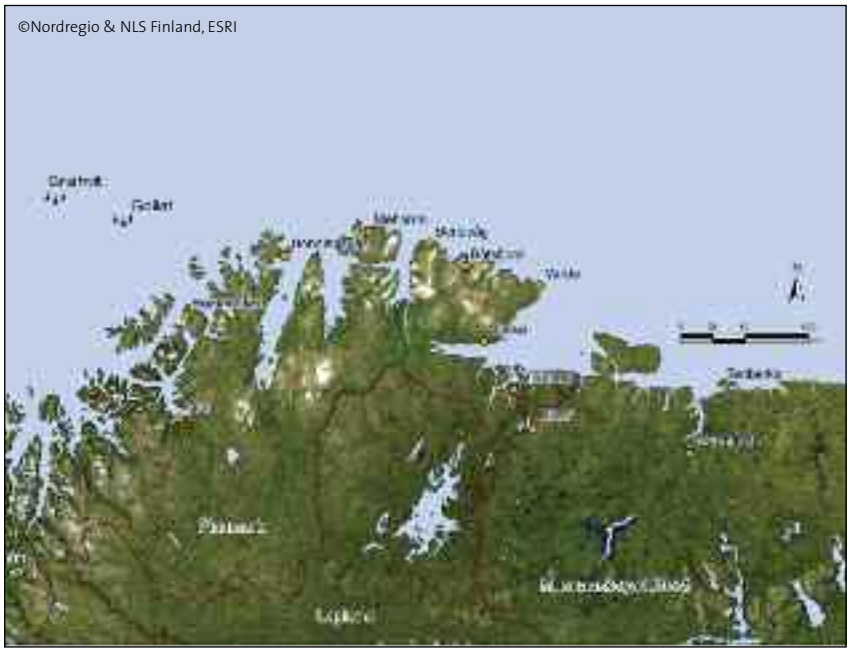
The recent immense surge in Chinese growth has seen global steel-prices rise to an all time high. For this reason there are now plans to reopen the iron-ore mines at Bjørnevatn, 12 km outside Kirkenes. 250 workers will be needed from the start:

– But we do not know where to find them and we will have to look both to Russia and to Finland. Russia in particular holds many possibilities. They are in the process of closing some minor mines on the other side of the border, says Oddgeir Danielsen, the Port Director of Kirkenes. – But there is one major obstacle, and that is that you still need visas to cross the border between the two countries, he adds

More than anything else he and many others involved in trade and industry in the county hope that the central authorities will ease border-crossings: – What we want to get is a special passport for people living in the border-area. With such a document crossings could be made much easier. You could drive to work in the morning and back in the evening.

In Norway, it has been official policy for decades to spread public jobs widely across the national territory. One outcome of this is that the tiny municipality of Vardø has 20 lawyers in its ranks. They all work in the State compensation office dealing with victims of violent crime. Similarly in Kirkenes the Norwegian National Collection Agency has a section employing 200 public officers. Modern technology facilitates further expansions in this direction.

By Odd Iglebaek



Hammerfest, Vardø, Kirkenes and Teriberka all want to be supply-ports.

The lights of Melkøya with the gas-flare to the right seen from the centre of Hammerfest. Photo: Odd Iglebaek

Gas flares in Hammerfest

West-Finnmark: The place where the lights really are shining in Norway's High North is Hammerfest. From the flare-tower at the impressive Liquid Natural Gas (LNG) installations out in the harbour, the burning flame can be watched night and day. In this barren landscape such a red-yellow fire provides a continuing symbol of life. In a few months from now a brand new house of culture will open in the small town. It will be the first of its kind in Finnmark.

The extraction of oil and gas on the coast of Norway began in the 1970s, in the southwest of the country. Since then, the growth in welfare, jobs, housing, transport, research and education related to this discovery has been formidable. Exploration drilling and the development of new fields depend heavily on the expectation of future price levels for oil and gas.

With continual rises in the estimates of future prices as the new economic powerhouses of South and East Asia increase their demand for hydrocarbons combined with ongoing technological improvements petroleum activities have thus moved further and further north.

The latest production plant on the Norwegian continental shelf is the Snøhvit (Snow-White) field in the Barents Sea.

The operator of the field is the Norwegian 67% state-owned company *StatoilHydro*. Snøhvit provides "LNG", as the locals say. The gas is brought in tubes on the seabed to Melkøya, in the harbour of Hammerfest. Total investment in these facilities runs close to 60 billion NOK – easily the largest ever industrial investment in North-Norway.

At Melkøya the gas is processed, before being exported in sphere-shaped containers on specially constructed tank-ships. The United States and Spain are the most important destinations for this product. Production began last year. It is planed to continue for the next fifty years.

In respect of new fossil fuel developments the greatest level of expectation in the High North has been placed on the Sthokman-field in the Russian sector of the Barents Sea. Potentials here are estimated to be 10-20 times those of Snøhvit. Sthokman is the world's second-largest, perhaps even the largest, gas-field.
- Before the development at Snøhvit and Melkøya we were in reality bankrupt, but now the future looks comfortable, notes Kristine Jørstad Bock, mayor and key politician in Hammerfest. As almost the rule in Finnmark, it is the Social Democrats who have the majority in the municipality.

Income directly controlled by the municipalities in Norway is mostly generated as a share of personal income, usually around 20% of the take. The other main source is tax on property. This again is related to the investment value of the specific unit.

- When we understood what was coming we increased the property tax for everyone, from 5 to 7%. In total the municipality's tax intake has grown from approximately 500-600 million NOK seven or eight years ago to, hopefully, 800 million this year. Of this, 125 million will come from Melkøya and another 25 million from all other properties in the municipality. I must however mention that this means that Hammerfest no longer qualifies for the state regulated municipal tax-transfers, says Mayor Jørstad Bock.

Hammerfest-mayor Kristine Jørstad Bock

The new house of culture in Hammerfest. Photo: Odd Iglebaek

In both Kirkenes and Hammerfest the value of houses has doubled, perhaps even tripled in just a few years. – In Hammerfest the number of inhabitants is growing rapidly, particular in the 20-40 years age bracket. Many of them are highly educated returnees with spouses. But we want more people to come, extra labour-force is needed in all sectors of society. This is indeed a very unique situation in `District-Norway`, she explains.

She also points out that the town is still a major fishing society: - We have three trawlers, six-and-a-half quotas and 120 workers onshore. And, in fact, no fish-factory has ever gone bust in Hammerfest, she underlines. At its peak in the 1970s, 1200 people worked in the fishing-industry.

In Hammerfest, as in the majority of Finnmark's fishing societies, the industry is not locally owned. Previously, the Norwegian west-coast company *Aarsaeter* (Ålesund) and multinationals like *Findus-Frionor* dominated. Today it is Norwegian multinational *Aker Sea Foods* which holds the majority of shares in Finnmark's fishing industry.

Hammerfest's neighbouring municipalities have also benefited from the new development. The new house of culture is a joint venture between Hammerfest and the two adjoining municipalities of Kvalsund and Hasselvik. According to the Norwegian Ministry of Regional Development, there are many companies, often quite small, involved in the oil and gas industry in all three counties of Northern Norway. Many companies from southwest Norway have established branches here. One third of all North-Norway's municipalities are in one way or another involved in the new industries.

Soon the adjacent, though much smaller, field to Snøhvit, Goliat will begin production. The 30% state-owned Italian company *ENI* are the operator here. Their representative in Hammerfest is Ms. Sylvi Jane Husebye: - We are the sixth largest oil-company in the world and like *StatoilHydro* we take our obligations to the local community seriously. Unlike them, however, we plan not to contribute the building of the new housing. Rather we hope to develop a partnership with the local fishing-fleet to improve maritime security. They have extremely valuable knowledge on, for example, how the local currents shift and the winds blow.

Hammerfest's mayor Kristine Jørstad Bock has very clear ideas about the future: - We have not yet really established a sound base for oil- and gas-production in our town. In order not to stagnate, it is therefore very important that the explorations in the Barents Sea continue. In fact, I think it is possible that four to five communities in the High North can develop and grow like Hammerfest. But note; the Norwegian state should not interfere and regulate in detail, like they have done in our fisheries. Rather they should treat us like the rest of Norway and let the industry develop itself!

By Odd Iglebaek

Part of the huge gas-processing installations at Melkøya with LNG-tanker. Photo: StatoilHydro

A State Company's regional dilemmas

The European Energy sector is dominated by State-owned companies who operate in a global market where the importance of physical distance is low and the mobility is high. Nevertheless the companies are all influenced and formed by their national culture and their history from before the "era of globalization". Here we take a closer look at the two Norwegian oil-and-gas giants *Statoil* and *Hydro* focusing on their impact on regional development. In 2007 the two companies merged to form *StatoilHydro*. This company is at present 67 % owned by the Norwegian state.

In terms of regional development two crucial incidents took place in Norway – in 1971 and 1972. First in 1971 the parliament of Norway established "The Ten Oil Commandments" (*De ti oljebud*). This laid down the rules on how to develop Norway's oil - and gas-resources while also providing a guide to the securing of oil-activities spread out among different regions in the country. Secondly, the state-owned oil-company *Statoil* was established in 1972. The purpose here was first and foremost to secure national control over oil and gas-resources. As such *Statoil* became a great success.

Statoil was also tasked with contributing to the realization of the Norwegian state's policies of development across various Norwegian regions. Therefore the company was dependent on the goodwill of local communities and mayors to secure political support from the central level. The political decisions which led to the establishment of *Statoil* and the Norwegian Petroleum Directorate in Stavanger were both important elements in the making of the southwest regions of Hordaland and Rogaland, the area that would become the centre for Norwegian Petroleum activity.

In the mid 1980`s Norwegian competence levels in respect of offshore installations and technical solutions had reached an internationally competitive standard. The need to further this capacity building was thus diminished. National control over resources and production had been accomplished. However, the political fear remained that *Statoil* would become too much of 'a state within'.

The development of new technological solutions has made the factor of distance in respect of the need to localise support close to the oil- and gas fields less important. However, due to the rediscovery of a tax instrument dating from the 17th century, most municipalities welcome new projects in the oil-and gas-industries. The clue here is that the level of local property-tax is related to the level of investment, and therefore large investments create larger municipal incomes.

Norsk Hydro began trading in 1906 in the production of fertilizer. During the 1940s the company expanded into metal, in particular aluminium. The key element in *Norsk Hydro's* early strategy was to utilize electric energy, which could be provided relatively cheaply from Norwegian waterfalls. The transfer of this type of energy was however rather expensive and complicated. Factories were usually located close to the hydro power-stations. Sites in Norwegian fjords constituted excellent locations in this respect combining waterfalls with facilities for deep-water and weather-protected ports.

As these developments occurred over several decades the ties between the industrial communities and *Norsk Hydro* became very close. More often than not, proposals to close reduce or change factories, were met with local political protest and industrial action. This became something of a trend in the 1980s and the 1990s, the decades in which *Norsk Hydro* expanded into oil and gas. *Statoil* on the other hand has thus far not found it necessary to close plants. As such then the company retains a good track record in industrial relations terms.

But *Hydro* have learned over time. Moving into oil and gas the company developed alternative regional strategies to those of *Statoil*. In particular they avoided establishing links of dependence between the company and the local communities. Their regional strategies were then rather passive.

Statoil or *StatoilHydro* is not the owner of Norwegian oil and gas resources. Legally ownership remains with the Norwegian State. *Petoro*, a company 100 % owned by the state manages the portfolio on behalf of the State. *Petoro* was established in 2001. It is a small organization; nevertheless it has managed to generate operating incomes, on average, of around 100 billion NOK in recent years. The income of *StatoilHydro* in comparison was 137 billion NOK in 2007. The company employs today almost 30 000 people.

The establishment of *Petoro* enabled *Statoil* to refine the company's national as well as global strategies. The Snøhvit-project developed in the northernmost part of Norway from 2002-2008 demonstrated the company's new role and position. One reason to become engaged here was to demonstrate to the Russians (*Gazprom*) the company's competence in offshore gas-production in the Arctic with a view to tendering for rights in respect of Russia's Sthokman gas-field which holds reserves some ten-to-twenty times those of Snøhvit. As such then the development of the Snøhvit field became a part of *Statoil's* new global strategy.

In addition, the company moved away from its traditional communitarian approach by actively implementing contracts that were inconvenient to the rest of the domestically-based industry.

Rather *Statoil* continued with their policy of attempting to promote local and regional support for both individual projects and the company as a whole. This is very important, because if a region is negative towards a company and their plans for the area, it is likely that they will never be realized. Arctic oil- and gas activities need regional support from Northern regions, and *Statoil* understood the importance of this.

After the merger between *Statoil* and Norsk Hydro in 2007 the high level of expectations and demands from regions and municipalities with regard to social responsibilities and local efforts still needed to be met. It remains unclear, however, as to how they will respond in the future. At the same, it seems very likely that *StatoilHydro* will utilize their regional experience previously gained in Norway in the new global context.

The global oil-industry will develop towards a pattern where it is more important to handle resources under political control than to speculate on

prices. Thus the experience of a Norwegian state-owned company and its record of regional national involvement will prove to be an important tool for *StatoilHydro* in the new era of global competition.

The 10 commandments accepted unanimously by the Norwegian parliament in 1971 (unofficial summary and translation).

1. National management and control of all activities on the Norwegian Continental Shelf.
2. Make Norway self-sufficient in raw oil.
3. Establish new businesses with a basis in petroleum.
4. Develop the oil industry in accordance with established industrial practices and environmental considerations.
5. Flaring of gas on the Norwegian Continental Shelf can only be accepted for short periods of time.
6. Petroleum from the Norwegian Continental Shelf shall, in principle, be landed in Norway
7. State involvement on all levels in order to ensure Norwegian interests and to promote the establishment of a Norwegian industrial oil cluster.
8. Establish a state oil company to take care of the state's commercial interests.
9. Take care of the special conditions pertaining in the northern regions (north of the 62nd parallel).
10. Continuing Norwegian petroleum discoveries are expected to create new challenges for Norwegian foreign policy.

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Official Norwegian oil policy*

Petroleum-based activities are expected to benefit the country as a whole. To achieve this resource management is based on a neutral regime of regulation and taxation in the petroleum industry. Approval from the public authorities is required at all stages.

Before any exploration can take place, a production licence must be awarded. Such licenses are normally given on the basis of applications from oil companies during pre-set licensing rounds. The production license provides an exclusive right for exploration, exploration drilling and the production of petroleum within its specified geographical area. Fields in operation apply annually for permits to continue production.

The supply base pattern for exploration activities is decentralised. Plans for the development and operation (PDO) of a field must be approved before development can take place. The plans are approved by the *Stortinget* or the government, depending on the project's size. As part of the PDO, an impact assessment is carried out. This also discusses regional impacts.

Through the petroleum taxation system and the State's Direct Financial Interest (SDFI), the state receives a substantial portion of the revenues from these ongoing petroleum activities. At the same time, however, tax deductions are granted on the costs associated with petroleum activities. This system therefore implies that, if the oil companies do not make profits, the Norwegian State will not collect revenues. In this way all players in the Norwegian petroleum sector share an interest in ensuring that the production of Norwegian petroleum resources creates the greatest possible value added.

Regional perspectives

The Government is very aware of the regional effects of Norwegian petroleum activity. In the case of the Snøhvit development the decision to go ahead with the project was helped by a tax adjustment for LNG-projects in this region. There are no specific governmental demands as to the landing of petroleum in Norway. In principle the oil companies are free to choose the most economic solutions. However, thus far there has been significant regional impact, and five landing points have been established along the Norwegian coast.

The Action Zone

The North Troms and Finnmark Action Zone was established in 1990. Geographically it consists of Finnmark and the seven municipalities in North Troms. A package of economic measures was established for people and businesses located in the area. The main objective it to make the region attractive to live, work and do business in. The Norwegian Parliament confirmed, in 2004, that the special measures should be continued.

The region is rich in natural resources and opportunities for people and industry. At the same time, the area faces significant demographic challenges. During the 1980s development was increasingly negative.

The three towns of Hammerfest, Alta, and Kirkenes have significant growth potential, but their interiors are dominated by more fragile industries. In the coastal areas fishing-related industries are predominant thus their futures will depend on the developments in respect of fish resources, regulations and markets. A lack of diversity among the industries and thus an inability to adjust to changing conditions represent important structural problems in this zone.

During the existence of the Action Zone a number of modifications to the special economic measures regulating it have taken place. As of 2006 the measures were:

- 0 per cent in social security tax.
- Reduction of student loans, up to 10 per cent of the initial loan, maximum NOK 25 000 a year.
- Exemption from tax on household use of electricity.
- Reduced personal taxes.
- Higher family/children's allowance (*Finnmarkstillegget*).
- Benefits to pre-school teachers.

The total annual revenue effect of these measures is estimated at NOK 2.6 billion consisting of exemptions to social security tax (1.7 billion), reduced personal taxes (0.6 billion), exemption of electricity tax (0.1 billion), reduction of student loans (0.1 billion), and higher children's allowance (0.1 billion).

* The text of this article is taken from: OECD's NATIONAL TERRITORIAL REVIEWS Norwegian Background Report, Norwegian Ministry of Local Government and Regional Development, 22 May 2006. Journal of Nordregio has undertaken some minor editing.

No Nordic shortage of labour

Contrary to popular belief the Nordic population will continue to grow until at least 2030 thus there is no labour shortage in sight. A new *Nordregio* study shows that the problems we are experiencing are not related to population development but rather to the inefficiency of the labour market.

Simulations and scenarios for the period 2020-2030 show that while some rural and peripheral regions will experience a significant population decline more urban regions will experience the opposite. The result is that regional population imbalances will be accentuated. This population imbalance calls for a new regional development policy designed for a post-industrial society to be implemented. The regional development policies used today are firmly rooted in the industrial economy and as such are now obsolete.

The Nordic populations will continue to grow at a national level 2010-2030. While Denmark and Finland will experience small decreases in the population of 0-19 year olds, these age groups will continue to increase in the other Nordic countries (in Sweden the increase will be 0.2 %). The massive increase for the two oldest age-groups can partly be explained by starting from lower numbers.

Mismatch in the labour market

Since the regional population imbalances are an already ongoing process, the labour market problems – e.g. mismatch and labour shortage – will become very challenging indeed even without demographic ageing. Future demographic ageing will however aggravate these labour market problems.

In most Nordic countries voices have been raised regarding the issue of labour shortage, employers have expressed difficulty in finding the labour they need, and immigration is needed to fill the vacancies. In a market economy however there is really no such thing as a true labour shortage. If you want more of something, you can pay more and have it.

"Labour shortages" distort the efficiency of the labour market. A central condition for an efficient labour market is that the matching process between vacancies and job searchers functions well. Information and search costs are central in this process. The labour market is frequently troubled with matching problems and these problems are often related to structural changes in the economy at branch or sector level.

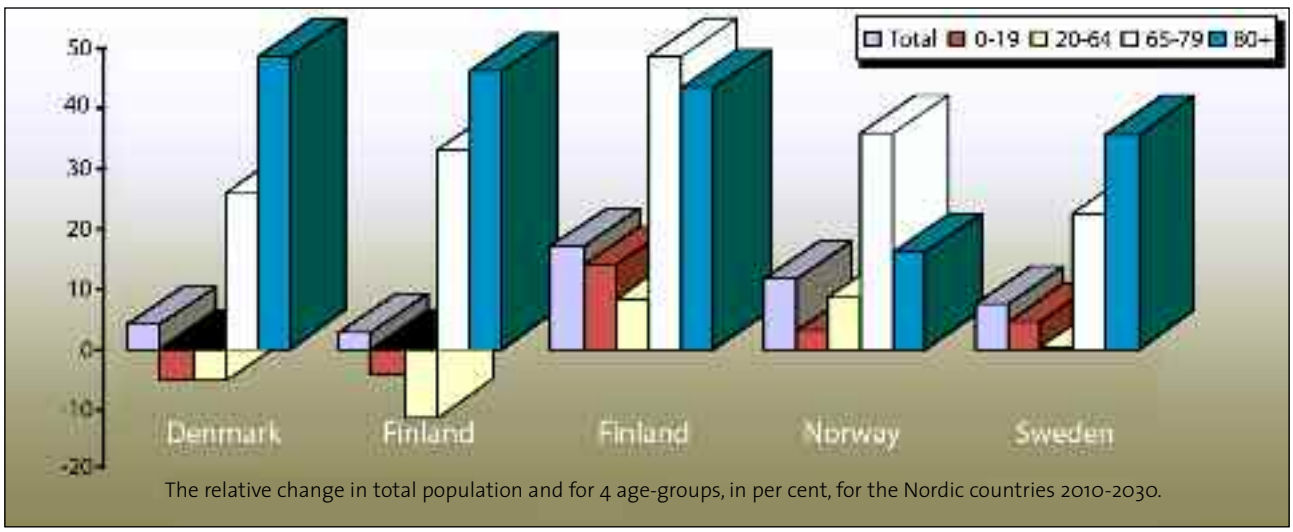
The matching efficiency on the Nordic labour market has decreased, i.e. the mismatch has increased, in recent decades. Examples here include the fact that geographic mobility has decreased. Further, that the labour force rejects low paid low status jobs. Thirdly, that employers reject some groups of labour such as 50+ years, single mothers, young adults and, immigrants). For those rejected the risk of unemployment is very high, and as a consequence, the risk of social exclusion is also high.

Exclusion from the labour market

To this group of excluded persons the long-term sick and early retirees must be added. The general estimate here is that about 50% of the long-term sick could return to the labour market if appropriate rehabilitation measures began early enough. In addition, the number of early retirees could also be reduced.

Officially 1 in 6 persons in the working ages belong to this list of 'the excluded'. In fact, the figures are probably higher: e.g. involuntary students and domestic workers ought to be included as well. In figure 3 the total number of persons in the working ages - but not in the workforce - is illustrated. For the Nordic countries together this group constitutes more than three million people. The group also contains early retirees, housewives, students and persons who declare themselves as non-working (persons who are excluded from the sickness insurance register but have not yet 'retired').

The regional potential labour supply as a share of the labour force is actually quite large in most regions. The total number of persons on long-term sickness leave, unemployed or otherwise economically inactive, although they are in the working ages, thus constitutes a potential labour supply. In Finnmark and Västernorrland 1 in 3 persons in the working ages is not working and thus is not in the potential labour supply. In Kymenlaakso, Etelä-Karjala and Etelä-Pohjanmaa almost 2 in 5 persons in the working ages are not in the potential labour supply.



The relative change in total population and for 4 age-groups, in per cent, for the Nordic countries 2010-2030.

Figure 1

With such a potential labour reserve it is difficult to see how we will run out of labour due to ageing and a relative decline in the population aged 20-64 years old. Rather, this very large potential labour supply actually indicates a misuse of the labour currently available.

It is remarkable that peripheral regions with a "labour shortage" also show the largest potential labour supply. This indicates that the supply of potential persons to the labour force is not the main problem, but that the institutions of the labour market have failed to allocate labour efficiently and thus have failed to fill the vacancies available.

In figures 4-6 the "wavy" behaviour of the regional potential labour supply is clearly visible, something which indicates an impact of economic cycles on the potential labour supply; this is to be expected since e.g. unemployment varies at the same pace as the economic cycles (economic boom – low unemployment, and vice versa etc). Consequently, short-term economic fluctuations, the functioning of national labour markets and their institutions etc., appear to determine the regional potential labour supply. Since this potential labour supply is so large it must be analysed more thoroughly in future studies; if used properly, the Nordic countries will not have to fear any labour shortage in the future.

Utilise the potential labour supply?

Much of the problem lies in the fact that production is now occurring in a post-industrial economy while the labour market and its institutions are still wedded to the concepts of the industrial economy. Labour market policies, often governed by 'vested interests' remain too rigid; as a result unemployed workers have only weak incentives to move to other parts of the country for work. The challenge is to adjust the existing system so that it better advances efficiency and sharpens labour market incentives.

One of the most efficient ways of changeing peoples' behaviour in the desired direction is to reward them economically when they behave 'well', and to make them pay if they are not. This is an interesting point of departure when discussing how to utilise the potential labour reserve, but it is also of course highly controversial.

Furthermore, the potential labour reserve can only be utilised if there is a real demand for the kind of labour which this group can provide. If employers continue to reject e.g. persons 50+ years, immigrants, single mothers, young adults and the former long-term sick no fundamental changes will take place.

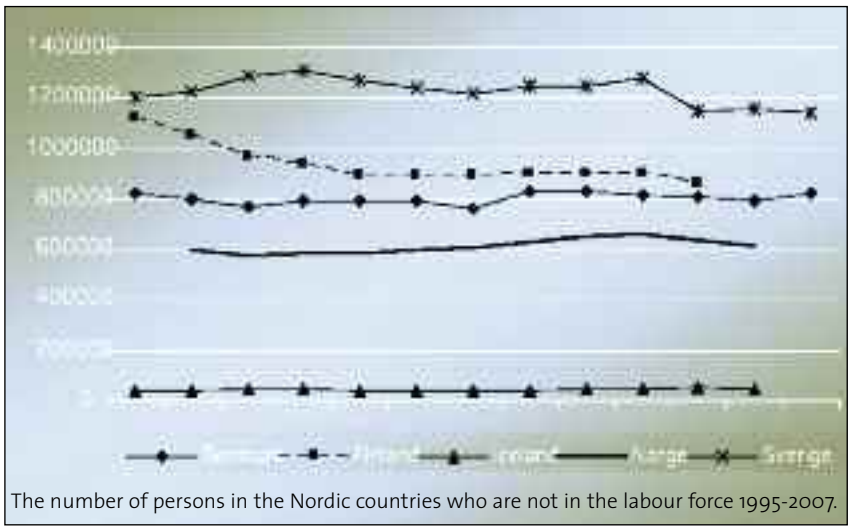
Potential policy approaches

Stimulating fertility remains an important long-term policy here. Child allowances do not, however, seem to stimulate fertility and the child allowance in itself is relatively low compared to the real costs of having children. Since people have a tendency to dislike taxes, tax-reductions for the second child (and even more for the third child etc.,) may stimulate fertility rather more. Many persons would prefer to spend the money on one more child rather than paying the same amount in tax.

Immigration policies must include a settlement policy – if labour is needed in the rural and peripheral areas, and if immigration can fill the vacancies, immigration should be allocated to those areas. Today about 2/3 of all immigration is allocated to the metropolitan areas in Denmark, Finland, Norway and Sweden.

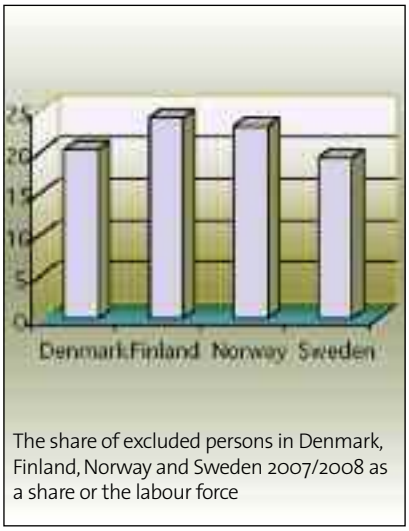
Economic incentives to move to rural and peripheral areas must then be created. New university graduates could reduce their student debts if they move to, and remain in, some areas of the country for a number of years (as is the case in Norway). In addition, tax instruments could also be used – if you live in some parts of the country you pay less in government tax and if you live in densely populated areas you pay more. Regions (*län, fylke, maakunta etc.,*) should be able to tax the income earners; using their taxation rights they should be able to attract the inhabitants they would like to have by offering them relatively favourable tax conditions.

Mobility in the labour market must increase, both geographically and professionally. One way to achieve this may be to liberalise the labour market. The "flexicurity regime" (Denmark) may also be worth considering in other countries. To reduce this mismatch an active labour market policy, including vocational training and education, should be further developed and designed to meet the needs of regional labour markets. A liberalisation of the labour market and an



The number of persons in the Nordic countries who are not in the labour force 1995-2007.

Figure 3



The share of excluded persons in Denmark, Finland, Norway and Sweden 2007/2008 as a share or the labour force

Figure 2

active labour market policy are seen as complementary policy tools; both policies are needed.

Administrative reforms can be useful, the actual territorial division of competences is important but the question of rational service provision, e.g. should schools, medical care etc., be run by the municipalities or the government, has emerged as the major focus here.

Time perspective and governance

Thus far, policies designed to improve labour market imbalances in the Nordic countries have been implemented on the national level while welfare service provision has been a regional or alternatively a predominantly municipal task. Labour market imbalances are embodied, predominantly, on the regional level thus requiring a regional approach. Within this context then, we can we expect that welfare service provision is also to a larger extent a regional and not a municipal challenge?

Broadening the scope of regions, there is a danger that poor policy coordination between the national and regional levels may lead to the delivery of contradictory policy actions. National regulations and frameworks decide the most significant aspects of the ageing agenda, such as questions related to retirement, to the structure of welfare services and the labour market. The provision of welfare services is sensitive to ongoing administrative reform processes. Therefore national-regional policy harmonization is a crucial element of policy delivery. The major challenge then is to find ways to modify the welfare system in order to encourage efficiency and improve labour market incentives.

The current policies used to address labour market problems were designed to solve the problems of an industrial economy at the national level. This is the reason for the moderate results achieved in solving the problems of the post-industrial economy on a regional level. Since the problems in the post-industrial labour market are different to those of the industrial labour market, the policy tools must be re-designed to deal with these new issues. This means that new ideas, new 'trains-of-thought' and new long-term visions are needed to design future regional policies while the traditional labour market institutions must be adjusted to the needs of the new post-industrial reality.

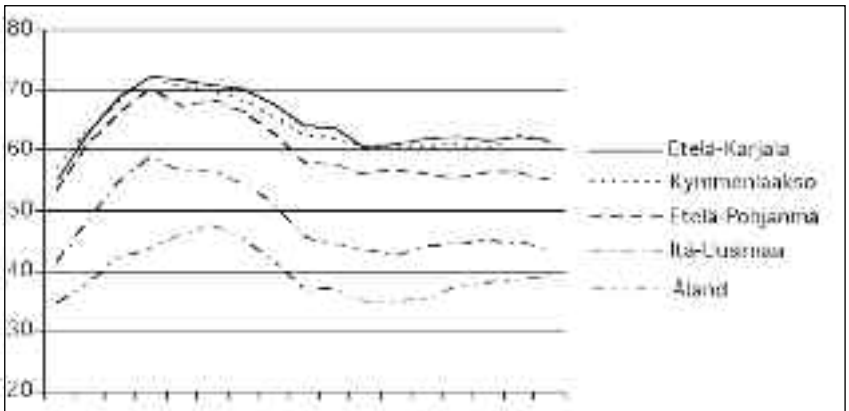


Figure 4 The potential labour supply as a share (%) of the labour force in Åland, Kymenlaakso, Itä-Uusimaa, Etelä-Karjala and Etelä-Pohjanmaa 1990-2006.

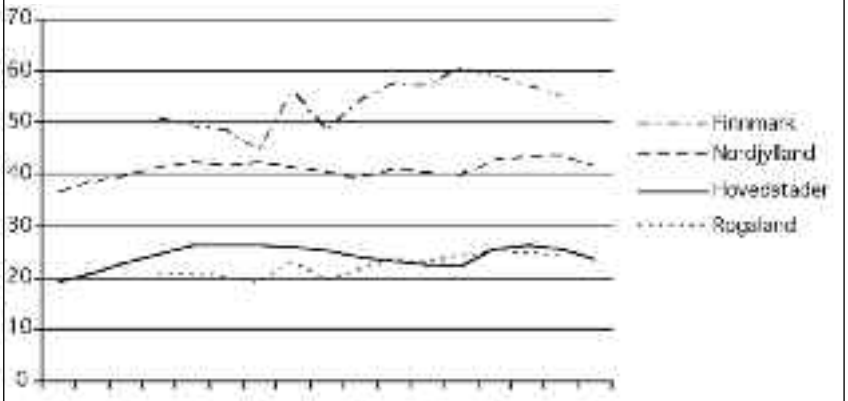


Figure 5 The potential labour supply as a share (%) of the labour force in Hovedstaden, Nordjylland, Rogaland and Finnmark 1990-2006.

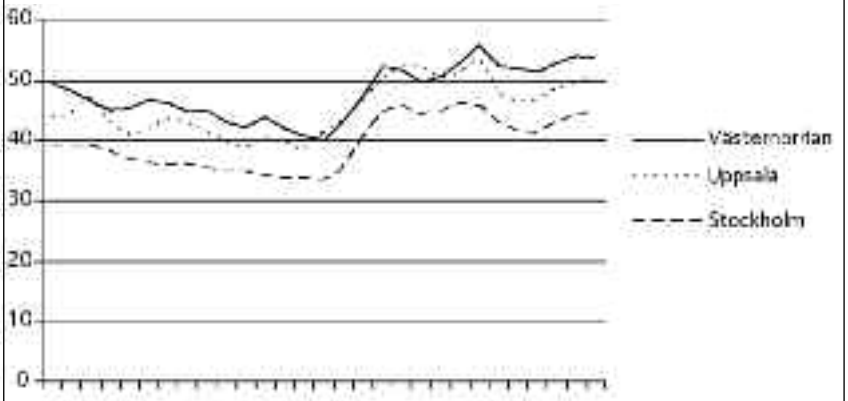


Figure 6 The potential labour supply as a share (%) of the labour force in Stockholm, Uppsala and Västernorrland 1976-2005.

	Short-term policies	Medium-term policies	Long-term policies
National level	Immigration	Tax incentives Liberalisation of labour market Administrative reforms	Fertility Administrative reforms
Regional level	Active labour market policy	Tax incentives	Fertility

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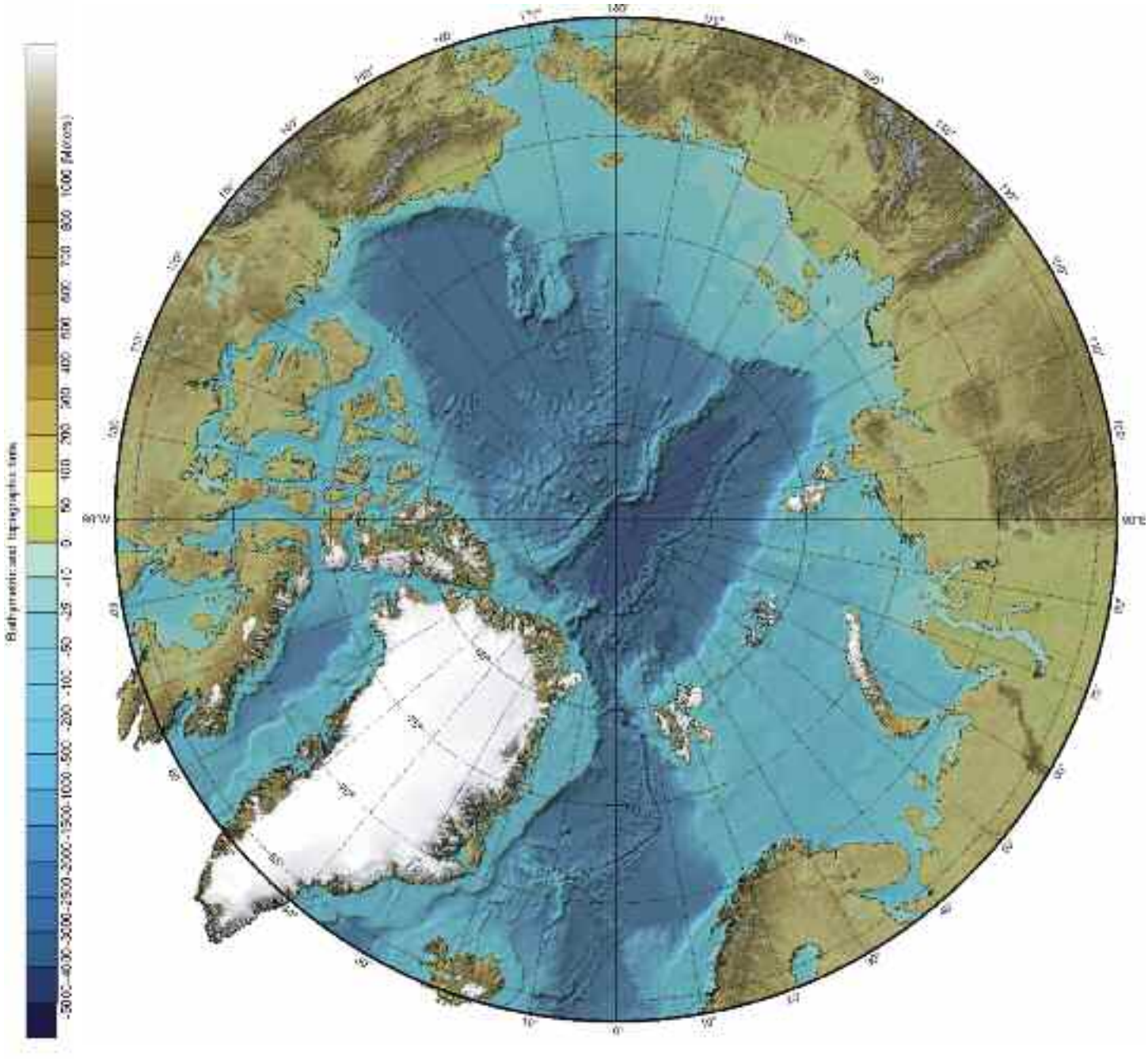

Coastal states and their Arctic claims

What are the claims of the costal states in the Arctic? Will there be anything left as international waters? Look at the map on the next pages (16-17). Is the answer 10 percent or maybe 15 percent?

In August this year The International Boundaries Research Unit (IBRU) at Durham University (www.dur.ac.uk/ibru) published the map Maritime jurisdiction and boundaries in the Arctic. In agreement with the IBRU *Journal of Nordregio* on the following pages reprint the map with detailed notes.

Under the United Nations Convention on the Law of the Sea Convention (see p 24) all coastal states have rights over the resources up to 200 nautical miles from their shoreline. But some nations are able to extend their claims as a result of their landmasses - or continental shelf - extending into the sea.

In the recent debate Russia has used the Lomonsov Ridge, stretching towards North-Greenland across the North-pole (see above) as the basis for her claims. The argument is that the Lomonsov Ridge is an extension of Russia's continental shelf.

If a state can prove its rights, it can exploit the resources of the sea and the seabed within its territory. Difficulty arises in areas where more than one country submits claims because of overlapping. On the map, shown on the following pages, the researchers took into account the fact that some nations were able to extend their claims to 350 nautical miles as a result of their landmasses extending into the sea.

Martin Pratt is the Director of Research at the International Boundaries Research Unit at Durham University. He says that

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the nations surrounding the Arctic only have a limited amount of time to outline their claims: - If they don't define it within the timeframe set out by the UN Convention on the Law of the Sea, then it becomes part of what is known as 'The Area', which is administered by the International Seabed Authority on behalf of humanity as a whole.

Thus far seven agreements on maritime borders in the Arctic have been reached. In most cases, the states involved has been Denmark (Greenland), Iceland and Norway. The first agreement, however, was in 1973, between Canada and Denmark. Russia and USA agreed on maritime boundaries in 1990.

By Odd Iglebaek

Agreed maritime boundaries
Canada-Denmark (Greenland): continental shelf boundary agreed 17 December 1973.

Denmark (Greenland)-Iceland: continental shelf and fisheries boundary agreed 11 November 1997.

Denmark (Greenland)-Norway (Jan Mayen): continental shelf and fisheries boundary agreed 18 December 1995 following adjudication by the International Court of Justice.

Denmark (Greenland) - Iceland - Norway (Jan Mayen) tripoint agreed 11 November 1997.

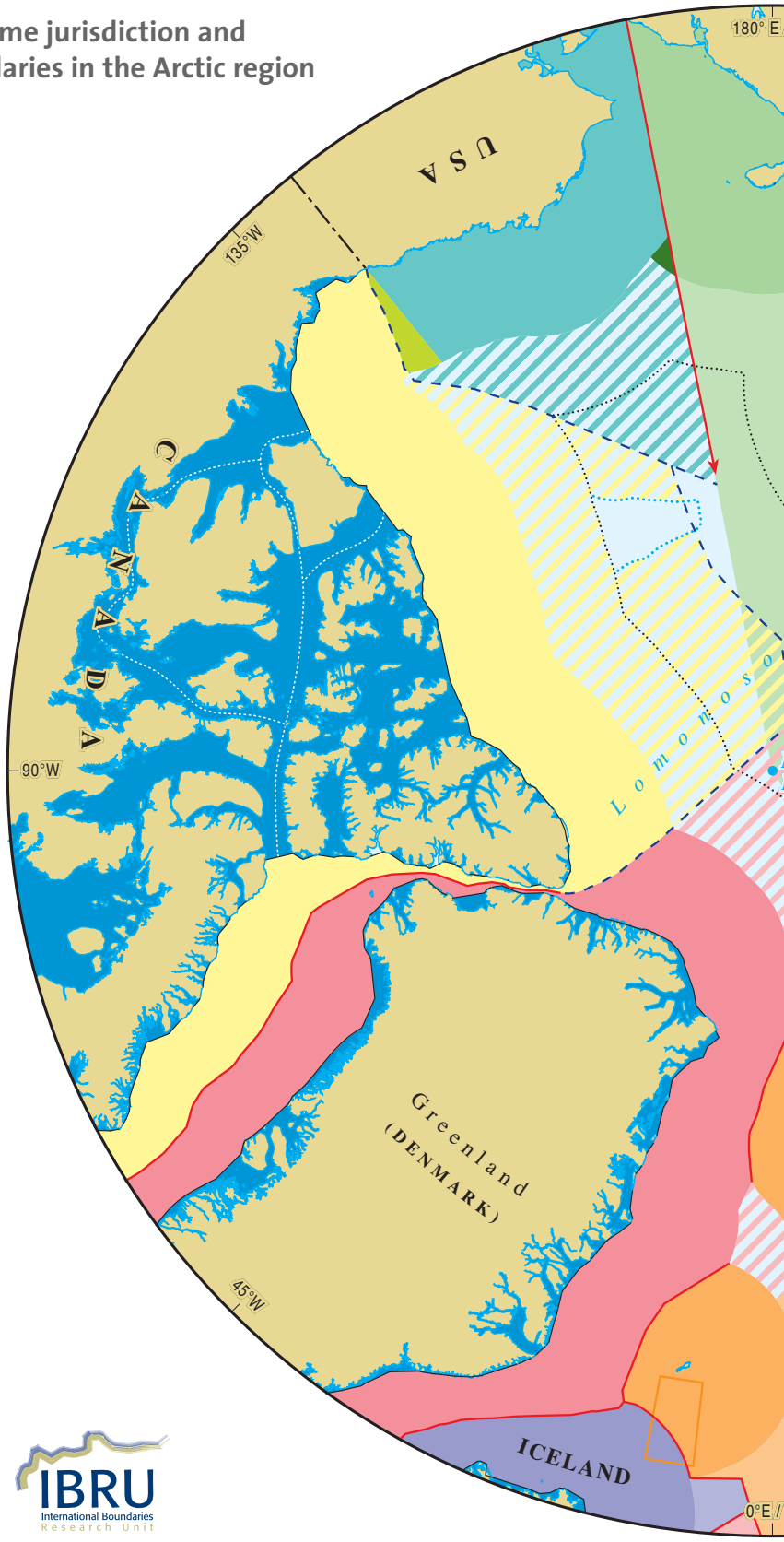
Denmark (Greenland) - Norway(Svalbard): continental shelf and fisheries boundary agreed 20 February 2006.

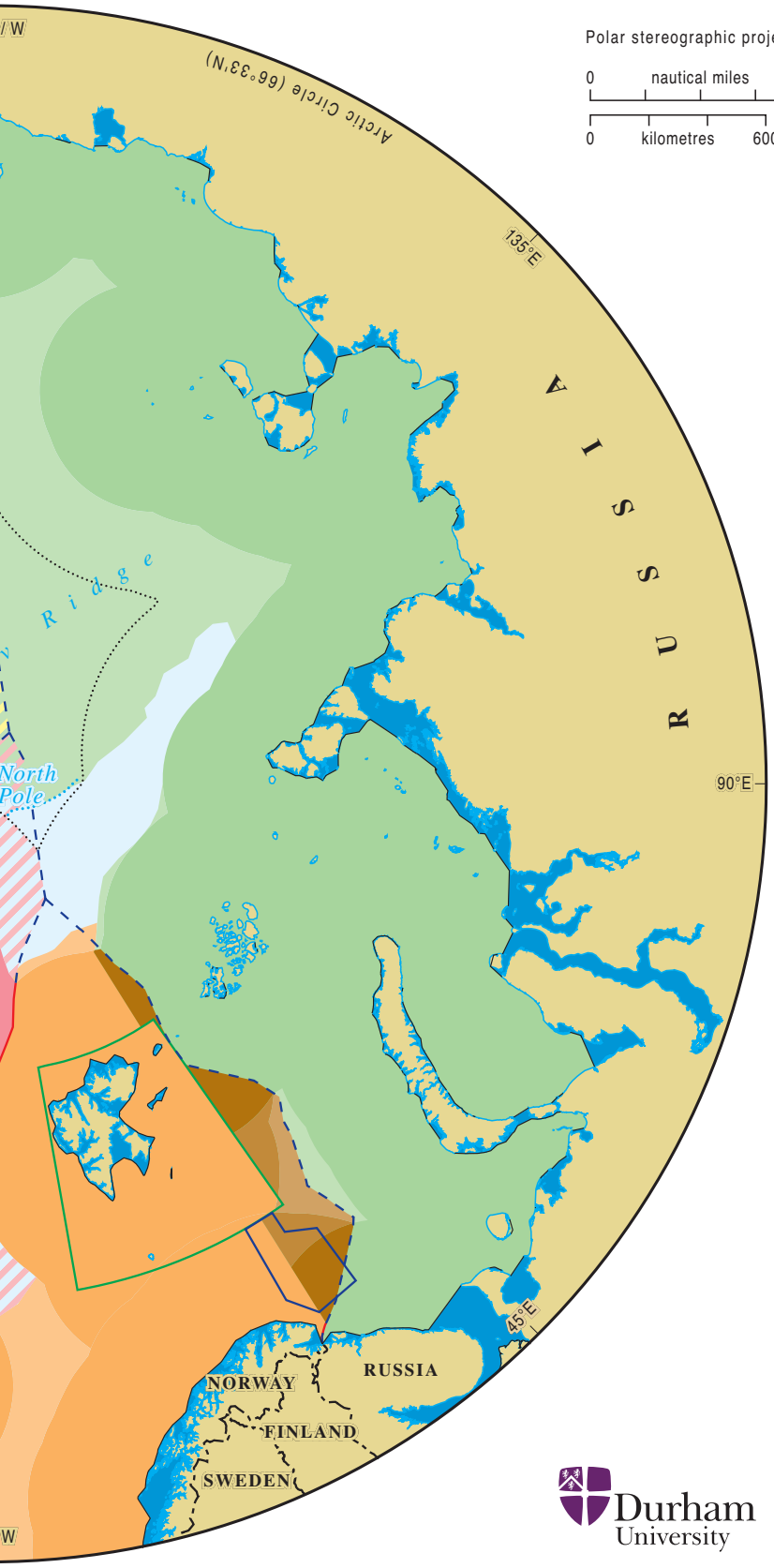
Iceland - Norway (Jan Mayen): fisheries boundary following the 200 nm limit of Iceland's EEZ agreed 28 May 1980; continental shelf boundary and joint zone agreed 22 October 1981 (see note 9).

Russia - USA: single maritime boundary agreed 1 June 1990 (see note 8).

Seabed topography
As discussed in note 1, the outer limit of the continental shelf is defined in relation to the geology and geomorphology of the continental margin. The Arctic Ocean seabed is currently rather poorly surveyed, but existing public domain datasets such as the US National Geophysical Data Center's ETOPO2 bathymetry dataset.

Maritime jurisdiction and boundaries in the Arctic region





The relief map (see p. 15) suggest that in many areas of the Arctic the outer limit of the continental shelf may fall well short of the theoretical maximum limits shown on the map on pp 16-17.

The Arctic coastal states are currently conducting hydrographic and geophysical surveys of the Arctic Ocean in order to identify the outer limits of the continental shelf with precision. Some data acquired through collaborative ventures has been made available to the public, notably the International Bathymetric Chart of the Arctic Ocean (http://www.ngdc.noaa.gov/mgg/bathymetry/arctic).

1. The depicted potential areas of continental shelf beyond 200 nautical miles (nm) for Canada, Denmark and the USA are theoretical maximum claims assuming that none of the states claims continental shelf beyond median lines with neighbouring states where maritime boundaries have not been agreed. In reality, the claimable areas may fall well short of the theoretical maximums. It is also possible that one or more states will claim areas beyond the median lines.

2. The depicted claims of Denmark and Iceland to continental shelf beyond 200 nm in the northeast Atlantic Ocean are defined in the "Agreed Minutes on the Delimitation of the Continental Shelf beyond 200 Nautical Miles between the Faroe Islands, Iceland and Norway in the Southern Part of the Banana Hole of the Northeast Atlantic" of 20 September 2006.

The agreed division of the continental shelf in this area is subject to confirmation by the Commission on the Limits of the Continental Shelf (CLCS) that there is a continuous continental shelf in the area covered by the agreement. Neither Denmark nor Iceland has yet made a submission to the CLCS.

3. An executive summary of Norway's submission to the CLCS of 27 November 2006 is available at http://www.un.org/Depts/los/ clcs_new/submissions_files/nor06/nor_exec_sum.pdf. The Commission has yet to respond to Norway's submission.

4. Maps and coordinates defining the area covered by Russia's submission to the CLCS of 20 December 2001 are available at

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http://www.un.org/Depts/los/clcs_new/submissions_files/submission_rus.htm. The Commission asked Russia to revise its submission relating to its continental shelf in the Arctic Ocean.

5. Norway and the Soviet Union agreed a partial maritime boundary in Varangerfjord in 1957 but disagree on the alignment of their maritime boundary in the Barents Sea: Norway claims the boundary should follow the median line, while Russia seeks a 'sector' boundary extending due north (but deviating around the 1920 Svalbard Treaty area).

As the Barents Sea is an important fishery for both states, in January 1978 the two governments agreed on a fishing regime in the so-called "Grey Zone", a 19,475 nm² area covering 12,070 nm² of overlapping EEZ claims, 6,588 nm² of undisputed Norwegian EEZ and 817 nm² of undisputed Russian EEZ. Within the Grey Zone Norway and Russia have jurisdiction over their own fishing vessels.

6. Canada argues that the maritime boundary in the Beaufort Sea was delimited in the 1825 treaty between Great Britain and Russia defining the boundary between Alaska and the Yukon as following the 141° W meridian "as far as the frozen ocean". The USA argues that no maritime boundary has yet been defined and that the boundary should follow the median line between the two coastlines. The area of overlap between the two claims is more than 7,000 nm².

7. The Eastern Special Area lies more than 200 nm from the baseline of the USA but less than 200 nm from the baseline of Russia. Under the June 1990 boundary agreement between the two states, the Soviet Union agreed that the USA should exercise EEZ jurisdiction within this area. A second Eastern Special Area and a Western Special Area (in which the opposite arrangement applies) were established adjacent to the boundary south of 60° north. The agreement has yet to be ratified by the Russian parliament but its provisions have been applied since 1990 through an exchange of diplomatic notes.

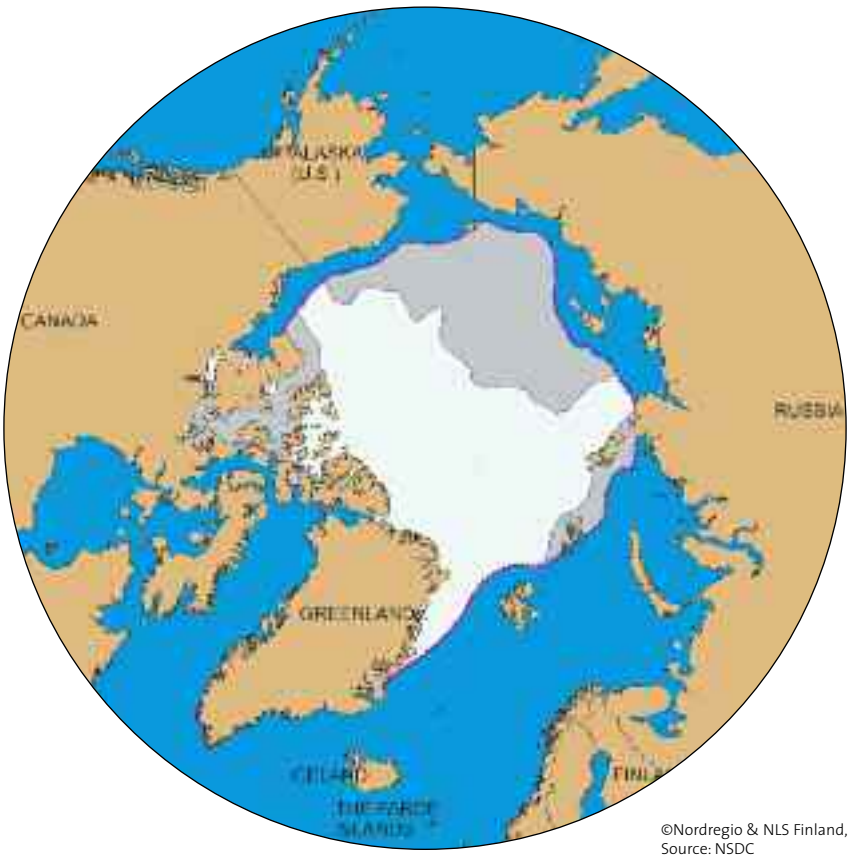
8. Under a treaty signed in February 1920, Norway has sovereignty over the Svalbard archipelago and all islands between latitudes 74° and 81° north and longitudes 10° and 35° east. However, citizens and companies from all treaty nations enjoy the same right of access to and residence in Svalbard. The right to fish, hunt or undertake any kind of maritime, industrial, mining or trade activity are granted to them all on equal terms.

All activity is subject to the legislation adopted by Norwegian authorities, but there may be no preferential treatment on the basis of nationality. Norway is required to protect Svalbard's natural environment and to ensure that no fortresses or naval bases are established. 39 countries are currently registered as parties to the Svalbard treaty.

9. Under the 1981 continental shelf boundary agreement between Iceland and Norway, each country is entitled to a 25% share in petroleum activities on the other's continental shelf within a 32,750 km² area between latitudes 68° N and 70° 35' N and longitudes 6° 30' W and 10° 30' W. The idea of a joint development zone straddling the boundary was proposed by a conciliation commission set up by the two governments when they were unable to reach a negotiated boundary settlement. The continental shelf boundary itself is located 200 nm from the coast of Iceland but less than 100 nm from Jan Mayen, reflecting the significant disparity in the lengths of the relevant coastal fronts (more than 18:1 in Iceland's favour).

10. Canada claims that the waters of its Arctic archipelago are historic internal waters, and has enclosed them within a system of straight baselines. Under normal circumstances there is no automatic right of innocent passage through internal waters for foreign ships. However, other states (particularly the USA) argue that the channels in the archipelago which form part of the 'Northwest Passage' through the Arctic qualify as straits used for international navigation under Part III of UNCLOS, and that there is therefore a right of transit passage through the straits for foreign ships.

While the Northwest Passage was under permanent ice cover, the debate was largely academic - but with the polar ice cap retreating and the Passage becoming increasingly navigable, the question of which legal regime applies has become increasingly pressing. Similar issues affect the straits of the 'Northeast Passage' around Russia's Arctic coastline.



©Nordregio & NLS Finland, Source: NSDC

Sea ice extent in September 2007 Average ice extent for September in 1979-2000

What is below the surface? Thus far no oil or gas has been discovered on the continental shelf of Greenland. Photo: Rasmus Ole Rasmussen

Sub-surface and Self-government

After almost thirty years of Home Rule in Greenland, political aspirations for increased self-determination may soon be within reach, with the likely introduction of self-government in Greenland in 2009. The referendum on self-government will take place on November 25th 2008 and represents the outcome of four years of work in the Greenlandic-Danish self-government commission. The main task of the commission has been to draw up a bill on self-government for Greenland and to come up with recommendations on how Greenland can take over new areas of authority within the Danish Kingdom. One area of special interest has been the question of the right to the Greenlandic subsurface.

The work of the commission has been based on the notion that self-government for Greenland will, as far as possible, be based on a self-sustaining economy. Today some 60% of Greenland's GNP is still derived from the yearly economic transfer (block grant) from Denmark, of just about 3.2 billion DKK, while the balance comes from local taxes. To reduce economic dependency on Denmark, the commission recommended that Greenland's self-government will be given the right to exploit the Greenlandic subsurface. Greenland's right to income derived from sub-surface resources is a key element in the economic model supporting self-government proposed by the commission, (see below):

There is no doubt that the Greenlandic subsurface will play an important role in the future regional development of Greenland, with its great mining prospects and promising oil industry potential. Within the next five years up to five mines will open, expected to create almost 1500 jobs. If the market prices for iron, gold, zinc, zircon, ruby and diamonds remain buoyant, another 10-15 mines are likely to be established within the next two-three decades. In addition, new discoveries of sub-surface resources are likely to be made as the ice cape withdraws due to climate change.

Sub-surface resources in Greenland are currently administered via a joint legislative process involving both Greenland and Denmark. Hierarchically, Danish law is superior to legislation produced by the Greenland self-government thus the exploitation of sub-surface resources is afforded a special position within the Home Rule legal framework. In practice this means that all activities relating to sub-surface resource exploitation remain subject to a special law and thus are dealt with under separate environmental legislation, requirements, traffic rules, etc.

As such, there are no legal requirements in the joint legislation process to involve other Ministries and institutions of the Home Rule government through e.g. hearing processes for the investigation of exploitation plans. From a physical planning perspective this has led the persuite of sometimes uncoordinated and conflicting interests in respect of land-use and resource utilisation. With the future scenarios of mushrooming activities in the mining sector, there is an ever increasing need for coordinated and pro-active physical planning to ensure sustainable regional development.

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A major future challenge for the Greenland self-government is therefore the development of Greenlandic legislation dealing with the law on sub-surface resources, ensuring increased cooperation among the Self-Government Ministries and the involvement of stakeholders at various levels. This will, however, mean that Greenland will have to look beyond the goals of mere economic independence from Denmark and follow a more holistic approach in respect of the question of sub-surface resources.

The views in this article are the author's alone and do not necessarily reflect the views of the Greenland Home Rule Government.

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Greenland Home Rule

References:
"Grønland får ret til selvstændighed", Sermitsiaq, 17. april 2008
Grønlandsk-dansk selvstyre-komminssions betænkning om selvstyre i Grønland, 2008

Economic principles for Greenland Self-government:

1. The Danish economic transfer (block grant) continues unchanged at the 2007-level (3.2 billion DKK regulated according to development in price and salary indexes).

2. Greenland will by its own means finance all new fields of responsibilities taken over from the Danish State.
3. Income generated from sub-surface resource activities will be allocated to the Greenland self-government.

4. The level of fiscal transfer from the Danish State will be reduced by an amount corresponding to half of the income earnings from sub-surface resource exploitation, exceeding 75 million DKK.

5. The Danish State and the Greenland self-government will cooperate on all issues related to sub-surface resources during the first five year period.

6. When the size of the Danish fiscal transfer has been reduced to 0 (zero) DKK negotiations for independence will begin. The negotiations will include the question of income earning division from resource extraction of the Greenlandic subsurface as well as the question of the resumption of fiscal transfers from the Danish State to the Greenland self-government.

Oil explorations in Greenland

No oil has yet been found in Greenland though expectations remain high due to the presence of source rocks (from the Neo Jurassic period), as well as exposed sandstone and shale which usually provides good reservoirs for oil. After disappointing results from five exploration wells drilled in the 1970s interest in exploration has again intensified since the beginning of the 1990s.

Companies exploring:
Disko West: Tender 2006 & 2007
Block 1 (Sigguk): Cairn Energy PLC (87.5%) and NUNAOIL A/S (12.5%)
Block 2 (Sikilinge): -
Block 3 (Eqqua): Cairn Energy PLC (87.5%) and NUNAOIL A/S (12.5%)
Block 4 (Puilasoq): Exxon (29.17%), Chevron (29.17%), DONG (29.17%)
and NUNAOIL A/S (12.5%)
Block 5 (Kangerluk): Husky (87.5%) and NUNAOIL A/S (12.5%).
Block 6 (Orsivik): Exxonmobil (43.75%), Husky (43.75%)
and NUNAOIL A/S (12.5%).
Block 7 (Ikermiu): Husky (87.5%) and NUNAOIL A/S (12.5%).
Block 8 (Naternaq): PA Resources (87.5%) and NUNAOIL A/S (12.5%).

(%) = License share

Open Door area: South west Greenland (south of 63° N) and Jameson Land in East Greenland:
Cairn Energy PLC and NUNAOIL A/S

KANUMAS preference area: North-east Greenland:
Estimated production: 31 billion drums (oil equivalents) in North-east Greenland (survey conducted by USGS).
Potential round of tenders: 2010

KANUMAS preference area: North-west Greenland:
Potential round of tenders: 2012 and 2013

Offshore Nuuk:
Atammik: EnCana orporation (47.5%), Capricorn Atammik Ltd. (40%) and NUNAOIL A/S (12.5%)
Lady Franklin: EnCana orporation (47.5%), Capricorn Lady Franklin (40%) and NUNAOIL A/S (12.5%)

Exploration wells 1970s:
In the 1970s five offshore exploration wells were drilled, the results however were very disappointing.
Exploration wells:
Hellefisk-1 (off-shore), Ikermiut-1 (off-shore), Kangamiut-1 (off-shore)
Nukik-1 (off-shore), Nukik-2 (off-shore), Qulleq-1 (off-shore),
GRO-3 (on-shore)

Source: Bureau of Minerals and Petroleum: http://www.bmp.gl

Mines and companies in Greenland

Existing mines:
Nalunaq Gold Mine A/S (Canada), Established in 2003, Numbers of employees: 130, Production 2006: 108,000 tons raw material (16-25 g gold/tons raw material), Production 2007: 137,000 tons raw material

Seqi Olivine A/S (Minelco A/S) (Sweden)
Established in 2005, Numbers of employees: 30-40, Production 2007: 620,000 tons raw olivine. Expected production 2008: 450,000 tons raw olivine

Planned mines:
'Black-angel' Lead and Zinc-mine, Angus and Ross Plc. Earliest re-start of production: 2009
Expected numbers of employees: 100
Preliminary production period: 15 years

International Molybdenum Plc.
Earliest start of production: 2012
Expected numbers of employees: 500
Estimation of resource: 217 million tons raw material. Expected production: 50,000 tons/day in 15-20 years.

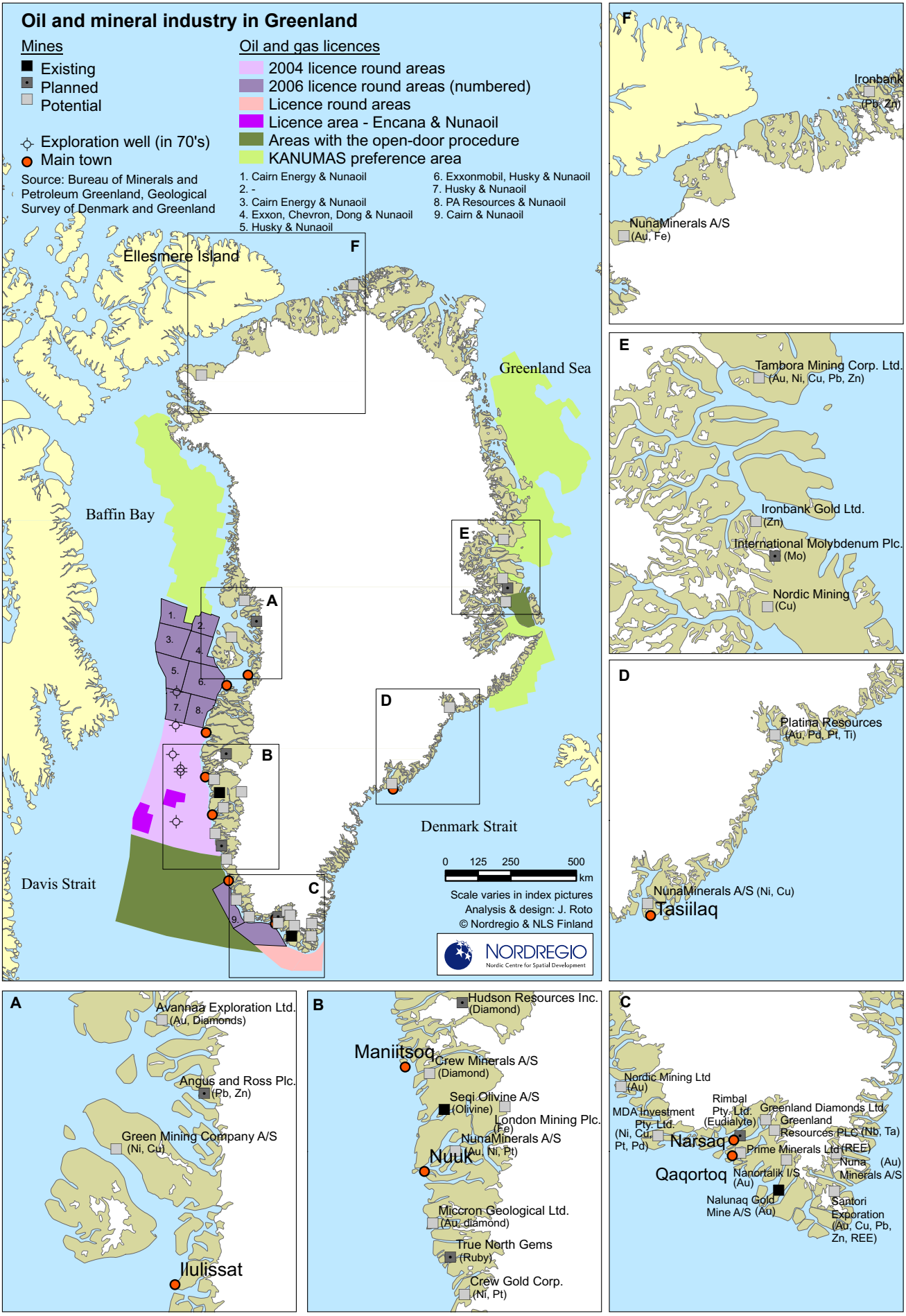
True North Gems, Ruby-mine
Earliest start of production: 2009/2010
Expected numbers of employees: 40

Rimbal Pty. (Australia), Eudialyt-mine
Earliest start of production: 2010/2011
Expected: numbers of employees: 80
Estimation of resource: 2.95 billion tons raw material
Expected production: 1 million tons raw material/year.

Hudson Resources Inc., Diamond-mine
Earliest start of production: 2011
Expected numbers of employees: 500

Potential mines
A number of exploration licenses have been granted in respect of various minerals around Greenland and if the market prices for metals, ruby and diamonds in particular continue to increase there is potential for the further establishment of new mines.

Source: The Geological Survey of Denmark and Greenland – GEUS: http://www.geus.dk


Oil and mineral industry in Greenland
Mines
Existing
Planned
Potential
Exploration well (in 70's)
Main town
Source: Bureau of Minerals and Petroleum Greenland, Geological Survey of Denmark and Greenland
Oil and gas licences
2004 licence round areas
2006 licence round areas (numbered)
Licence round areas
Licence area - Encana & Nunaoil
Areas with the open-door procedure
KANUMAS preference area
1. Cairn Energy & Nunaoil
2. -
3. Cairn Energy & Nunaoil
4. Exxon, Chevron, Dong & Nunaoil
5. Husky & Nunaoil
6. Exxonmobil, Husky & Nunaoil
7. Husky & Nunaoil
8. PA Resources & Nunaoil
9. Cairn & Nunaoil
Ellesmere Island
Greenland Sea
Baffin Bay
Davis Strait
Denmark Strait
0 125 250 500 km
Scale varies in index pictures
Analysis & design: J. Roto
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NORDREGIO
Nordic Centre for Spatial Development
F
Ironbank (Pb, Zn)
NunaMinerals A/S (Au, Fe)
E
Tambora Mining Corp. Ltd. (Au, Ni, Cu, Pb, Zn)
Ironbank Gold Ltd. (Zn)
International Molybdenum Plc. (Mo)
Nordic Mining (Cu)
D
Platina Resources (Au, Pd, Pt, Ti)
NunaMinerals A/S (Ni, Cu)
Tasiilaq
A
Avannaa Exploration Ltd. (Au, Diamonds)
Angus and Ross Plc. (Pb, Zn)
Green Mining Company A/S (Ni, Cu)
Ilulissat
B
Hudson Resources Inc. (Diamond)
Maniitsoq
Crew Minerals A/S (Diamond)
Segi Olivine A/S (Olivine)
London Mining Plc. (Fe)
NunaMinerals A/S (Au, Ni, Pt)
Nuuk
Miccron Geological Ltd. (Au, diamond)
True North Gems (Ruby)
Crew Gold Corp. (Ni, Pt)
C
Nordic Mining Ltd (Au)
MDA Investment Pty. Ltd. (Ni, Cu, Pt, Pd)
Rimbal Pty. Ltd. (Eudialyte)
Greenland Diamonds Ltd.
Greenland Resources PLC (Nb, Ta)
Narsaq
Prime Minerals Ltd (REE)
Nuna Minerals A/S (Au)
Qaqortoq
Nanortalik I/S (Au)
Nalunaq Gold Mine A/S (Au)
Santori Exploration (Au, Cu, Pb, Zn, REE)

Will new EU-policies bring changes to Greenland? Here the village Sarfannguaq, West Greenland. Photo: Rasmus Ole Rasmussen

A new Arctic Agenda for the EU

Up until now the Arctic has been at best peripheral to EU policies. When Denmark entered the European Community in 1973, Arctic areas were included in the Union for a while through the presence of Greenland. But as the Greenland Home Rule Government decided to withdraw from the EU in 1985 the Arctic policy was limited to OCT (Overseas Countries and Territories) agreements similar to the arrangements made with a number of former British, French and Dutch colonies. In the case of Greenland, EU fishing rights in Greenlandic waters were traded for monetary compensation and full market access for Greenlandic products to the European market.

The enlargement of the EU to include Finland and Sweden in 1995 re-introduced the Arctic to the EU. Policy approaches initially complied with existing regional policies directed towards rural and mountainous areas. With the 1997 initiative regarding a Northern Dimension policy, aiming at providing a common framework for the promotion of dialogue, cooperation and sustainable development in northern Europe, and with the endorsement of the concept in 1999, the first steps towards a new policy paradigm were however, albeit tentatively, taken. The specific mode of relations to the Arctic was emphasized through the "Arctic Window of Opportunities" initiative presented by the Greenland's Prime Minister Jonathan Motzfeldt.

These initiatives, however, had little effect in relation to the real concerns of the Arctic. The Northern Dimension policies became quite successful, albeit focussing predominantly (given that Finland was the driving force) on North West Russia and the new neighbours in the North, and on other parts of the former Soviet Union, now separate countries bordering the EU, and with clear northern perspectives, but with limited relations, however, to the Arctic. So even while the Nordic members of the EU continued to maintain a focus on the Arctic Window the whole concept of the Arctic remained rather peripheral to policy makers in Brussels.

A recent combination of events, however, seems to have re-opened the Arctic issue as an active focus of European policies. In addition to the fact that Neighbourhood-policies, including the Northern Dimension, are up for renewable, the recognition of the possible geo-political consequences of the ongoing changes in climate, and the effects this may have in relation to accessibility to the Arctic region, seems to have become a driving force in respect of this changed approach to the Arctic.

Ilulissat 2008 - A turning point?

On September 9-10, 2008, a meeting was arranged by the Nordic Council of Ministers in Ilulissat, Greenland. Under the title, "Common concern for the Arctic", representatives from the EU were invited to discuss future initiatives in relation to the Arctic. The desire was to identify possible new directions for a new 'Arctic focus' within a newly re-launched Northern Dimension policy.

A new approach would be founded in a new Northern Dimension policy with emphasis on dialogue and cooperation, according to Commissioner Joe Borg, DG Fisheries. Moreover, it should be a policy open to development into a new

dimension, both legally and practically. Questions in relation to the environment will still remain at the core of regional policy here with emphasis on protection measures which may contribute to safeguarding the delicate and sensitive Arctic environment.

In this connection it is recognized that the protection of ice-covered regions from the adverse effects of transport and large scale resource exploitation should be met by the establishment of a proper system of governance and be led by legislative measures, where the EU, together with the Nordic Countries, will be lead partners.

In line with this Laurent Stefanini, French ambassador for the Environment, emphasized that taking action – not only talking – would be important, and that action should be based on scientific measures and monitoring, for instance through such measures as the International Polar Year initiative of SAON – Sustainable Arctic Observation Network – trying to establish common standards and open accessibility to data from the Arctic. As he emphasized, the activities should aim at addressing current problems, but should also include the political will to serve the Arctic in the future.

Even more interesting, seen from an Arctic perspective, was the direction emphasized by Dianna Wallis, vice president of the European Parliament. She pointed out that future action should be based on listening to the voices of the population living in the Arctic. Measures in the Arctic are not only environmental, technical and scientific, but recognizing the fact that the Arctic is inhabited. She suggested future activities should be based on partnership with the population in the circumpolar North.

The inhabited Arctic

One of the most important changes to previous attempts to formulate an Arctic policy is this recognition of the Arctic as being inhabited, and that proper measures should be taken to ensure a sustainable future for the Arctic people. The question, however, is how to turn the recognition of an obvious fact and good intentions into practical political measures?

When rights to resources and territories are up for grabs – and that might very well be the situation if and when the ice disappears in the Arctic Ocean, giving access to mineral and energy resources, new fishing opportunities, and new transportation routes – differences in perspectives, as seen from nation states and from the local communities in the North, emerge. Even if it has been emphasized time and time again by the stakeholders representing governments in the North that the international juridical framework created by "The Law of the Sea" already exists as a suitable vehicle for solving future disputes in the Arctic, others have emphasized that "The Law of the Sea" only recognizes states and not peoples as stakeholders, thus basically eliminating indigenous inhabitants of the north from becoming participants in the formulation of future policy for the region.

To ensure that the people of the North become stakeholders, the concept of subsidiarity – a well known concept in an EU setting, as it was introduced in the EU debate during the process of moving decision of power to the EU parliament during the 1980s and 1990s – has been brought forward as a starting point for future activities. The concept, emphasizing the need to bring decisions closer to those affected by them, was raised in an Arctic setting in a keynote speech in connection with the Arctic Social Science Association's tri-annual congress in Nuuk in August 2008.

The keynote speach emphasized that the reality at the national level of reaching agreements which might violate the rights of peoples in the Arctic was inherent in the current situation. Classic notions of state sovereignty, therefore, cannot adequately address the issue of the sovereignty of peoples.

Instead, the principle of subsidiarity could provide a conceptual tool to mediate the polarity of pluralism and the common good in a globalized world by providing a tool to make sense of questions relating to the future management of the Arctic's resources. The keynote address stresses that there is an obvious need to ensure that the peoples of the Arctic, by means of regional arrangements, are granted a voice through the establishing of a comprehensive regime – as some have suggested, a constitutional contract – treating the Arctic as a distinct region in international society.

Exactly how this should be turned into practical political measures has not yet been fleshed out, and as they say, the road to hell is paved with good intentions. Though, ultimately, what is said in Ilulisaat and what is said in Brussels may differ this does not detract from the clear sense of honesty in the proposals presented in Ilulissat. Obviously current political intensions are much more to the point as compared to the previous measures taken. The EU now wants to be a serious player in the Arctic, and this is manifested in the development of an agenda that goes beyond "soft" issues such as scientific research and/or distant partnerships through the exchange of fish-resources for cash.

The representatives from the EU and the Nordic Council of Ministers visit UNESCO World Heritage Centre of Ilulissat in West Greenland. Photo: Rasmus Ole Rasmussen

Clear intentions now seem to be emerging also in relation to "hot" issues such as geopolitics, environmental measures, security issues, and in-depth relations with the population in the Arctic. And in this endeavour they seem to be compliant with the intensions of the Nordic Council of Ministers.

Arctic Council membership 'EBV'?
Using the Arctic Council for this purpose has been contemplated . The current status of the EU being acknowledged as an observer in the Arctic Council to a certain degree serves this purpose. Within the EU a discussion has already taken place in respect of the possibility of becoming a regular member of the council. But such an attempt would require a re-writing of the legal framework of the Council, and might be considered unacceptable by some of its members.

The Danish minister of Education and Nordic Cooperation, Bertel Haarder, has however suggested a rather innovative model which might be more acceptable, namely "Membership EBV" - membership including "Everything but Veto". This would enable the EU to become more active in outlining policy measures for Arctic cooperation, while the final decision would still remain with the original 8 founder-member Arctic states. Moreover, as emphasized by the minister, it is important to make proper use of all positive means available. The Arctic Council is unique in the sense that the indigenous peoples of the Circumpolar North are represented through their role as permanent members.

To what extent that might be acceptable needs testing among the current members, and pessimists maintain that it may not be considered acceptable for some. It should not, however, be a hindrance to commitments by the EU to produce further initiatives on the Arctic. Within the context of its current position as observer closer cooperation with the Arctic Council remains possible, and might very well contribute to the desired processes.

The activities of the Arctic Council have never been characterized by overarching decisions on legal matters. What the council is good at is giving the people of the Arctic a voice, and providing a network for the conduct of practical projects of relevance for the Arctic's future. In that context it will continue to provide positive feedback on the issues discussed in Ilulissat. The new cooperation between the Nordic Council of Ministers and the EU will, moreover, be an important vehicle in this respect.

By Rasmus Ole Rasmussen,
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References:

For a detailed overview of EU policies in relation to the Arctic, see: Adele Airoldi, 2008, The European Union and the Arctic: Policies and Actions. Norden, Nordic Council of Ministers, ANP 2008:729.

UNCLOS – United Nation's United Nations Convention on the Law of the Sea, based on UNCLOS I (1958) outlining the four principal conventions, elaborated on in UNCLOS II (1960), and developed by UNCLOS III (1973-1982) , eventually adopted as four Conventions: The Convention on the Territorial Sea and Contiguous Zone, the Convention on the Continental Shelf, the Convention on the High Seas, the Convention on Fishing and Conservation of Living Resources of the High Seas, and the 2001 enforced addendum on the UN Agreement on the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks.

Rasmus Ole Rasmussen: Climate Change and Subsidiarity – is there a need for an Arctic Treaty? Keynote speech at the Arctic Social Science Association tri-annual congress, ICASS-VI, Nuuk August 2008. To be published in the Proceedings from the congress.

The Arctic Council, established 1996, it is comprised of representatives from all eight Arctic nations (Sweden, Norway, Denmark, Finland, Iceland, Canada, the USA and Russia) as well as representatives from the main indigenous organizations in the area as permanent participants.

EU and North Norden

The European Union has repeatedly expressed its desire to help regions with unusual geographic specificities, such as a mountainous terrain, an insular position or a sparse population.

The latter category is particularly relevant for the regions of North and East Finland, North and Mid-Sweden and North Norway. These regions have previously asked Nordregio to produce a report highlighting their specific economic and social development challenges as an input into the negotiations for the 2007-2013 programming period. This report subsequently contributed to the allocation of an additional €35 million in Structural Funds support to these northernmost regions.

The European Commission now emphasizes that it has a good understanding of the challenges encountered in North Norden. What it wants to hear more about is the development opportunities that could justify further European efforts in terms of funding and policy design.

In order to provide the best possible inputs on these issues, the Brussels representation offices of the concerned regions have asked Nordregio to organise foresight workshops involving a wide range of regional stakeholders.

The first of these workshops was organised in Stockholm on September 11th and 12th. Over 40 representatives from the regions gathered to discuss the current situation in the so-called "Northern Sparsely Populated Areas". This meeting will be followed up in October with further discussion in respect of opportunities, strategies and visions. The final product will encompass a policy road map for these regions' European development strategy.

By Erik Gloersen
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People left the village of Kangeq, in West Greenland, in the late 1960's and the early 1970's. Many moved to Nuuk.
Photo: Rasmus Ole Rasmussen

Greenland village futures

Village life in the Arctic is being challenged in numerous ways. Ongoing changes in climate are causing trouble for many places, for instance, dwindling ice cover and "rotten ice" inhibits transport, fisheries and hunting. The melting of the permafrost creates unstable ground for housing and transport. It has also been argued, however, that the most serious problems today are due to demographic changes, caused by changes in the gender balance and generational differences in social and economic preferences. It may very well be that a number of villages become deserted in the coming decades.

Living under changing conditions is nothing new for Arctic inhabitants, however, while abandoned settlements have been a frequent phenomenon over time in this region. In the case of Greenland the largest number of settlements was around the period 1900 to 1920 where the total number of settled places numbered more than 200. Today it is down to less than 100, and several of these places were abandoned in the latter part of the 20th century.

The village of Kangeq is situated at the mouth of the Godthåbs Fiord, not far from Nuuk, the current capital of Greenland. It was established to take advantage of the rich hunting and fishing options available, and during the modernisation process after WWII a plant for the processing of cod was established, providing good income opportunities for a thriving fishing community. It was however abandoned in the late 1960's and the beginning of the 1970's, partly due to the increasing concentration of processing activities in Nuuk, and partly due to the natural reduction in the cod stock. The later followed as a consequence of reduced sea temperatures.

The buildings were subsequently abandoned as no alternatives were envisaged. The buildings continue to stand more or less as they were left, impacted, though, through forty years of weather and wind, giving the place a somewhat sad ghost-town ambiance. For instance in the former church, only the paint indicates its former use.

Also in the Godthåbs Fiord another village, Qoorqut, went through more or less the same process. It was established at a place with abundant cod fishing opportunities, but the economic background for its existence vanished when the cod stock diminished during the 1970s and 1980s and finally disappeared at the end of the 1980s. As a consequence the place was closed down and temporarily abandoned during this period.

Only temporarily, though, as many people from Nuuk saw the place as providing excellent options for summer houses. The municipality of Nuuk saw the potentials of the old school building to provide excellent facilities for summer schools and vacation camps.

In consequence, the buildings have been maintained, and most are now in use year round, as second homes, as summer houses, for school camps and for tourists. There are no permanent residents in the village, but the place has nevertheless experienced "a second birth", providing not only good experiences to local inhabitants, but also healthy incomes to the community.

While previous arrangements between the EU and Greenland focused on the simple exchange of EU exploitation of fish resources for cash, the recognition by the EU of the Arctic as being inhabited provides a totally new basis for future relations, where tourism, but also other economic activities, may provide new opportunities for Arctic communities to thrive and develop. Hopefully this can contribute to preventing sad stories like that of Kangeq from happening again, providing instead new perspectives, as has been the case in Qoorqut.

By Rasmus Ole Rasmussen

Potentials for Trans-Arctic Shipping

The rapid reduction of the ice cap in the Arctic Ocean in recent years has increased the focus on the possibility of expanding and commercialising Trans-Arctic shipping. From a Nordic perspective, opening up the potential of the Northern Sea Route (NSR), traditionally termed the Northeast Passage, is of significant interest. Shipping through the Arctic Ocean via this route could save 40% of the sailing distance from Asia (Yokohama) to Europe (Hamburg), compared to the traditional route via the Suez Canal. A 40% reduction in distance however does not mean a 40% cost saving.

Nevertheless, even when taking into account the additional fuel needed when sailing in icy waters the basic fuel saving (and thereby also the saving in respect of emissions) remains enormous. The shorter distance also means shorter transit times. This is a benefit for both the user, as the goods spend less time in transit, and the ship-owners can make the ship undertake more roundtrips per year.

The increased cost of building ice-classed ships, the unpredictability of open waters, slower speeds, navigation difficulties, the greater risk involved and the availability of ice-breaker services are all factors influencing the total expenditure calculations. The Department of Maritime Research and Innovation at the University of Southern Denmark has studied the economic feasibility of the Northern Sea Route. A summary of their findings is provided below.

The Northern Sea Route crosses five Arctic Seas: the Barents Sea, the Kara Sea, the Laptev Sea, the East Siberian Sea and the Chukchi Sea. The distance travelled on this route will be between 2,100 and 2,900 nautical miles depending on prevailing conditions, and will become the shortest seaway connection between Northeast Asia and Northern Europe (See Figure 1.)

Historically, foreign ships have been prevented from using the Northern Sea Route. In October 1987 however, then the Soviet leader Michael Gorbachev delivered a speech in Murmansk declaring that the Northern Sea Route would be opened to international traffic. This was followed up in 1991, by the Russian Federation, which approved Regulations for Navigation of the Seaways along the Northern Sea Route – ensuring free shipping, without discrimination, for all vessels for commercial purposes along the Russian Northern Coast.

The Arctic however still has an important role to play in the national security system of the Russian Federation. Actually all operations along the NSR, including scheduling, route assignment, navigational support, use of pilots etc., are controlled by two Russian Marine Operations Headquarters (MOHQs). The formerly state-owned Murmansk Shipping Company serves as the MOHQ at the western end, and Far Eastern Shipping Company is in charge of the traffic originating at the eastern end.

Climate Change and Ice Conditions

The navigation season of the Northern Sea Route is often defined as the number of days per year with less than 50 % sea-ice cover. In 2004, the length of the season was projected to increase from 20 - 30 days per year to 90 - 100 days per year by 2080. This estimate might however be too conservative as the melting of sea ice increased dramatically between 2004 and 2007 and it seems likely to set a new "record" again this year.

The Northern Sea Route is a fairly long shipping lane and the climatic conditions are not stable along the entire route. The amount of ice usually varies more in the eastern as compared to the western sectors, and of course changes from one year to the next.

It could easily be that in some years the Northwest Passage is virtually ice-free while the Northeast Passage is not (and *vice versa*). As such, the Northern Sea Route would potentially change from year to year. For shipping this prevailing unpredictability due to the natural conditions remains the main problem with regard to commercial use of the Arctic sea ways.

One of the most important factors in container shipping is regularity - especially when calling at major international ports with significant capacity constraints. Both the NSR and the Northwest Passage however exhibit a number of factors with a potentially significant impact on regularity. The Arctic Ocean remains quite a harsh environment while the fundamentally unpredictable ice conditions can make it difficult to maintain a regular schedule.

Icebreaking Fees

The icebreaking assistant is one of the major cost components of sailing the Northern Sea Route. The fees are dependent on the vessel's size, ice class, the route and the level of support required. In addition to the actual icebreaking, the fees also include guiding by reconnaissance aircraft, hydrographic and meteorological services and the use of communication systems.

In the early 1990's, when the cargo volume along the Northern Sea Route was around 4 million tons per year, the average ice-breaking fee was US$ 2-4 per ton. In the late 1990's, when the volume dropped to 2.5-2.8 million tons per year, the operation became unprofitable and the rate was increased up to US$ 7.5 per ton. At this point, the Russian government annually granted additional subsidies to maintain the icebreaker fleet. In 2003 these subsidies ceased to be

Figure 1: Map of the Northern Sea Route Source: Murmansk Shipping Company homepage

granted. The fee for icebreaking was therefore increased to an average of US$ 23 per ton – in order to maintain and modernize the icebreakers. The changes in fees are shown in Figure 2.

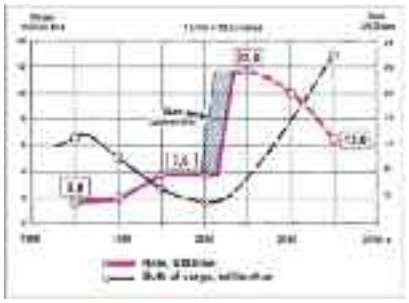


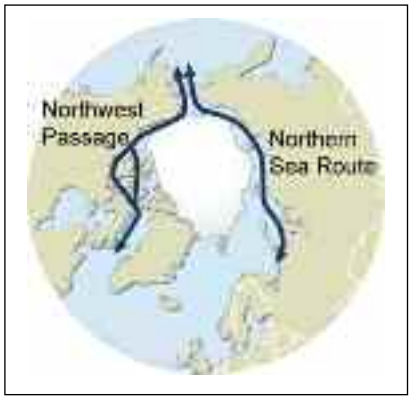
Figure 2: Annual revenue comparison

An up to date list of current icebreaking fees is not easily obtained. However, 1,050 RUB (US$ 40.8) per ton of containerized cargo was mentioned in a recent tele-phone conversation with the Murmansk Shipping Company. They would consider one TEU (container) as 24 tons and the total icebreaking fee for one TEU could be equivalent to US$ 979.2. This is extremely high as compared to other cost components.

In the future, it seems likely that the rates will, in the main, be influenced by the amount of cargo, the financial resources available to maintain the ice breakers and most importantly, by the broader sweep of Russian Arctic policy and the desire to introduce the market mechanism into this route.

The Northwest Passage

The alternative to the Northern Sea Route for shipping through the Arctic Ocean is the Northwest Passage. From a navigational point of view, however, this route is more difficult as it passes through much narrower straits.



The two possible Artictic shipping routes.

Both lanes are, from an international shipping point of view, immature. The North West Passage thus far has none of the administrative procedures and perhaps more importantly a wholly insufficient icebreaking capacity. The Northen Sea Route (the North East Passage) has some administrative procedures but no guaranties in respect of the time needed to complete these administrative processes. On the other hand it has the world's largest icebreaker fleet at its disposal.

If the routes between Europe and Asia have to use the North West Passage ships must sail though the David Strait and to the south of Greenland before crossing the Atlantic Ocean - a detour of approximately 2000 nautical miles as compared to the NSR. Whether or not crossing through the North West Passage will be feasible will of course depend upon the fees associated with using such a connection. What such expenditures are likely to entail will be the topic of a forthcoming research project at the Department of Maritime Research and Innovation.

The Case Study

In the economic feasibility study, two sets of 4,300 TEU container ships (one non ice-classed and one ice-classed, both making year round service between Asia and Europe) are deployed. The annual profit gained from a regular service by the non ice-classed ships via the Suez Canal is compared to the annual profit gained from the ice-classed ship, using the Northern Sea Route during the navigable months and the Suez Canal for the rest of the year.

The study looks into the main factors influencing the NSR, the two most important ones being the navigable time and the icebreaking fees. Three options for navigable time (3, 6, 9 months per year) and three options for icebreaking fees (the fee will be reduced by 50%, 85% and 100%) are used.

These options are combined with each other to make a 3 x 3 matrix showing different scenarios. An overall comparison is then made to evaluate whether, and under which conditions, the Northern Sea Route is competitive against the traditional route via the Suez Canal. The total one-way transit time for each of the two routes is first calculated depending on distance, speed, waiting time etc. Based on this, the numbers of trips per year are obtained and finally the annual revenue, overall cost and annual profit are calculated and compared. The main results are shown in Table 1.

	Reduction in icebreaking fee	The navigable months of the NSR		
		Three	Six	Nine
Suez vs. NSR Profit	50%	- 46%	- 83%	-120%
	85%	- 3%	7%	17%
	100%	15%	45%	76%

Table 1: The dramatic changes of averaged NORTHERN SEA ROUTE icebreaking fees from 1985 to 2003 (tonnage due) Source: Legal and administrative issues of arctic transportation, GROWTH project GRD2-2000-0112 "ARCOP", Finland.

As can be seen from the table above, even if the ice breaking fee is reduced by 50%, the NSR is still not economically viable as compared to the Suez Canal Route, no matter how many months it will be navigable. If the ice breaking fee is reduced by 85%, it still does not make the route competitive when it is open for only three months, but if it is open for longer it would generate more profit than use of the Suez Canal Route.

If however use of the NSR is free of charge, it is competitive in all scenarios and it generates up to 76% more profit than the Suez Canal Route if the NSR was navigable for nine months.
More general information and the detailed calculations used to produce these results can be obtained from the authors.

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The Nordic States and Polar Geopolitics

In the Arctic, global climate change, resource use, and the impacts of globalization are significant domestic and foreign policy issues for the Nordic states. From these issues arise challenges – as well as opportunities – that have a circumpolar Arctic-wide, a Nordic, and indeed a European dimension, and require significant cooperation in science, technology and policy.

As key actors in the geopolitics and science of the Arctic, Norway, Sweden, and Finland also have active Antarctic science programmes as well as political interests in the continent. Sweden, Norway, Finland and Russia have already begun to construct a framework for operational cross-border cooperation.

However, one of the ironies of global interdependence is the emergence of a world increasingly characterized by dispute and disagreement. In the polar regions the issues of climate change, sovereignty and strategic positioning by both states and multinationals in respect of access to oil, gas, and mineral resources, raises the question of whether international cooperation can be sustained, while at the same time recognizing and protecting the political interests of all states concerned.

Over the last twenty years the Arctic has experienced something of a transition from the old geopolitical order to a new one. The most urgent challenges are no longer confined to military issues but to addressing environmental problems and promoting viable economic development as well as the effective management and use of natural resources.

Norway's initiative on trans-border cooperation, the creation of the Barents Euro-Arctic Region, illustrates how Nordic leadership has already set the pace for further cooperation in these polar regions. The alignment of national and regional goals was a pragmatic step towards the promotion of stability and the establishment of a link between the Barents Region and the broader European process of restructuring. Similarly, Finland and Sweden share a concept of 'comprehensive security' promoting the notion that security in today's world comprises economic, ecological, and human rights strands.

Region-building policies

The notion that cooperation and integration contribute to security and stability, influences the Arctic-rim states in their focus on region-building. Given the similar history, political and security interests, culture, social systems and values, region-building in the Nordic context makes cooperation at various levels a politically viable, but also necessary step. The 'Northern Dimension' promoted by Finland exemplifies Nordic understanding of how the geopolitical realities affecting individual states require alliances built on a regional identity rather than a global/international one.

Antarctica, by virtue of its history and geographic isolation is not influenced by a similar political outlook from states in the southern hemisphere which could promote regional integration, or indeed lead to the development of a 'Southern Dimension' similar to the approach developed in the Nordic Arctic. Political and scientific interests in Antarctica have historically been extended remotely by countries in the northern – not the southern – hemisphere.

The display of 'power' in Antarctica is increasingly defined by a country's scientific and technological capabilities. Antarctic science not only supports political ends, like permanent occupation, but is increasingly being used as a 'knowledge tool' for the protection of the polar environment.

Flag-planting as a declaration of ownership in the last century has been replaced by the practice of high-calibre science as a declaration that, should there be a challenge to territorial rights in Antarctica, possessing knowledge about the region provides justification of ownership.

Continued leadership?

The leadership shown by the Nordic states, and the Nordic values of openness and strict environmental protection regulations, gives them a certain authority in advocating the responsible use of the Antarctica for science. The growing number of countries involved in scientific activities has led to calls for international cooperation in Antarctica to continue to take common perspectives into account.

The Nordic states - Norway, Sweden and Finland - have taken advantage of their comparable social, economic and technological capabilities for joint research programmes in Antarctica. Significantly, Norway (the only Nordic state with territorial claims in the Antarctic) sees the continuation of such cooperation as being important for the continuity of its Antarctic research and political interests.

The contrast in the political and strategic positioning between the Arctic and Antarctica is best reflected in two separate events in the late 1980s – Gorbachev's Murmansk speech in October 1987, and the Convention on the Regulation of Antarctic Mineral Resource Activities (CRAMRA) respectively.

Gorbachev's declaration "Let the North of the globe, the Arctic, become a zone of peace" lifted the circumpolar 'ice curtain' and provided a significant impetus to regional cooperation among the eight Arctic states. This 'regionalization' was advocated as benefiting them, economically, socially and politically. This was not the case however in Antarctica, where 'inter-nationalization' rather than 'regionalization' was promoted. Benefits would result from advancing science and protecting the environment rather than offering economic benefits to the Treaty nations.

Divergent mineral-policies

Although an attempt was made to plan for managing the exploration and exploitation of potential minerals resources, albeit not in the immediate future, this was quashed on the grounds that resource activities would harm the Antarctic environment and have global consequences. In contrast, it is interesting that Arctic-rim countries concerned about Antarctica are not yet barred from exploring for minerals/oil and gas in the fragile North!

Discussion on the need for an international regime to regulate mineral activities in the late 1980s reflected the many competing interests represented by the membership of the Antarctic Treaty system. The outcome of negotiations on the Convention on the Regulation of Antarctic Mineral Resource Activities (from 1980 to 1988) revealed the absence of a unified regional outlook from the Treaty parties.

The Convention was not ratified and failure to reach consensus on how to deal with the

minerals issue exposed the limitations of the Antarctic Treaty. It should be noted however that throughout the process Norway maintained its position as mediator between the competing states.

2009 Claims-deadline

Current territorial rivalries place a strain on relations between countries with conflicting territorial claims in the Arctic and the Antarctic. The looming deadline of 2009 for countries to establish the outer limits of their continental shelves, according to the UN Convention on the Law of the Seas (UNCLOS), has caused an international flurry of activity by many states in their bids to expand state sovereignty across the ocean floor beyond the traditional 200-mile limit.

Russia's flag-planting on the deep seabed of the North Pole during the summer of 2007 provoked an international outcry, galvanizing other Arctic nations into action. Denmark is to submit its own claim and Canada has announced plans for an expanded military presence in the far north in a bid to assert its sovereignty over the contested Arctic region.

The Antarctic territorial claim issue is also beginning to take on new meaning in the context of the CLCS. Australia's attempt to delimit an extended continental shelf zone to include the Australian Antarctic Territory has set a precedent for other Antarctic claimant states, including the UK, whose intentions have alarmed Argentina and Chile. Norway has not yet made a submission, citing the 'extremely complicated and resource-intensive' process of data collection.

Cooperation-threats

International agreements based on the spirit of mutual cooperation are seemingly under threat. Drawing on their histories of cooperation in science and politics in the Arctic and Antarctic, as leaders in innovation, and, as in the case of Norway's role as mediator and moderator in previous Antarctic negotiations, the Nordic states appear well-placed to lead the way in forging new and robust frameworks for regional cooperation in both Polar Regions.

In 2009 and 2011 two anniversaries will be marked that have significant relevance for the Arctic and the Antarctic; and for the states with geopolitical and scientific interests in both regions. In 2009 it will be fifty years since the signing of the Antarctic Treaty, and twenty years since the beginning of the Rovaniemi Process.

2011 will mark the fiftieth anniversary of the Antarctic Treaty coming into force, and twenty years since the Arctic Environmental Protection Strategy (AEPS) was adopted by the eight Arctic states as a direct outcome of negotiations in Finland two years before. Furthermore, 2011 marks twenty years since the adoption of the Environmental Protocol for the Antarctic by the Antarctic Treaty Consultative Parties.

There will be cause for celebration and evaluation and, as these anniversaries coincide with the end of the fourth International Polar Year (IPY) and its subsequent follow-up activities, there will, in addition, be inevitable calls for an Arctic treaty to be drawn up to act as a legacy for IPY4 in a similar fashion to that formulated for Antarctica.

Yet caution and pessimism remain as we ponder the brittleness of international agreements based on the spirit of mutual cooperation, and of the realization that forging new international regulatory agreements for the polar regions may be unlikely, at least in the near future.

Arctic Council cracks?

Cracks may appear in the Arctic Council, as adversarial approaches to Arctic issues become more common - states are already involved in sovereignty and boundary disputes, while indigenous peoples may become more litigious in their struggle for the international recognition of their political, cultural and human rights.

In May 2008 a meeting in Ilulissat, Greenland between the five Arctic coastal states' foreign ministers (Norway, Iceland, Russia, Denmark/Greenland, and the US) at the invitation of Denmark, sparked criticism. The meeting was held to discuss sovereign rights and jurisdiction in the Arctic and to consider joint strategies for the management of the Arctic Ocean.

Critics saw the meeting as not only marginalizing the relevance of the Arctic Council, and excluding indigenous peoples' organizations, but also as duplicating fora which already carry out effective discussions about the Arctic. Similarly, does this permutation of Arctic 'coastal' states put a spanner in the works of Nordic cooperation?

As research points increasingly to the importance of understanding both polar regions for climatic processes, the working, functioning and interrelationships between ecosystems, and global change, the scientific argument for why countries should engage in scientific research in Antarctica is unequivocal. But why would they wish to do so politically?

And as the Arctic and Antarctic each continue to emerge as critically important international regions, what future leadership roles do the Nordic countries have in setting new political and scientific agendas, particularly in light of their geopolitical interests in the Arctic and their technological edge over other key players in the polar regions?

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Potential Nordic bioenergy production

As energy prices around the globe rise countries are beginning to seriously contemplate new energy sources. One of these sources is biomass from agricultural products which has rapidly flourished thanks, among other things, to the successful introduction of bioethanol and biodiesel in the fuel market. However, bioenergy production from arable land is also very controversial as it is often blamed for worsening the problems associated with the global food supply. With the hope of reducing the competition for land today's decision makers are turning their attention to the option of cultivating energy crops in abandoned agricultural land or ´fallow` land.

In the Nordic countries, most of the arable land is located in Denmark, Southern Sweden and mid- and south-west Finland. According to EUROSTAT more than 756,792 ha of fallow land exist in the Nordic countries, primarily situated in Sweden (335,764ha) followed by Denmark (212,949ha), Finland (195,329ha) and Norway (12,750ha). Notwithstanding a level of uncertainty about how much fallow land is actually available, it is generally believed that these areas could actually be substantially larger.

Perhaps the most limiting factor, in respect of the use of fallow land for energy cropping, is as with any other agricultural crop, the particular crop's dependency on favourable soil, climate and geophysical conditions as well as easy accessibility to enable the use of heavy machinery and transport during harvesting. It remains unclear however just how much of this fallow land actually boasts these optimal conditions for energy cropping. Assessments made thus far suggest that the majority of these areas are unsuitable particularly for the cultivation of traditional food crops used for bioenergy production.

The cultivation of perennial crops such as willow, hemp, reed canary grass and hybrid aspen, characterized by the need for several years' growth before harvesting, appears to be suitable for fallow land in the Nordic countries. This is so because, compared to traditional food crops, they can be cultivated in less favourable conditions while demanding lees soil preparation and monitoring.

From an environmental point of view, the cultivation of perennial crops is also a better option since they require less use of fertilizers and pesticides. Because the vegetation is retained over several seasons between harvests, perennial crops also reduce the risk of water and wind erosion and increase biodiversity in cultivated farmland. Another environmental benefit obtained from some perennial crops, like willow for instance, is that they can be used for both soil remediation and the purification of municipal wastewater.

Perhaps one of the most central arguments in favour of the cultivation of perennial crops for energy purposes is the fact that the amount of net-energy obtained, per hectare of cultivated farmland, is significantly higher than that obtained from traditional food crops.

One disadvantage with perennial crop cultivation is the risk of causing important changes in the landscape, especially in areas of high cultural value.

This occurs because, aesthetically, perennial crop fields look very similar to wheat and rapeseed fields. Furthermore, in areas of high natural value the cultivation of perennial crops may imply both the homogenization of the vegetation and an increased environmental load.

One solution to these problems is to diversify the cultivation structure by combining several energy crops or by combining them with the native *flora*. However, these solutions could also lead to conflicts between business and landscape conservation interests since homogeneous cultivation practices are, in general, more profitable and therefore often preferred by farmers. This conflict can become more severe in areas of high touristic value, where the alteration of the landscape could have a negative impact on the attractiveness of these areas to tourists or second-home owners.

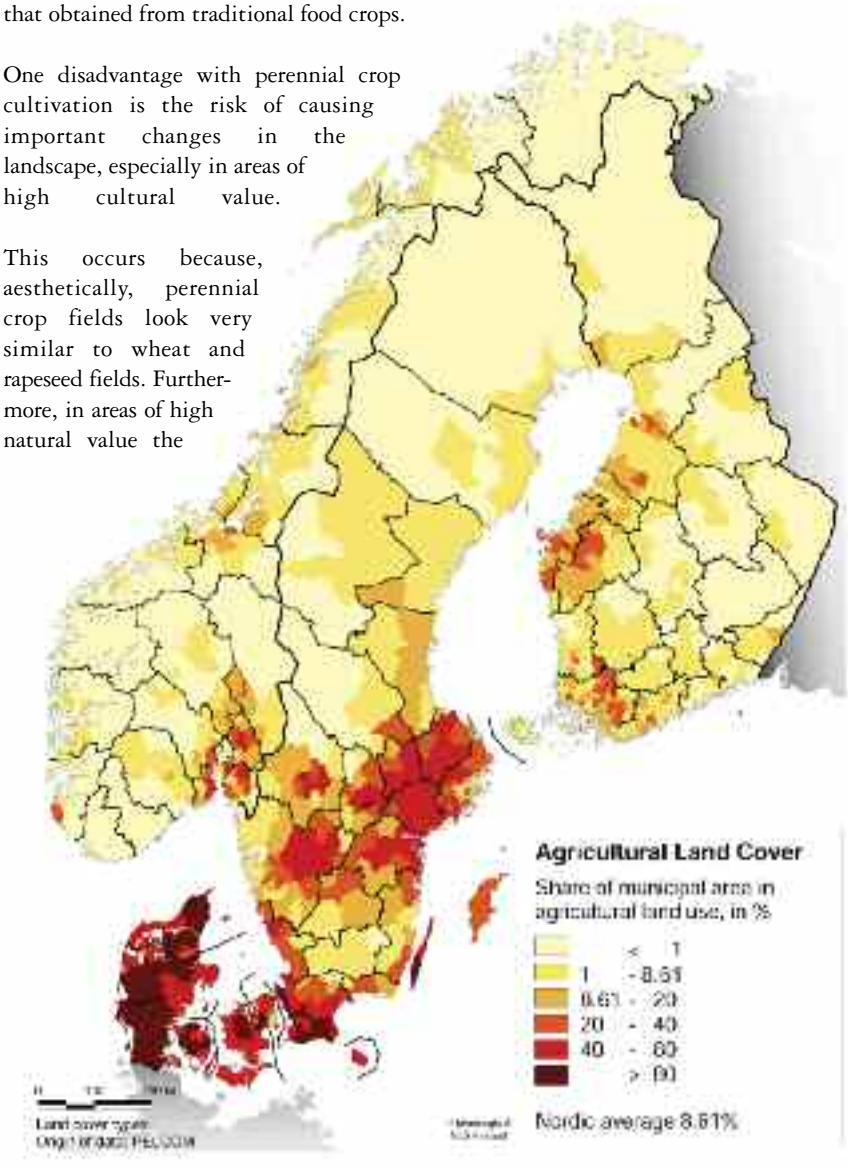

Figure 1 Potential bioenergy production areas for annual energy crop farming.

The use of fallow land for biomass production may have positive socio-economic effects on, among other things, labour market expansion and the prevention of out-migration in rural and remote regions where agricultural and industrial activities have been marginalized.

Most of the job opportunities will not however be the direct result of farming activities, but will instead come from activities related to the transformation and conversion of biomass into various biofuels, heat and electricity as well as the related infrastructure development including biorefineries and district heating plants. Only a reduced seasonal labour force will be required in connection with the actual cultivation of perennial crops due, among other things, to the fact that perennial crops take several years to conclude their harvesting cycle and require little tending or husbandry.

The overall debate on the use of fallow land for bioenergy production is still ongoing, but it is already possible to recognize clear economic, social and environmental benefits resulting from this activity. On the other hand, this option must be evaluated against the possibility of using the fallow land areas for other purposes, not least for food production. Notwithstanding this, the extension, sensibility, and natural value of fallow land areas has to be further evaluated in order to guarantee their sustainable use.

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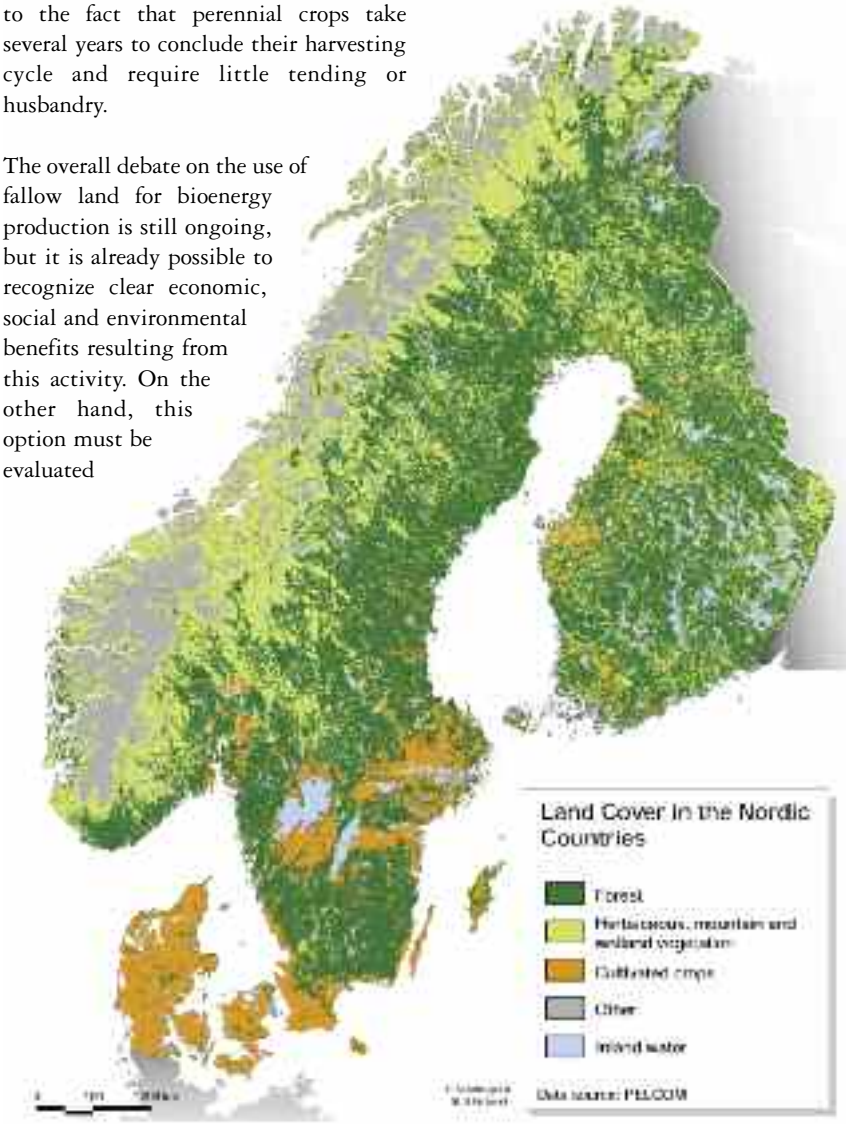

Figure 2 Potential bioenergy production areas in the Nordic countries- forest, grassland and arable land-

Testing cross-border

The conditions for cross-border cooperation (Interreg in EU parlance), once dubbed the darling of regional policy, are up for revision. Cross-border cooperation activities in the Nordic area are managed both in the context of a range of cross-border and transnational cooperation programmes co-funded by the EU and their European Regional Development Fund (Interreg) programmes as well as in specific Nordic initiatives.

The activities of Nordic cross-border cooperation organisations have been sponsored by the Nordic Council of Ministers for many years. The NCM has recently also revised their funding principles for cross-border cooperation organisations, in order to add new dynamism to traditional regional development initiatives.

From the 2009 budget year onwards, the NCM will establish 1-3 year contracts with a set of cross-border cooperation organisations to cater for more long term commitments in cross-border cooperation activities.

Tapping a similar vein, the first round of calls for project proposals in several of the new Interreg IV programmes covering the Nordic cross-border and transnational cooperation areas have been met with great interest.

In fact, so large has been the interest that Norwegian partners in the Interreg IVB North Sea, Northern Periphery and Baltic programmes are already subject to a reduction in future national co-financing from 50% to 30%. Similar co-financing restrictions are not however faced by budding Interreg partners in the Nordic EU Member States, where 50% co-financing is ensured by the ERDF.

According to the Norwegian Ministry of Local Government and Regional Development, the reduction in national co-financing is first and foremost due to the large number of successful Norwegian applications made in the first rounds of the 2007-2013 Interreg IV programme calls open to Norwegian partners.

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