NORDREGIO
Nordic Centre for Spatial Development

JOURNAL OF NORDREGIO

No. 3 October • Volume 9 -2009

North Norden: A new mining era

www.nordregio.se

Contents

Journal of Nordregio is owned and distributed by the Nordic Centre for Spatial Development (NORDREGIO). The journal appears quarterly and is distributed free of charge. All articles express the views of their authors. Subscription: sophie.didriksson@nordregio.se

 ISSN 1650–5891

JOURNAL OF NORDREGIO

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Cover-photo: Digging for gold. Here at the recently opened Agnio-Eagle Kittilä Mine in Finnish Lappi/Lappland. The gold is hidden in the darker parts of the rock, called the Suurikuusiko ore, to the left in the picture. Eventually the open pit will be 160 meters deep. Photo: Odd Iglebaek

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NORDREGIO Nordic Centre for Spatial Development

norden Nordic Council of Ministers

Nordregio is a centre for research, education and documentation on spatial development, established by the Nordic Council of Ministers.

Forging ahead into a new mining era

The theme for this issue of the Journal grew out of a conversation with Robert Forsberg, the Mayor of Kalix municipality in Norrbotton. He was attending a seminar on Northern Sparsely Populated Areas at Nordregio last autumn where he underlined that many parts of northern Norden were forging ahead into a new mining era. Could we draw some attention to this?

Future plans included doubling production of iron-ore in Kiruna, reopening the iron-mine at Kirkenes in Norway and also opening a completely new iron-mine close to Pajala, just a couple of hours up the road from Kalix. Both Sweden and Finland are also preparing new mining ventures in respect of gold, uranium and other minerals.

Including Northwest-Russia, there are currently 42 functioning mines in the region. Within a few years there could be as many as 68. An overview of this prospective growth in the mining sector is provided on pp 8-9.

The basis for these developments is the enduring richness of the Fennoscandain Shield, which provides a geological structure ripe with assets. A good comparison here is the oil and gas fields below the North Sea. Globally only a few areas, such as some parts of North and South America, China, India, Russia, Australia and Southern Africa have mineral potentials like the Fennoscandian Shield (p 5).

Iron is the basic element in steel, the metal used in the construction of buildings, bridges, oil-platforms, pipelines, cars, trains, weapons and ammunition. Sweden is already the largest producer of iron in Europe and the planned expansion could more than double its capacity.

The importance given to controlling these iron-ore assets was clearly demonstrated during World War II. This was also the case for nickel. Talvivaara in Finland has one of the largest reserves of this precious metal in Europe. In 2008 Finland opened a new mine here. The importance now given to exploiting these minerals, combined with the already discovered reserves of oil and gas in the Barents Sea, has without doubt increased the military-strategic importance of the region as a whole.

Why the sudden interest then in mining? Jan-Olof Hedström, the Head of the Mining Inspectorate of Sweden, draws our attention to the increased level of global demand for metal and minerals (pp 6-7). In particular the growth in demand levels in both China and India should be mentioned here.

Increased demand levels generate higher prices but also a greater willingness to risk capital on prospecting for new fields. According to figures provided by the Norwegian Government, prospecting investment in Sweden, in 2007, amounted to 625 million SEK; the equivalent figures for Norway and Finland were 100 million NOK and 54 million euros respectively.

Most natural resources have been there for millions of years. For so-called sparsely populated areas this is clearly understood. Woods, fish, pastures for reindeer and other husbandry was the starting point. Later value was added through work to produce timber and food. Mining and the production of metals can usually be traced back to the 15th century.

Industrialisation offered the possibility for massive expansion, jobs and the growth of the permanent population. Subsequently however more sophisticated modes of production reduced the number of jobs available. Produced volumes, however, often continue to grow. In this respect the story of LKAB is telling, the iron-ore company which at its peak had 8300 employees in Lappland and Norrbotten today has just 3100. No one has thus far however studied the likely impact the opening of the new mines will have on employment. It does however seem that several thousand jobs will be created in the foreseeable future (See also p 8).

The greater part of these new mining areas is within what is called the remote Northern Sparsely Populated Areas (NSPA) of Finland, Sweden and Norway. They have a population density of only 4.9 inhabitants per km^2, which is not to be found in any other part of the European Union (Nordregio 2005:4 1). The NSPA of Finland and Sweden comprise an area of 429,970 km^2 with a population of only 2,185,000 people. Furthermore, North Norway comprises an area of 135,340 km^2 with a population of 591,470 people.

Most mining projects have major impacts on the landscapes they inhabit. One would expect this to generate conflict with the tourist-industries or the reindeer-herders. There seems however to be little if any evidence of this. Potential conflicts are often more concerned with the use of specific hazardous chemicals in the production process, like cyanide for extracting gold. The mining of uranium, given the use to which it is put, does however usually meet with strident protests.

During the production of this issue of the Journal, the impact of modern tourism in Northern Norden, particular skiing, became very evident. The Finnish municipality of Kittilä (p 12) is one of the outstanding examples of this development. On pp 26-27 we attempt to provide a brief Nordic overview.

During the summer a minor reader's inquiry was conducted for the Journal of Nordregio. First and foremost the inquiry lent support to the editorial changes undertaken in recent years. We of course appreciate this. In our attempt to broaden the reader base the main potential for expansion seems to lie in the private rather than in the public sector and among the younger rather than the older age-groups. In addition, again from a demographic point of view, attracting more female readers is a challenge worth pursuing.

The next issue of the Journal of Nordregio is slated for publication in early December. We plan to take a closer look at some of the aspects of Nordic climate adaptations.

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Ore and waste-rock is transported out of the open pit at the gold-mine in Kittlä. To get 1 ton of ore 9 tons of waste has been removed. Annually 10 million tons are brought out of which 1 million goes to the mill. After processing some 5000 kilos (250 liters) of gold is the net product. Photo: Odd Iglebaek

Prices and geology will determine further developments in Fennoscandia

Over the last five years the global mining community has experienced the bull market of the century. As with all such things unfortunately this was not to last as business speculators in the USA "put the bull in the barn and set the bear loose". The short but intense joy of a fast growing global economy, not least in the mining sector, however, did manage to change traditional attitudes that mining was becoming a declining industry, particularly in Finland. Recent activity in exploration and mining across *Fennoscandia* confirms that favourable geology is the decisive factor here, together with political and legal stability, in attracting mining investment.

Why did *Fennoscandia* attract investment in the order of 55M€ per year in the field of exploration during the period 2006-2007? The basic reasoning here is that everything, ultimately, comes down to geology. Without a suitable geology and the culture and history of mining across this region there would be no interest in investing here (Fig. Geology matters). The key issue here is the age and the evolution of the bedrock. The *Fennoscandian Shield* was formed together with the Canadian Shield; globally they formed the major ore field.

Crucially, the continents were joined to each other during the period of time when most of the geological processes producing the ore deposits were active. Over the passage of time various tectonic events caused the continents to drift apart separating ore provinces in the course of the crustal evolution of the Earth.

GTK-Finland

So, we are in the right area then in terms of geology but this alone is not enough. Geologists need data like medical doctors need x-rays or blood tests etc., in order to build up the information upon which further measures are based. In Finland the Geological Survey of Finland (GTK) has recorded a wide range of geological, geophysical, geochemical and GIS data over its 120 year history (Fig Data bases). This database, affording easy and reasonably inexpensive access, provides an opportunity particularly for small companies to start their exploration projects without the need for major investment.

Prior to 1994 mining and exploration in Finland was mainly carried out by state-owned companies like *Outokumpu Oy* and *Rautaruukki Oy* in addition to GTK in relation, specifically, to mapping and exploration. The risk-taking culture of small companies has thus been absent. In Canada on the other hand small companies have historically been the driving forces in producing new discoveries in the mining industry.

Access to land

Uncertainty over the issue of gaining access to the ownership of the land in Finland was removed in 1994 thus, finally, opening the door to the entry of small companies into the industry. This indeed proved to be the last significant obstacle to getting investors to loosen their purse strings. This was a significant issue in the Finnish context the satisfactory resolution of which

increased trust in the investment community and thus increased the country's potential in both economic and legal terms.

After several quiet years in the mining sector the rise in metal prices in the decade from 2000 onwards certainly surprised many. Suddenly we had several advanced mining projects in Northern Finland and Northern Sweden ongoing. Throughout the period however this remained highly challenging particularly in terms of how to get the necessary number of skilled people to every project. The lack of a professionally trained workforce remains a persistent problem for all companies in this sector.

It was in the 1990s when *Outokumpu*, the largest mining company in Finland, started to release hints that it was going to discontinue its mining business. This triggered, perhaps not surprisingly, a discussion focussing on the need for further education.

It is quite common for Finns given the relatively short time they have spent dealing with industry and the business world, that they cannot necessarily see the wood for the trees. It is undoubtedly the case here that a retrospective view is lacking, something which generally encourages recourse to institutional 'quick fixes'. In Canada there is a saying "old mines never die, they just rest awhile". This is a good example of their more profound understanding of the mining business.

We are now bearing the bitter fruits of the short-sighted decisions taken in the 1990s as regards education in respect of the mining and mineral processing sectors. We are however lucky to have forward looking and independent-minded universities (such as those in Oulu and Luleå), which have launched new courses in mining in order to address the shortage of engineers in these areas.

EU is a global player

The EU is a major global player in the drive to upgrade the industrial sector which produces a remarkable proportion of the high tech metal products used across the world. This vast industrial sector is however based, primarily, on imported raw materials. Only a small percentage of the total amount of raw materials consumed come from domestic production sources. Figures for iron imports for example give a good idea of the situation here. This near total dependence on imported raw materials has raised questions and highlighted significant concerns in the EU Commission. As a result of this awakening the Commission has stated - in SEC (2008)2741 - as follows:

"Securing reliable and undisturbed access to raw materials is increasingly becoming an important factor for the EU's competitiveness and, hence, crucial to the success of the Lisbon Partnership for growth and jobs. The critical dependence of the EU on certain raw materials underlines that a shift towards a more resource-efficient economy and sustainable development is becoming even more pressing. It is therefore appropriate to develop a more coherent EU policy response as suggested by the Council in May 2007."

Natura 2000 is a challenge

What, however, can the EU really do here? The fact is that there are no easy solutions to the problem. It is likely that the EU will have to try to enter into long term contracts with ferrous and non-ferrous raw material suppliers while at the same time planning to increase domestic production or at least clearing the way, in terms of legal issues, for the full rehabilitation of the European mining industry in the long run. This may however have a significant impact on the way in which legal issues in respect of nature conservation, for example, are dealt with. The Commission should thus make it clear that the *Natura 2000* conservation programme is simply a guideline, the administration of which could be assumed by local authorities, i.e. provincial governments as part of the environmental permission procedure.

Highly prospective mineral regions. Map provided by Risto Pietilä

Increase EU-supplies

What then are the chances of the EU being able to increase its own raw material supply? This, at root, is a basic question of geology. The EU actually has rather few countries with world-class ore deposits (ferrous or nonferrous). Bearing this in mind the historical rule of thumb here is that the most probable location for new discoveries is in areas where known ore bodies or old mines are already situated. As such, this does not auger well for the success of a policy calling for the breaking of EU dependence on the import of raw materials.

What else is needed here?

- Focus on the EU's mineral policy.
- Mining elevated to one of the core industrial sectors in the EU.
- Building of the infrastructure essential for the development of mining regions
- Impact assessment of the EU's raw material supply in the long run
- Positive impact on local tourism and public services etc.
- Development and application of cutting-edge exploration and mining technologies
- Mutual benefit creation for mining and tourism and the municipalities.

It is often the case that people today do not realise that the welfare of today is based on the past extraction of raw materials through hard labour. Though, currently with the benefits brought about by modern technology the end result is achieved a lot more easily and in a sustainable manner with less stress placed on the environment.

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Ariel photograph of Kirua, the largest iron-mine in Europe. By 1990 one billion tons of iron-ore had been produced. Note the heaps of slag. Photo provided by LKAB.

Number of mines in Sweden could double

Sweden currently has fifteen working mines though another eighteen are planned and are currently in the process of gaining the necessary planning permission. In the interim of course some small mines will undoubtedly close while some companies will perhaps want to wait a few years before starting up. Nevertheless the bottom line is that Sweden is currently undergoing a highly expansionary phase with regard to mining, says Jan-Olof Hedström. He is the head of the Mining Inspectorate of Sweden, carrying the title of the Chief Mine Inspector (*Bergmästare*).

The Mining Inspectorate of Sweden (*Bergsstaten*) is the official body responsible for issuing prospecting permits, i.e. in relation to the exploration for minerals. It also issues exploitation concessions, i.e. permits to operate mines. Thirdly the Inspectorate carries out inspections and provides information.

The head-office is in Luleå, in northern Sweden and thus is situated close to the large iron and sulphide mines of northern Sweden. A subsidiary office is located in Falun in central Sweden, the other major mining district of the country. Of the possible eighteen new mines some will be in the northern part of the country. The majority will however be located in central Sweden.

- What then is behind this expansion of mining in Sweden?

- One reason for this is that we have seen a significant global increase in the level of demand for minerals and this has been reflected in a relative increase in price levels on the metal-market. Secondly, the liberalisation of prospecting, which Sweden introduced in 1992-93, has also had an impact here.

- A major issue in respect of any debate on mining is the environment?

- We have said that landscape changes will be restricted as far as possible and in addition require that some fifteen years after a mine has closed that woods should be growing over the site once again. Usually however the most challenging issue concerns how to avoid toxic discharges. For example arsenic is one of the most widely used substances in the process of extracting gold or copper and should obviously not end up being discharged into the natural environment.

- Sweden has very strict regulations with regard to the environment. In this context it could be argued – rather than cause environmental damage in desperately poor countries

Jan-Olof Hedström, the Swedish Bergmästre outside his head-quarters in Luleå. Photo: Odd Iglebaek

abroad – that we have a moral obligation to extract minerals at home. In fact Europe produces only around four percent of the total world production of metals and minerals while it consumes some 20-25 percent.

- As far as the location of mines is concerned there are a number of important issues relating to transport and the proviso that existing communities should not be disturbed. A third challenge here relates to the question of reindeer-herding. The areas attractive to prospectors looking to open new mines in the northern parts of Norway, Finland and Sweden are generally the same as those used for reindeer grazing.

The Chief Mine Inspector explains that the ownership of land in potential mining-areas is mixed. On average around half of such land is owned by the Swedish state, a quarter by large companies and the final quarter by smaller owners.

The mine-companies generally lease the ground they need and pay 0.15 percent of the annual gross income. In other words the rent varies with prices on the mineral market. A few examples also exist of mining-companies actually buying land for exploitation. In cases like this the price is usually the value of any woods on the site plus 0.15 percent of the expected profits.

- Usually no major discussion takes place over what should be paid for access to the land and the ore deposits it contains, particularly as such costs are small compared to what must be invested in machinery and transport, explains Jan-Olof Hedström.

Together with Sweden, Poland, Spain and Russia are the largest mining-countries in Europe. Sweden is without doubt the largest in the iron field and number two or three as regards lead, copper, silver, gold and zinc.

- The Second World War demonstrated the strategic importance of metals such as iron ore as exemplified by the mines of Kiruna. Germany was very eager to secure for herself these mineral resources?

- True and Sweden had to play a difficult hand in order to stay out of the war. Today, however I think the challenges are rather more that the major so-called third world mineral producers will likely reduce their exports to the rich countries in future. They will increasingly want to keep more of these resources for their own development.

- In terms of oil and gas much is often made of the amount remaining to be discovered. Many argue that as much as a quarter of these resources are to be found in the Arctic. Can such an argument be applied to minerals?

- I guess that I am too serious to adhere to such speculation. However, let me say that the kind of rock formations we have here in the northern Baltic-Scandinavian area can also be found in parts of Northern and Southern America as well as in Australia. This means that all these areas show a major potential for future mineral extraction.

Hedström underlines that, for Sweden, mining has also given them the possibility to develop industrial concerns relating to explosives, equipment, transport etc., like Nobel, *Atlas Copco*, *Sandviken* and others. - The fact that these companies have had the ability to test their products on nearby sites has been of the utmost importance, he adds

By Odd Iglebaek

The birth of a new iron-mine, here we see the test-tunnel at Stora Sahavaara near Pajala. Photo: Odd Iglebaek

Active mines and major new projects in the Fennoscandian Shield

FINLAND

1	Hannukainen	p
2	Hitura	a
3	Jokisivu	a
4	Kemi	a
5	Kevitsa	p
6	Kutemajärvi	a
7	Kylylahti	p
8	Laivakangas	p
9	Länttä	p
10	Pahtavaara	a
11	Pampalo	p
12	Pyhäsalmi	a
13	Sokli	p
14	Suurikuusikko	a
15	Särkiniemi	a
16	Talvivaara	a

NORWAY

17	Bjørnevatn	p
18	Tellnes	a
19	Ørtfjell	a

KOLA PENINSULA

20	Karnasurt	a
21	Kirovogorskoe	a
22	Koashvinskoe	a
23	Komsomol'skoe	a
24	Kootsel'vaara-Kammikivi	a
25	Korpanga	a
26	Kostomuksha	a
27	Kovdor	a
28	Olenegorskoe	a
29	Professor Bauman	a
30	Rasvumchorr	a
31	Souker	p
32	Tsaga	p
33	Tundrovskoe	a
34	Uleeta	p
35	Umbozero	a
36	XV Oktyabr'skoi Revolyutsii	a
37	Yuksporskoe	a
38	Zapolyarnoe	a
39	Zhdanovskoe	a

SWEDEN

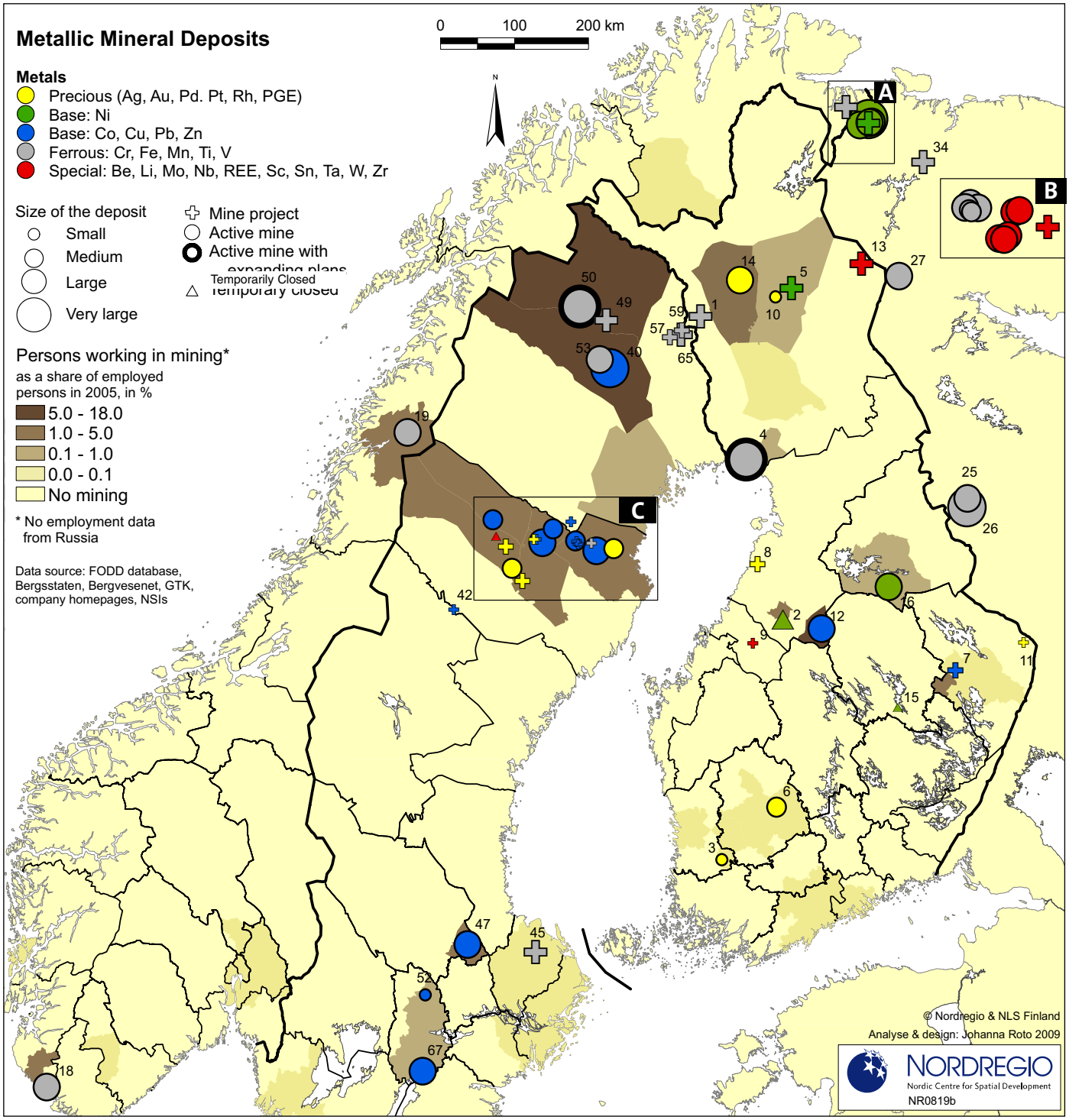
40	Aitik	a
41	Barsele	p
42	Granberget	p
43	Björkdal	a
44	Blaiken	a
45	Dannemora gruvor	p
46	Fäboliden	p
47	Garpenbergsfältet	a
48	Vindelgransele	p
49	Gruvberget Fe	p
50	Kirunavaara	a
51	Kristineberg	a
52	Lovisagruvan	a
53	Malmberget	a
54	Maurliden Västra	a
55	Maurliden Östra	p
56	Norrliden Norra	p
57	Pellivuoma	p
58	Renström	a
59	Sahavaara Stora	p
60	Storliden	a
61	Stortjärnhobben	p
62	Svartliden	a
63	Svartliden - Eva	p
64	Svärtträsk	p
65	Tapuli	p
66	Vargbäcken	p
67	Zinkgruvan	a
68	Älgträsk	p

(a = active mine - p = project)

Northern Sparesly Populated Areas - Number of non-public jobs per country

Type of jobs	Finland	Norway	Sweden	Grand Total
Agriculture, Forestry, Fishing	47787	19129	11408	78324
Mining and quarrying	2746	3003	4680	10429
Food manufacturing	6960	8203	4276	19439
Textile manufacturing	3651	608	548	4807
Wood manufacturing	12159	1956	6665	20780
Pulp and paper products	9803	731	5743	16277
Chemical industry	7828	1642	4131	13601
Steel and metal industry	18611	3473	9564	31648
Manufacture of machinery	10155	1620	8790	20565
Manufacture of transport equipment	2533	2763	5247	10543
Other manufacturing	18458	5473	12514	36445
Supply of electricity, gas, and water	3411	3827	5192	12430
Construction	39583	23702	28217	91502
Trade	56801	40143	39651	136595
Hotel and restaurant	16113	10091	10496	36700
Transport and communication	31904	21721	24772	78397
Other services	41605	23675	6572	71852

Sources: National Statistics



Situation as of September 2009

LKAB-headquarters in Kiruna to the left and a train with iron-pellets to the right. Photo: Odd Iglebaek

The Pajala-mines – A second Kiruna?

The existence of iron-ore in Pajala has been known about since 1918. The rights to extract it were previously owned by LKAB, the Swedish state company. Now they have been taken over by the private company, *Northland Resources*, which is registered in Canada. The largest shareholders are however Norwegian. The spokesperson for *Northland Resources* is Jonas Lundström.

- We have done a series of tests and are currently now in the detailed planning phase. We want to start production in three places to begin with, Tapuli, Stora Sahavaara and Pellivuoma all of which are close to Pajala. The total estimated amount of iron-ore at the three sites is close to 200 million tons, he explains. In order to maintain confidence on the stock-market *Northland* publicly however only talks about confirmed findings.

Construction work in Tapuli can commence next year, at Stora Sahavaara in 2012 and at Pellivuoma in 2013. The distance between the three areas is only a few kilometres and the ore from all three plants will be brought to a central mill facility to be built close-by at Kaunisvaara. The mill will be 136 metres long, 86 metres wide and 43 metres high, in other words it will be a large construction.

Current production-plans for mining in Pajala have a twenty year horizon and work on the assumption of extracting 100 million tons, which is viewed as a minimum figure. At Kiruna, iron-ore production has been going on for close to 120 years and by 1990 production figures had reached 1 billion tons.

In terms of phase one in Pajala *Northland* calculate that they have invested 617 million US$ in the project with a pay-back time of 5.8 years.

The prospecting arm of *Northland Resources* has also identified an additional 100 million tons of iron-ore 20 km to the northeast in Hannukainen, on the Finnish side of the border. However many knowledgeable commentators suggest that the total level of resources in this field, often called the Pajala-shield, could reach volumes equivalent to that which has already been produced in Kiruna.

The end-product from the LKAB-mines in Kiruna is iron-pellets. *Northland Resources* plans to stop one step before this, with what is called concentrate (powder). The product will be sold on the world market and letters of intention have been signed between *Northland* and the potential buyers of the concentrate the *Gulf Industrial Investment Company* (GIIC) in Bahrain.

The importance of transport

The current market price for metal and the operational techniques for its recovery from the ground are, generally speaking, the decisive factors in respect of mining. For iron however the volumes to be transported are huge and thus transportation costs are also of the utmost importance to the profitability of any project.

This is an old lesson. Iron-ore from the mines in Kiruna was first transported to the Gulf of Bothnia at the end of the nineteenth century, but only in 1903, thirteen years after the opening of the mine, was a new railway line built to the ice-free harbour of Narvik. Since then Narvik has been the main loading-site for the LKAB-company. The company's headquarters and a second harbour are however to be found at Lulelå in the Gulf of Bothnia. Here, however, the water freezes during winter.

The importance of ice-free harbours has diminished with the development of major new ice-breakers. For Sweden the main base for such vessels is Luleå. New ways of constructing ships, such as with double hulls, have also rendered the ice less of a danger.

In the short term however the only possible transport-route from Pajala is to connect to the Finnish Kolari-Kemi railway line. The Finnish railway authorities are prepared to improve facilities here in order to handle the weight of iron-concentrate. This is also the case for the port of Kemi, where loading will take place.

– But before production can begin in Pajala 17 km of railway line has to be built to connect the new facility with the line on the Finnish side of the border. This must be ready by 2013 and is calculated to cost 800 million SEK. I am, however, confident that the Swedish government will take the responsibility and solve this issue in due course, underlines Bengt Niska, who is the Commissioner of Pajala.

Future transport-routes

Many things are uncertain about the future of the Pajala iron-mines. However if the volumes of production grow substantially it will most likely only be a question of time before the capacity of Kolari-Kemi has to be expanded, particularly in respect of harbour handling capacities.

The Swedish town of Kalix hopes to gain from this. Robert Forsberg, Mayor of the municipality explains: - We are also

prepared to build a new deep-water harbour. However, to make this feasible we need an improvement to be made on the new Bothnia-railway from Kalix to the border town of Haparanda. This must get a double set of rails so trains from Finland can also use the port.

It is up to the Swedish government and *Northland Resources* to negotiate this. – At present we are in a wait-and-see situation, depending on how everything develops, comments the spokesperson for *Northland Resources* Jonas Lundström.

In the debate over the Pajala-mine proposal, at least when viewed from the longer term perspective, the issue of transport via Kiruna and to the Norwegian harbour of Narvik will play an increasingly central role. To connect Pajala with Kiruna necessitates the building of some 140 km of new railway-track, at a cost of several billion SEK.

- At present there is however no capacity for additional transport from Kiruna to Narvik. We are fully utilising the possibilities for our own needs and have also started to consider double tracking the route, notes, Lars-Eric Aaaro, Acting President and CEO of LKAB.

The fourth option debated is an entirely new railway line connecting Kolari in Finland with Skibotn in Troms in Northern Norway. The length of this line would be 312 km and the cost could easily reach 24 billion NOK. However harbour facilities would be excellent and there would not be competition with LKAB.

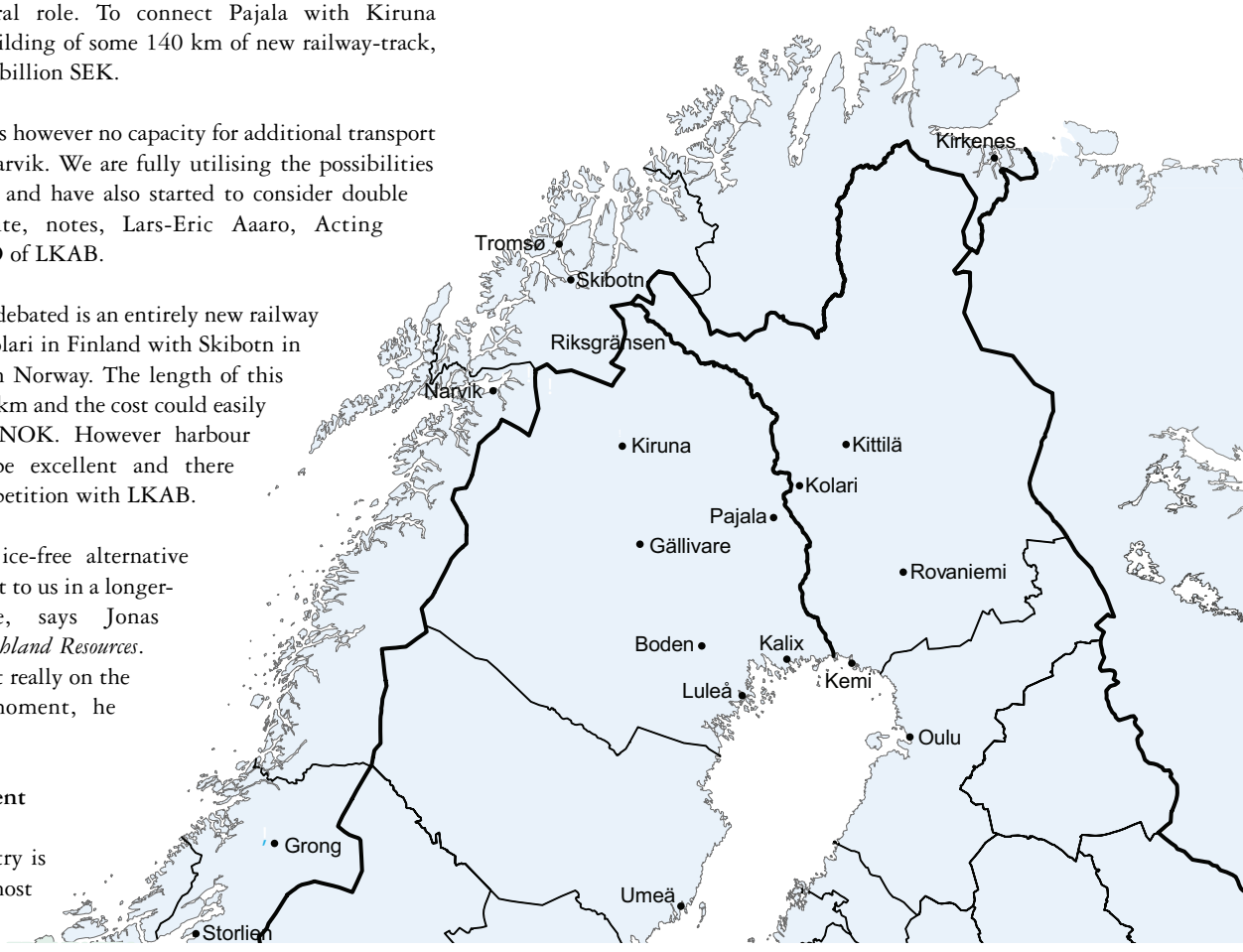
- Of course any ice-free alternative would be of interest to us in a longer-term perspective, says Jonas Lundström of *Northland Resources*. – However it is not really on the agenda at the moment, he adds.

Future employment prospects

The mining-industry is currently in an almost constant state of technological turmoil implying that the number of workers necessary is likely to diminish significantly. Indeed, the industry is in many ways similar to the timber- related industries in this respect. For example LKAB had at its peak in 1961 a staff of more than 8300. Today their employees in Sweden number just above 3100.

- For *Northland Resources* we estimate that the total numbers of jobs will be somewhat less than 1000 by 2014-2015, notes Jonas Lundström.

By Odd Iglebaek



Tourism is gold in Kittilä

- Today we have around 22 000 tourist-beds in Kittilä. We have approximately 2000 cottages and by calculating six beds to each cottage we get to the figure of 12 000 beds. The remaining 10 000 beds are located in the various hotels, hostels, and guest houses in the municipality.

The municipality of Kittilä is in the Lappish part of Finland. The landscape here is relatively flat, covered with forests, and is approximately 200 metres above sea-level. To the north mountains gradually rise above the plains. One of these is the Levi, which rises above the small village of Sirkka where the mountain stretches like a huge sugar-top some 330 metres above the village. The slopes provide excellent conditions for ski-lifts, slalom and downhill racing. In the woods it is cross-country that is popular – either by ski or snow-scooters – and all is provided by nature free of charge!

- This all started some thirty years ago when there were only some 200 tourist-beds here. But some saw the potential and managed to raise capital, partly local but mostly from Helsinki and other parts of Finland. The growth of the resort has been quite formidable and we are now, definitively, the largest ski-resort in Finland.

It is Seppo Maula, Kittilä's Municipal Manager, who presents the figures. The Municipal Manager's job is a full-time one – a combination of mayor and director - although he is politically elected. Mr. Maula took up the position 16 years ago. He represents the Centre (farmers) party, like the majority of municipal-heads in northern Finland.

- Without doubt tourism is our most important industry enabling us to survive as a community. Out of our yearly tax-incomes of 20 million euros we receive two-thirds from tourism, he says and continues: - We hope also to expand further particularly in the seasonal-homes and hotel sectors. The goal is to reach 35 000 beds by 2020.

Kittilä municipality has just over 6000 inhabitants and is continuing to grow, albeit only a little. – I guess that without tourism we would only have had some 4000 people living here, says Seppo Maula. The area is 8600 km^2 meaning that, in geographical terms, Kittilä is the third largest municipality in Finland.

Full-time jobs related to tourism number around 1000 and without doubt tourism is the most important sector for employment. In the high season up to 1 700 people work in this field. Unemployment is around 10 percent, which is not particularly high for this part of Finland. In other communities with similar locations it is often double that.

Just across the other side of Kittilä's eastern border, in the municipality of Kolari, there is another sugar-top-mountain, the Ylläs. The story here is similar to that of Levi with Ylläs also passing the 20 000 beds mark.

- The airport at Kittilä serves both resorts with overall traffic increasing by 20 percent yearly and by 30 percent for flights from abroad, mostly from Great Britain, Russia, France and the Netherlands, explains Seppo Maula: - Our strategy is first to get people to come perhaps for one-day to see Santa and thereafter to get them to return for skiing and to stay for a whole week or more.

At this time of the year, mid-August, we are in low-season for tourism. Only a few golfers and some berry-pickers are to be found here. Close to the top of Levi there is however hectic activity connected with the building of a new hotel. A handful of reindeer sweep by checking progress at the building site. The air is clear and some 20 km to the east it is possible to see the steam from the processing-plant at the new gold-mine which has just opened at Kiistila.

- Of course we are very happy about the mine. It creates another 400 full time year-round jobs, underlines the mayor.

- You also have uranium in Kittliä. Other parts of Finland have experienced very difficult debates within the local communities ripe for the extraction of this nuclear substance?

- We are very lucky in this respect however as we can easily say no, since we are already so relatively well-off for jobs. Indeed we are now among the top-ten municipalities in Finland with the brightest economic futures, smiles Seppo Maulo

By Odd Iglebaek

Checking progress at the new hotel site in Levi. Photo: Odd Iglebaek

Seppo Maula, Municipal Manager of Kittilä. Photo: Odd Iglebaek

The NSPA are looking ahead

The Northern Sparsely Populated Areas (NSPA) are looking ahead. Nordregio has recently finalised a Foresight Study for the Northern Peripheral Sparsely Populated Areas (NSPA) of Finland, Norway and Sweden. This study, initiated by the Brussels representation offices of the concerned regions, is part of their continued effort to profile this part of Europe. It focuses on the NSPA's unique opportunities for economic development and growth, as a counterweight to previous problem-oriented approaches. Over 50 civil servants, politicians and academics from the regions have participated in workshops where they have identified their shared ambition for the NSPA in 2020. This time-horizon was chosen to fit the next European Union Structural Funds programming period (2014-2020).

The stakeholders were asked to determine what they would like to have achieved by 2020 and to identify the most efficient public policy levers to promote these objectives. This had a twofold purpose: Externally, the NSPA regions of North Finland, East Finland, North Norway, Mid Sweden and North Sweden need to define a common position to increase their ability to influence European Union decision-making processes. Internally, the foresight study will hopefully help to increase the awareness of belonging to an area with common features from a European point of view.

The perspective of economic growth based on current development opportunities occupies an obvious and important place in the foresight study. Mining activities in Sweden and Finland could potentially produce thousands of new jobs; growth perspectives in the North Norwegian fish farming sector are also important; throughout the NSPA, there is evidence that winter and summer tourism could be increased enormously with the help of integrated local product development. Based on these possibilities and on the economic performance levels of the last ten years, public policies in the NSPA cannot be justified on the basis of supporting lagging or weak economies.

The concern is however to ensure that the income generated by these activities should help to ensure a socially and ecologically sustainable future for the NSPA. In spite of the development possibilities the majority of NSPA municipalities experience continuous population decline. Up to 2007, many NSPA entrepreneurs mentioned recruitment difficulties as the single most important limiting factor of growth in their company. Many parts of the NSPA are therefore insufficiently attractive for reasons that are independent of their economic performance.

The under-representation of women in most of these areas can be considered as both a symptom of and a causal factor in these imbalances. Similarly, in-migrants from outside the Nordic countries are significantly fewer in rural NSPA municipalities than in comparable areas in the rest of Norway, Sweden and Finland. Many NSPA localities therefore still need to demonstrate that they can offer a social environment allowing for a contemporary modern lifestyle and the personal and professional fulfilment of all their inhabitants. They have obvious assets in this respect, in terms of secure and cohesive communities and high quality natural environments. But there are also some critical weaknesses, especially in terms of access to services and the perception of certain localities.

In this respect, the development of more knowledge-intensive activities throughout the NSPA is then more than just a tool to increase the added value and robustness of local economies. It is also a strategic measure to modify the perception of local communities, which would be able to pride themselves on being at the forefront of technological development within specific industrial niches. Numerous examples of good practice in the NSPA demonstrate the efficiency of such strategies. The objective for the NSPA then is to demonstrate the advantages of small-scale research and development activities developed in close cooperation with local industries. This implies a positioning in respect of Research and Development policies favouring major centres of excellence. A recurring idea here is to establish a fund based on income from raw material extraction in the NSPA to finance local R&D initiatives.

The increased geographical spread of R&D functions and knowledge intensive activities however does not imply that higher education should follow a similar pattern. There is a general consensus that higher education institutions need to be of a certain size to function efficiently. Combined with the objective of raising the education levels of the population, this implies that youth will increasingly need to leave their place of birth in the NSPA at least for the period of their studies. Permanent policies to encourage return migration and the in-migration of young graduates of other origins are therefore required.

In terms of access to services, the success of the Tornio-Haparanda shopping precinct, whose development was triggered by the opening of an IKEA store, shows that the NSPA is different from other parts of Europe. The mobility patterns of a population prepared to travel hundreds of kilometres to access such services allow for alternative regional development models. A restricted number of strategically positioned centres, potentially distinct from the major cities, could function as purveyors of commercial services to the entire NSPA. This would significantly change the development perspectives of individual towns and settlements.

Such wide-ranging mobility, together with long daily commuting distances however means that the NSPA is heavily dependent on fossil energy. As such then this type of investment cannot be envisaged throughout the NSPA. Furthermore, the contemporary and modern lifestyle upon which NSPA stakeholders are building their development vision requires access to air transport. The higher ecological footprint per inhabitant in NSPA regions compared to more densely populated areas however needs to be weighed against the renewable sources of energy, mineral and other natural resources that would be made unavailable if the NSPA were to be depopulated.

The very extent of these resources however makes it possible to envisage infrastructure developments that would otherwise be unimaginable. The Bothnia railway project exemplifies this. While the transportation needs of exporting industries justify this major investment, it will also allow efficient and sustainable connections along the Swedish coast from Sundsvall to Umeå. Similar types of 'win-win' situations could be identified in other regions, for example along strategic East-West oriented transportation axes connecting the NSPA to North-West Russia. Along the Norwegian coast, maritime corridors could play a similar role. The

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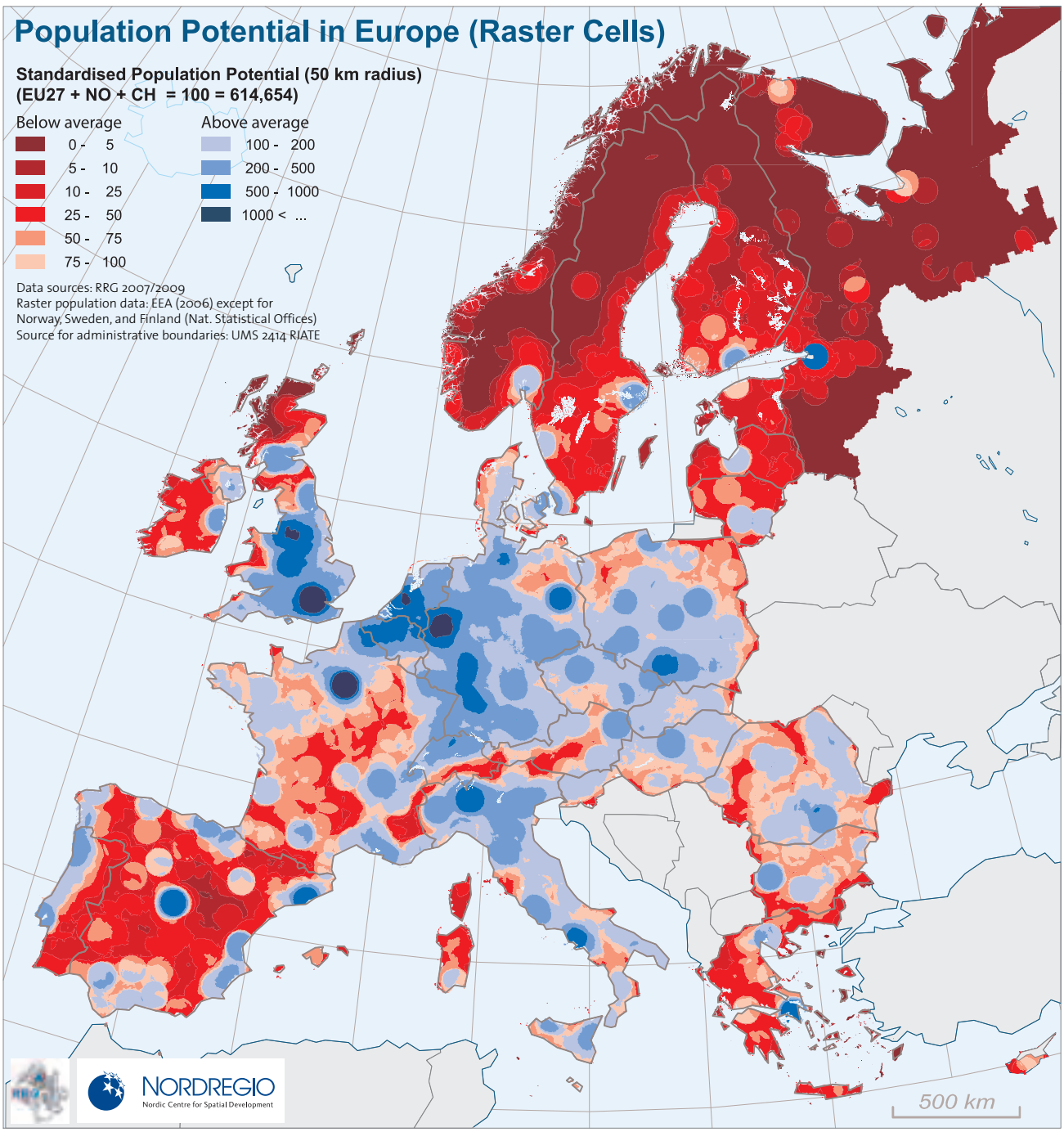


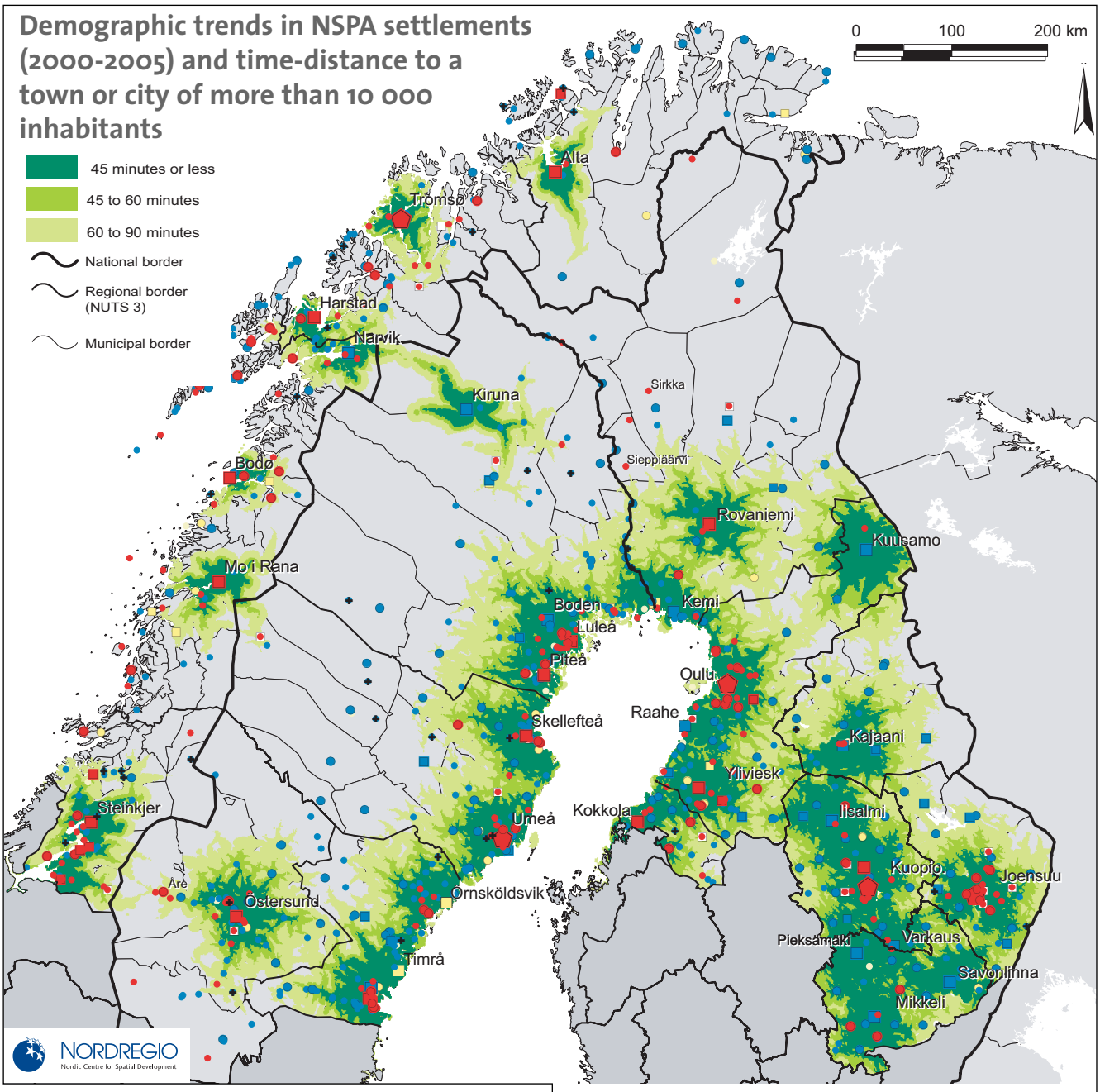
Low population densities are generally seen as the defining feature of sparsely populated areas. Such an understanding of sparsity is however problematic because population density is determined as much by regional borders as by settlement patterns. Typically, the coastal regions of southern Norway will be above or below European population density thresholds of "sparsity" as a result of the extent of their attached mountainous hinterland areas.

Whether a significant proportion of the population lives is small and isolated towns or not becomes irrelevant. Furthermore, the areas described as "sparse" will vary enormously depending on the scale of observation. Looking at municipalities, there are sparse areas in most parts of Europe, at the "NUTS 2"level, (the regional scale), they can only be found in its northernmost parts.

There are however alternatives to population density. In order to reflect the population to be found within a generally accepted maximum daily commuting distance, one can calculate the number of people that can be reached within a 50 km radius from each point of the European territory. This type of measure, referred to as "population potential", expresses the main challenge of sparsity, namely that local communities are too small and too isolated to create diversified and robust labour market areas and to allow for cost-efficient service provision.

They can be used for a regional assessment of sparsity by estimating the number of inhabitants or the area that is characterised by low populations within each region. As such, the impact of the way in which regional borders are drawn has a reduced impact using this approach.

The featured map of regional population densities in Europe and in North West Russia was created by Erik Gløersen (Nordregio) in cooperation with Carsten Schürmann (RRG). The Russian data was collected by Dmitry Zimin (University of Joensuu) and geopositioned by Nikolay Komedchikov (Institute of Geography, Russian Academy of Sciences)

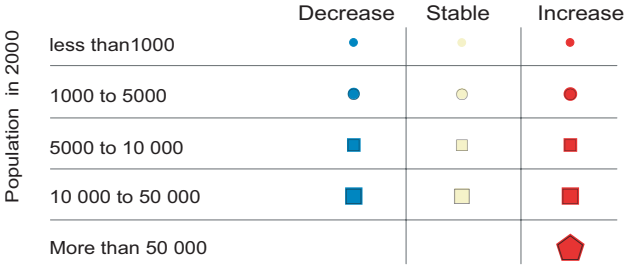


NSPA regions need to develop a long-term settlement strategy based on these possibilities particularly in respect of improvements in their transportation infrastructure.

The foresight study has also shown that NSPA regions generally do not want to be viewed as peripheries. They can boast numerous sectors of activity in which they are at the forefront of innovation, including information and communications technology, biotechnology and forestry. They would prefer to profile themselves as an interface to Russia and to the Arctic rather than as an area far from the "European core". And they look upon extractive activities and processing industries as sources of income and expertise that should be mobilised to build a new knowledge-based economy.

This requires that the public authorities play a more pro-active role in channelling regional energies and in ensuring that private initiatives contribute to the overall ambition of creating a sustainable future for the NSPA. The NSPA stakeholders would also like to involve the European Union more as a strategic partner in this ongoing process.

Population of settlemnts in 2000 and demographic trend 2000-2005



New settlements (□) and abandoned settlements (✚) between 2000 and 2005.

By Erik Gloersen
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The banks of the beautiful Torneälven where the municipality of Pajala now offers building-sites for sale. Photo: Odd Iglebaek

Pajala goes for iron and beauty

Five metres below the road bridge is one of the largest rivers in the region, the Torneälven, which runs wide and shallow. It has a sandy and stony bottom, easily seen through the clear water. A middle-aged woman is crossing on her bicycle. An elderly man sits in a small boat, fishing. He drifts under the shadows of the decking - hidden to onlookers - but probably in an excellent position to catch the plentiful trout to be found here. The sun is high and warm and the water ripples and glistens. It is exultantly quiet and the air is just exquisite.

It is late in the afternoon of the 18th of August 2009. Many people, at least those with local roots would probably consider this place, i.e. the village of Pajala and its surroundings, to be one of most beautiful places in Northern Scandinavia. One particular distinguishing feature is that many of the houses in the village are of the traditional type – constructed of timber and painted in *falu-röd* (deep red) with white window-frames. The spire of the Lutheran Pajala-church is easily seen from the bridge. This is also a wooden construction, originally more than two hundred years old and subsequently adorned with rich neo-classical ornaments and painted a warm yellow. And contrasting all this are the river-banks at this time of the day an intense green with straws and grasses and forests of pine or deciduous trees. In the distance brown-and-white grazing cows can be glimpsed. Yes, harmony reigns, at least on the surface.

Bengt Niska is the Commissioner of the Pajala. He is an elected politician and represents, like most municipal heads in North-Sweden, the Social Democratic Party. Overall, he exudes the impression of friendliness and seems like a guy who likes a joke, but then he says rather seriously:

- In 1956 we had 16 000 inhabitants. By 1969 it was down to 10 000 while today we are more or less stable at just a little more than 6000. We are also a poor municipality and almost everything must be spent on operational costs. There is unfortunately hardly anything left for investment.

According to the figures in the budget the municipality has an annual turnover of 400 million SEK. Incomes are generated by 225 million in personal taxes, 37 million in interest and property taxes while 150 million is received in transfers from the state.

Green gold

Like many other municipalities in the relatively sparsely populated northern parts of Nordic countries, particularly in Sweden and Finland but also in some parts of Eastern Norway, it is the forest areas that have first and foremost generated jobs and incomes for generations: Firstly to cut the timber, secondly to split, plane and dry it in the sawmills and thirdly, and more recently, further treatments in factories to make boards, laminates and various other types of products including pellets and briquettes.

In this perspective Pajala is in many ways quite typical: - It is always the timber and forests which have been the basis of our existence. The total area of the municipality is 8000 km^2 of which 4500 km^2 is woodland. It is not without reason then that we call it 'green gold'. We reckon that the export value of what we take out of the woods in the municipality is around one billion SEK annually, says Jan-Erik Blomqvist. He is the managing director of *Pajala Utveckling AB* a municipally-owned development company.

Jobs disappear

- In terms of jobs, however, life is not what it used to be. One machine today does the work of thirty men some fifty years ago. Forests nevertheless remain very important for employment. We have two large and very modern sawmills here. They provide 60-70 jobs. We also have a new pellet-factory, creating opportunities for another ten people.

Pajala also has an electronics factory *Mikromakarna* which provides work for 40 people. Culture and tourism are also growing in importance partly due to the success of the writer Michael Nemi. His book "*Populärmusik från Vitula*" – later also made into a film - is set in Vitula, a distinct part of Pajala consisting of smaller villas built in the 1960s. The number of jobs related to tourism is 70. In total approximately 530 persons are employed in the private sector and 1 300 in the public domain 900 of whom work part-time.

Airport wants traffic

The airport in Pajala has a 2300 metre long runway. Except for two daily flights to Luleå there is however not much traffic. Airport supporters are busy however collecting signatures in order to try to attract charter-flights. – The point is that we are only 45 minutes away from the ski-centre at Ylläs and 90 minutes from Levi, explain the two Pajala-community representatives.

The total cost of the airport, opened in 1999 and further extended in 2007, amounts to around 100 million SEK with 80 million SEK being provided by national, regional and EU (Interreg) funding. The cost to the municipality has thus been 20 million SEK. – We must admit that some of our inhabitants think this has been too much for a small community like ours, and that we should have spent the money differently, note both Niska and Blomqvist.

One should also add that Ylläs and Levi are just across the border in Finland, the latter being part of the municipality of Kittilä, which already has its own international airport with charter-flights. – Thus the question arises, is there really a need for two large airports so close to each other?

Iron is the future

- Well, Kittilä sometimes needs some extra capacity, says director Blomqvist while Commissioner Niska adds: - It still is a good investment for the future. Just think of all the air-traffic we will have when the iron-mines open. It is only some 25km up the road, and will create hundreds of new jobs. I would say that if everything goes well we can reach 16 000 inhabitants once again – perhaps in a couple of generations. We can become the second Kiruna of Sweden! Now he is all smiles.

In other words, Pajala-community is planning to double, perhaps even treble, its population within a few decades: - This will however represent quiet a challenge to attract so many people and experienced mine-workers in particular who are already most likely in high demand elsewhere across the many other mining communities in these parts.

- Fair enough, but we do not see this as the main problem. We think that many people with their roots here would like to come back. Secondly, I think we can attract people who already live up here in the north to move to Pajala.

- In the new mine in Kittilä they have opted, in part, for a system of fly-in and fly-out, or drive-in and drive-out, one week on work and one week off with the workers living in barracks while at work. Is that an option for the new iron-mine in your community?

- No, we want people who come here to live here permanently, to bring their children here and eventually for them to retire here. One should also be aware that there are an increasing number of women working in the mining sector particularly in operations and production.

Later the head of *Pajala Utvecling* Jan-Erik Blomqvist takes us to see the site of the Stora Sahavaara, where the test-drilling has been done. It is another beautiful day with panoramic views over the large forests and with the mist covered mountains providing a distant backdrop. Here and there one catches a glimpse of a collection of houses. In fact around 4000 of the municipality's 6000 inhabitants do not live in the centre but in one of the many small communities dotted around the forest and mountainous areas, some as much 90 km from the centre.

– Do you think the Dutch would like it up here, asks Jan-Erik Blomqvist. – Here they would have plenty of room, in fact maybe too much. On the other hand I think they are culturally very similar to ourselves. So yes, we are definitely thinking of attracting people from the Netherlands to migrate to Pajala.

I answer that in Norway where I come from there have recently been a few Dutch immigrants to sparsely populated communities. But also that in all probability there have been more non-refugee immigrants, in particular women, to such communities from the Philippines or Thailand.

It is early morning on the 2nd of September 2009. The morning news on the national Swedish broadcast announces that Pajala wants a very liberal interpretation of the national planning regulations which forbid new construction in the 100 metre-zone by any shoreline. The reason for this is that the municipality wants to offer up attractive sites on the Torneälven riverbank for new houses for possible newcomers into the community. In other words, beauty is up for sale, even in a future iron-mining community!

By Odd Iglebaek

Jan-Erik Blomqvist (left) and Bengt Niska. Photo: Odd Iglebaek

Nordic regional policies shift to regions

Nordic regional policy is heading for a generational shift that is about to change its very character. Since its emergence in the 1960s the regional policy discourse has predominantly carried a state - and since the 1990s also an EU – level perspective. In recent years, however, the focus has shifted from the national to the regional level focussing in particular on the issues of regional responsibility, regional leadership and the individual region's political room for manoeuvre. The "one size fits all" solution to regional development dilemmas that has dominated the policy for more than four decades is thus now increasingly questioned.

The current shift in focus is undoubtedly a multi-faceted affair though at root it is driven by economic forces. Economic globalisation and the current financial crisis will create new competitive patterns which will, ultimately, make the individual region an ever more important politico-economic entity. But what then are the necessary preconditions for a region to develop into a politically, administratively and economically successful entity?

This question has been raised in a recent Statistics and Research Åland/Nordregio study presented in the report *Mot den tredje generationens regionpolitik – Lärdomar från Nordens autonomier och perifera ö-regioner* ("Towards the third generation of regional policy – experiences from the Nordic autonomous and peripheral regions." English Summary included). The study was conducted on the basis of a comparative analysis of the three autonomous Nordic islands – Åland, The Faroes and Greenland – with the addition of one of the "regular" Nordic island regions – Bornholm. The results of these case studies were presented in four separate reports (Karlsson, 2007 a, b; 2008; van Well, 2008).

The aim was to explore the various emergent expressions of sub-national jurisdictional power and economic and innovative capacity in respect of these four island jurisdictions. The study is related to the so-called SNIJ (Sub-National Insular Jurisdiction) research by Baldacchino (2006); Baldacchino & Milne, (2000, 2008); Bertram & Poirine (2007). It is also relevant to the ongoing Nordic and European regional policy discourse - well known to the readers of Journal of Nordregio.

The project has resulted in a number of conclusions being made in respect of the effects of various degrees of political autonomy on economic and innovative capacity. One major lesson here is that regional responsibility requires not only formal room for manoeuvre, but also a distinct and competent regional leadership. Too many actors with shared (overlapping) regional policy responsibilities tend to reduce the inherent economic possibilities reflected in this political space which we term "room for manoeuvre".

This does not necessary mean that the regional institutions should be given sole responsibility for regional policy. What is important, though, is that policy responsibility - shared or sole – should be clearly distinguishable.

Another important finding is that the contextual economic characteristics and preconditions of the regions should have a profound bearing on the distribution of political responsibility and regional leadership. The policy instruments must be adapted to the economic capacity of the individual region. Regions with strong economic and innovative capacity need more sophisticated policy tools and a wider political room for manoeuvre than economically weaker regions.

Thus, one size *does not* fit all. This is not to say that the significant actors of stronger economic regions are *per se* more competent than those of weaker regions, but that a good match between economic capacity and political responsibility tends to foster further development.

A third lesson concerns the very characteristics of economically successful regions. The existence of a strong economic "core competency" that grants the individual region comparative and

The beauty of The Faroe Islands. Photo: Nicolai Bock/norden.org

competitive advantages in international markets, is a critical component of economic and innovative capacity. Such a core competency is a driver of innovation and a resourceful element of successful economic diversification.

It is based on an accumulated, regionally-diffused but to a certain extent 'tacit' knowledge. It is identity-related, socioeconomically prestigious and can only be fully understood in its specific regional setting. Without a strong core competency it is difficult, if not impossible, to fully utilise the inherent economic possibilities of increased political autonomy at the regional level.

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New paths to "forgotten places"

Occasionally a book arrives that, in one sweep, dramatically increases the available knowledge on a topic. The multi-authored book, *The Changing Governance of Renewable Resources in Northwest Russia,* edited by Soili Nystén-Haarala, is one such contribution. It represents the results of a research project funded by the Academy of Finland's programme, "Russia in Flux," 2004-2007.

The book is valuable because it represents both a depth of scholarship and an accumulation of experience that are difficult to over-estimate. While most of the authors are either from the region, or from neighbouring regions in northern Sweden and Finland, they have all worked in international contexts. Although students of its two main organizing concepts, *governance* and *path dependency,* will also find it interesting, the book's main strength is its foundation in the impressive range of empirical work carried out by the authors, *in situ* and with considerable inconvenience.

As anyone who has ever worked in Northwest Russia knows, even the smallest steps are hard-won, and this group of authors has certainly been persistent. The issues that slow research there are often the same as those faced in overcoming problems in respect of managing the natural resources of the region, and in that sense the book represents a genuine achievement.

The complex intertwining, overlapping and often contradictory layers and shells of bureaucracy, regimes, tacit knowledge and multi-cultural interactions present a considerable puzzle, whether trying, for example, to arrange interviews, or struggling to set up a venture in fishing, logging, or reindeer-herding.

The detailed analyses of how these renewable natural resource industries have changed in accordance with various legal, institutional and organisational constraints and opportunities provides a solid basis for understanding the challenges faced by any actor in the region. Even if the region seemed to have been forgotten by Moscow for some time, its resources are now increasingly controlled from there. Whether following the path, or path-breaking, beware.

Review of *The Changing Governance of Renewable Resources in Northwest Russia,* edited by Soili Nystén-Haarala. Ashgate Publishing, 2009. 265 pp.
Richard Langlais

Hammerfest with the LNG-plant behind. Photo: Odd Iglebaek

Mega-projects and regional reforms

The global oil and gas industry has broad experience of operating in outlying, sparsely populated areas or less developed regions. Therefore, when oil and gas-constructions are established in a region it is not necessary for the production companies to involve the region itself in the planning, building or in the continuing operation processes.

The question thus arises then to what degree do regional actors and institutions have the ability to contribute to regional economic impacts in the wake of the establishment of such huge constructions? The starting point here is the development of the Snøhvit gas field and LNG plant in Hammerfest in Finnmark County in Northern Norway. (See also the Journal of Nordregio No 3- 2008.) From 2002-2007 Norwegian-owned *StatoilHydro* made investments of 50 billion NOK or more in this plant. At the same time the region administered 600 million NOK, approximately the equivalent of 1.2 % of the industrial investments to support regional development.

The region's opportunities, expectations and pressures can be understood from several perspectives. In a Norwegian reform in 2002, large parts of the means and measures of regional policy were decentralized, or regionalized to the 19 Norwegian county municipalities. The intention here was to give the counties a stronger role as regional development actors.

From then on it was the regions that had the formal role in developing strategies and also the tools for developing the region in the wake of, for example, the implementation of mega-projects.

Contesting actors

Relationships between the various actors, both political and administrative in the regions, have however continued to evolve. While, according to the 2002 reform, the regional political level has responsibility for stimulating regional development this has been challenged by the new and vigorous regional strategies developed by state-owned actors not governed by the county municipalities. As such, several institutions now contest with the regional actors the role of "primary" regional developer. Examples of such actors include *The Norwegian State Housing Bank, Innovation Norway* and *The Industrial Development Corporation of Norway* (SIVA).

The region's mandate from the state is to support various development actors and to facilitate any given initiative from enterprises in the region. When a huge construction project such as the development of the Snøhvit field is established this role of facilitating enterprises does not however seem adequate enough. Actors in the region expect high level economic and strategic support when it comes to industrial networking and development which generally lie well beyond the county municipality's mandate or capacity.

Diminishing power

The political tools used to govern regional processes have also been reduced, while the power which previously lay with the regional political level has undoubtedly diminished. In the shadow of these processes significant discussions are now taking place between local and regional actors, though few concrete answers have emerged in respect of the handling of this issue as a "regional problem".

The regional level claims that more resources are needed to support regional capacity building than are currently available from the central level. In recent years, implementation of the reform has contributed to the creation of a new structural framework in which the regional level is still struggling to find its place. High expectations are placed on regional actors which they simply cannot meet.

The opportunities arising from globalisation and the expansion of certain industrial sectors have, of course, much to do with the region's own history, a history which has shaped both the region and its actors. In Finnmark this is represented by the traditional structural orientation towards fisheries and agriculture which contributed to the late arrival of industrial modernization.

Lack of training

These factors help explain why Finnmark lacks an industrial innovation culture and how the institutional systems in the regions are not oriented towards handling growth-processes. When a construction of 50 billion NOK is established the regional political level simply lacks the resources to contribute in significant ways, but this becomes even more obvious when the political level is not trained in the handling of these types of growth processes.

When Finnmark was planning how to address the construction of Snøhvit, several plans were outlined within a strategy to involve the region. Due to the regional administration's lack of training in handling such strategies however, this work was undertaken, in the main, by a single external consultant who had the experience and the networks. In addition, several rather unsuccessful initiatives were taken to deal with this issue at the regional level by people lacking in experience.

Petro Arctic

Politicians at various levels, and other enterprises attempted to established areas of communication where people met, discussed and developed strategies with a view to establishing regional momentum in respect of becoming a 'player' in the petroleum arena. This resulted in what today we know as *Petro Arctic*, which besides developing contact between local and regional enterprises and private companies, also contributes to the production of the information needed to handle this 'new economy' in Finnmark.

Moreover, *Petro Arctic* also conducted political work in trying to affect how policy is shaped in the North when it comes to petroleum. The constellations between different actors which lead to the building of new institutions are known from the literature as governance-based development. This means that decisions are formed in new ways, moving away from the traditional political orientation of government, and towards more network-based processes involving several actors at different levels.

It was in this way then that the Norwegian regional political-administrative level was altered and this is how it subsequently lost its premier regional position and role. Major decision making could thus now be seen to be taking place outside the county parliament.

In the wake of the Snøhvit project similar processes are now more or less observable in several sectors while their importance is also being magnified by the established regional institutions' lack of responsibility or skill when it comes to adapting to new challenges such as establishing the necessary higher educational institutions to drive the long term process forward. Formal responsibility for primary education is retained by the municipalities.

The county municipalities have responsibility for secondary and tertiary (e.g. state universities and colleges) education. But as a result of Snøhvit's establishment in Finnmark a serious need arose for higher educational institutions to be set up within the region because of the high level of demand created for technological and engineering competencies from both local and international enterprises.

Poker to avoid responsibilities

The result of a very long process was that institutions on various levels were playing poker to ensure that they alone did not have to take responsibility for the establishment of a new institution, subsequently entitled *Energy Campus Nord*. The new campus was formed by a national team of universities forced together by the county municipality. It seems clear then that the regional level ultimately took the responsibility to develop institutions which lie beyond their official mandate.

Their partnership with other political levels created new possibilities to decentralize supply when it came to higher education. It is however unlikely that such *ad hoc* policy making will be able to consistently meet regional expectations and needs in respect of global mega-projects with the necessary regional competence and knowledge.

Mega-projects in the oil- and gas sector constitute an important strategy concern in respect of the new Norwegian 'Northern Areas' policy priority. Handling mega-projects such as Snøhvit tests the ability of regionalization as a strategy in implementing the specific Northern-focused policy.

The results do not however specifically favour regional actors. The Finnmark 'experience' in this respect is that the partial, *ad hoc* or unfinished nature of the Norwegian decentralization reform process is clearly demonstrated when the regional partnership and the county municipality are forced to confront the rigours of managing a mega-project.

The regional actors' lack of funding opportunities, economic tools and training inevitably see the initiative relocated to state governed actors operating in the regions. The need to build up specific research and petro-related higher education in outlying places without established universities or regional colleges effectively unmasked the vacuum in the regional organisation of research and development policies. As such, the regions are, on the one hand, close to where the action is, but on the other, they are unable to meaningfully contribute to the expectations of the actors close to them.

The regional level can thus operate in normal situations but is simply superseded when novel situations arise. Thus, situations that should be seen as significant opportunities for the region instead contribute to the questioning of the very existence of the regional level.

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Globalised Economy in Värmland

One of the most basic elements in traditional economic geography is the understanding of economic activities' location as becoming increasingly footloose. A growing awareness of the importance of the local and regional levels has however emerged within the so-called 'new' economic geography approach. One major topic here is the importance of social networks. But where is the evidence?

In our Interreg III financed project on Inner Scandinavia we found arguments favouring a theory focusing on the importance of local and regional resources (Berger, Forsberg and Ørbeck, 2004 and Forsberg *et al*., 2006) though perhaps not in the way Porter (1990) and Krugman (1998) necessarily understand it. The evidence for this is of another kind, namely, it is best understood within a path-dependence perspective with physical connotations. This means that there are arguments for a more physical resource-oriented approach than was observable within the "new economic geography" models based on a number of simplifying assumptions.

A concentration of ownership

We will illustrate this further by looking more specifically at the province of Värmland in the Swedish part of the broader Inner Scandinavia region. The notion that company and industry-specific knowledge and skills should be utilised in regional growth programmes is a central idea in the discussions of regional innovation systems. This is also a central idea in the Regional Development Programme of Värmland.

The industrial background of the region is of importance here in order to better understand the strategy of the programme. During the high point of the paper and pulp industry in the 1950s and early 1960s, large parts of Värmland were divided in terms of ownership between two large forest fiefdoms, namely, *Uddeholm* and *Billerud*. Apart from a few large paper and pulp industries (primarily Skoghall), *Uddeholm's* base was the iron and steel industry. *Billerud* was first and foremost orientated towards the paper and pulp industry (primarily the Gruvöns Bruk mill), but it also owned a number of large sawmills. A significant difference also existed in ownership terms between western and eastern Värmland. A relatively high percentage of private forest owners in the west combined agriculture and forestry, whereas eastern Värmland was dominated by company-owned forests.

In skills terms, industrial development based on forest-based resources has given rise to an extensive store of knowledge on processes and products. The growth of this expertise was nourished by the close relationships between firms and industries in the region. The exchange of personnel between companies in close proximity to one another additionally facilitated learning processes and skills, creating a fertile environment for innovation. Company research and development departments have also gradually undergone a process of concentration.

In some cases, changing ownership structures hastened concentration tendencies and valuable expertise was sometimes lost. In other cases, skills and expertise were enhanced and a higher degree of specialisation was enabled within the region. The increasingly clear trend of recent decades in which products have gained an ever greater knowledge component has made research and development resources, relatively speaking, an increasingly important factor in improving products and processes. This stands in contrast to the prevailing situation fifty years ago, when relatively unprocessed products could still be sold for a tidy profit.

The emergence of a knowledge-based economy and regional innovation systems

The interaction between company research resources and university research has taken on greater importance in development work. Research and development at Karlstad University in particular has proved vital for the forest industry of the region. The advent of a civil engineering programme orientated towards chemical technology and research on paper coating are examples of the key role played by the university.

Gruvöns Bruk/ Billerud in Grums, Värmland. Photo: Odd Iglebaek

There are several research directions within the "Forest, Environment and Materials" knowledge profile at Karlstad University that are relevant to the investigation of innovation systems. A strategic research field entitled: "The Properties and Function of Packaging" was also recently established at the university. In addition, regional companies often also possess significant in-house research resources.

Värmland's clusters, *the Paper Province, the Packaging Arena*, *Steel and Manufacturing*, have without doubt been highly successful (Sölvell, 2009). They have each emerged from the traditional regional industries and today consist of companies in the paper and pulp and steel industries respectively. The purpose of these clusters is to promote skills development, marketing, project development and regional growth processes.

One such example is that of the Paper Province (TPP) which was born of a 1998 initiative by an enterprise promotion organisation. Discussions among the group members led to a study being initiated of the paper and pulp industry. Funded by the County Council, County Labour Board, a number of municipalities and private enterprise, TPP was launched in spring 2000, primarily for the purpose of working with labour recruiting issues (Forslund and Johnstad, 2004, Berger and Johnstad, 2008). As a result of a joint initiative, a highly diversified packaging sector was established within the framework of *The Packaging Arena* (TPA).

Innovative arenas

The fact that Värmland is home to a unique expertise endowment in the forest industry sector is obvious. The problem is that today's fiercely competitive situation in the global arena requires a higher level of specialisation and product processing. Business relationships have been developed between companies in many industrial markets, rather than between companies and consumers. It is increasingly apparent, however, that consumer goods markets have become more important, due in the main to improvements in social welfare and purchasing power in many countries.

The most significant impact here can however be observed in the computer and telecoms sector, where new products and models targeted at an affluent group of consumers are launched one after the other. The paper and pulp industry in Värmland has also tried to find ways to develop the value chain from forest and paper to various types of special products. As a result the whole region is now being promoted as "The Packaging Arena".

A similar process took placed in the Norwegian part of Inner Scandinavia with innovation systems such as "*Treklynga*", *Bluelight* and *Light Metal*. One of our studies has initiated a benchmarking process of the innovation systems in the region (Berger & Johnstad, 2008).

These are only some of examples discovered of how forest assets in Värmland initiated various technical innovations. Research and design play a greater role not only in technical innovations, but also in the efforts made to identify the best possible system solutions, which integrate product and packaging solutions. The greater service content in the consumer products market leads companies to more fully connect and cooperate with the regional university in Karlstad.

Conclusions

Our main observation in relation to the globalised economy is that the economy may be globally integrated, but the strategies of the municipalities in the region are strikingly local and path-dependent. Without questioning the importance of social networks and the social integration of knowledge and local collaboration, we found that the strategies are heavily based on the natural resources of the region.

Moreover, new local projects also aim to sell the exclusive resources of the municipality, and these are physical: the border, the forest, the hilly topography, the water system etc., are all suitable for housing and tourism. This demonstrates that no one single economic narrative exists. Across Inner Scandinavia then, as in other regions, it is clear that a multitude of economies and development strategies based on local physical and human resources exist.

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The Ups and Downs of Tourism

A trek across Iceland's wilderness, a cruise to admire Svalbard's vistas, and driving a team of huskies across Samiland each represent possible holidays in sparsely populated areas of the Nordic region. They attract tourists, which brings in income and creates livelihoods. But is it all good news here?

People based in the same location often have differing views of the impact of such forms of tourism. These disparities, and tourism-related gains and losses, are particularly poignant in northern locations. This article examines some of the positives and negatives connected with tourism as a livelihood in northern sparsely populated areas.

Many settlements across the Nordic region would have a hard time surviving without tourism. According to Statistics and Research Åland, 35% of the archipelago's Gross Domestic Product came from tourism in 2003. That figure does not include indirect contributions however which are harder to calculate, such as tourist use of petrol stations and supermarkets.

A legitimate question emerging from this boost to livelihoods experienced is the *form* of livelihoods supported by tourism. In Åland, a significant proportion of tourism income comes from selling duty free products on board ferries. This inevitably leads to lively alcohol-fuelled 'party' tourism.

Such livelihoods can nevertheless provide much needed income and the incentive to develop, maintain, and interpret heritage — which, in turn, supports increased tourism. The most famous mountains on the northern Norwegian island of Senja, the *Devil's Teeth*, can now be viewed from a recently built platform and rest area, part of the integration of this road into Norway's National Tourism Route. Similarly, Norrbotten's museum in Luleå offers free entry, part of the broader strategy to attract tourists and their spending to the area's heritage sites. In many isolated communities seeking to preserve their own heritage, cash income can be generated through the selling of traditional handicrafts.

The natural heritage of an area can however be harmed quite easily by the over-development of the tourist sector. The spectacular bird cliffs of Vestmanna in the Faroes recently experienced declining bird numbers which was attributed to the number of power boats using the surrounding waters to provide tours. A voluntary code of conduct for boat operators had thus eventually to be put in place in the hope that the trend could be reversed without detracting from the overall tour experience.

As regards cultural heritage, building and industrial sites on Svalbard can currently be seen to be suffering from general wear and tear simply from the volume of visitors. Some tourists, moreover, induce direct destruction through the stealing of 'souvenirs' or by dropping rubbish. Potential approaches to counter this, all of which incur costs and create controversy, include roping off sites, hiring monitors independently of tour operators, and limiting the number of tourists either permitted at any particular site or on Svalbard generally.

The danger also exists that such heritage may become overly packaged or 'commodified', especially if such heritage is promoted only to tourists. A fine line thus exists between *supporting heritage* through tourism and *creating heritage* for tourists. On the other hand, is a pair of gloves hand-made using traditional skills diminished in heritage (or monetary) value if it is made solely to sell? Local people are using local resources and their culture to assist their own community by encouraging locally-based income generation, local spirit, and local life.

Duty free aboard a Mariehamn-Stockholm ferry is an important element in Åland's tourism. Photo: Ilan Kelman.

These skills and the sense of community then transcend tourism, especially since seasonality is one of the attractions of tourism as a livelihood in northern sparsely populated areas. The business operators and their employees can focus on specific times of the year, such as summer and winter holiday periods, leaving the rest of the year free to pursue other endeavours. Such additional livelihoods might include subsistence pursuits, such as hunting, or other businesses serving local needs or remote clients.

As with all businesses, one of the major challenges relating to the development of tourism livelihoods is the high level of dependency on external forces. In the past decade, the volume of tourism has dropped in the wake of international terrorist attacks, the rising price of oil impacting on air travel the financial crisis, and in the wake of the health concerns related to the outbreak or threat of various epidemics.

Tourism operators can do little to counter these market vagaries, except to ensure that they never rely on tourism as their sole source of income. While new ideas offering tourists more activities, especially in inclement weather and out of the regular tourist season, can bolster tourist income, to shift towards entirely tourism-based livelihoods would harm the long-term viability of the communities involved.

Similarly, tourism can bring sparsely populated regions to the attention of capital cities where rural development decisions are frequently made. Visitors to remote locales glean an understanding of the beauty and importance of those places, rather than seeing them as 'other' communities where people should not settle. This has the potential to generate a deeper understanding and awareness of the needs, challenges, and opportunities of livelihoods in these areas.

The unique and fascinating nature and culture of the Nordic regions brings forward ample opportunities for tourism, from the summer's midnight sun or the winter's aurora to Inuit carvings from Greenland and Sámi reindeer herding. Yet tourists and locals are not always aware of the challenges and problems brought about by the 'packaging' of this richness.

The key is to neither avoid nor reduce tourism because it might, and frequently does, cause problems. After all, avoiding or reducing tourism could cause worse problems by losing out on its potential benefits. Instead, decisions regarding tourism need to involve honesty in respect of the positives and negatives of different choices, to highlight three aspects.

First, creativity is needed in implementing tourism livelihoods, especially in recognising that bigger and more prominent is not necessarily better or more lucrative over any time scale. Second, a balance of views should be input into every policy and practice, implying that locals deserve full and effective consultation for, and participation in, the decision-making processes that affect them. Third, livelihoods should be supplemented by tourism rather than relying on tourism.

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Tourists near the bird cliffs of Vestmanna on the Faroe Islands were attributed to declining bird numbers. Photo: Ilan Kelman

A typical Nordic downhill slope. Here from Sälen in Sweden. Photo: Robert Ekegren / SCANPIX

Huge expansion in winter-tourism

Recent decades have seen a huge growth in winter-tourism across the Nordic countries. This seems to have taken place, in the main, in sparsely populated areas in addition to a small number of already establish tourism-oriented centres. The availability of transport in combination with the natural topography and guaranteed snowy winters is the main driver in the development of these new winter resorts. Slopes and tracks are open well into the late spring period, the availability of building sites, available investment and the infrastructure and various other necessary facilities as well as good marketing have all played a major role here.

Specifically in terms of the skiing industry the long winter season, aided by the availability of artificial lighting, is a significant Nordic advantage. In addition, many of these resorts are now also working ever harder to expand into the provision of summer activities like golf, hiking and fishing. Indoor skiing is also on the agenda in a few places.

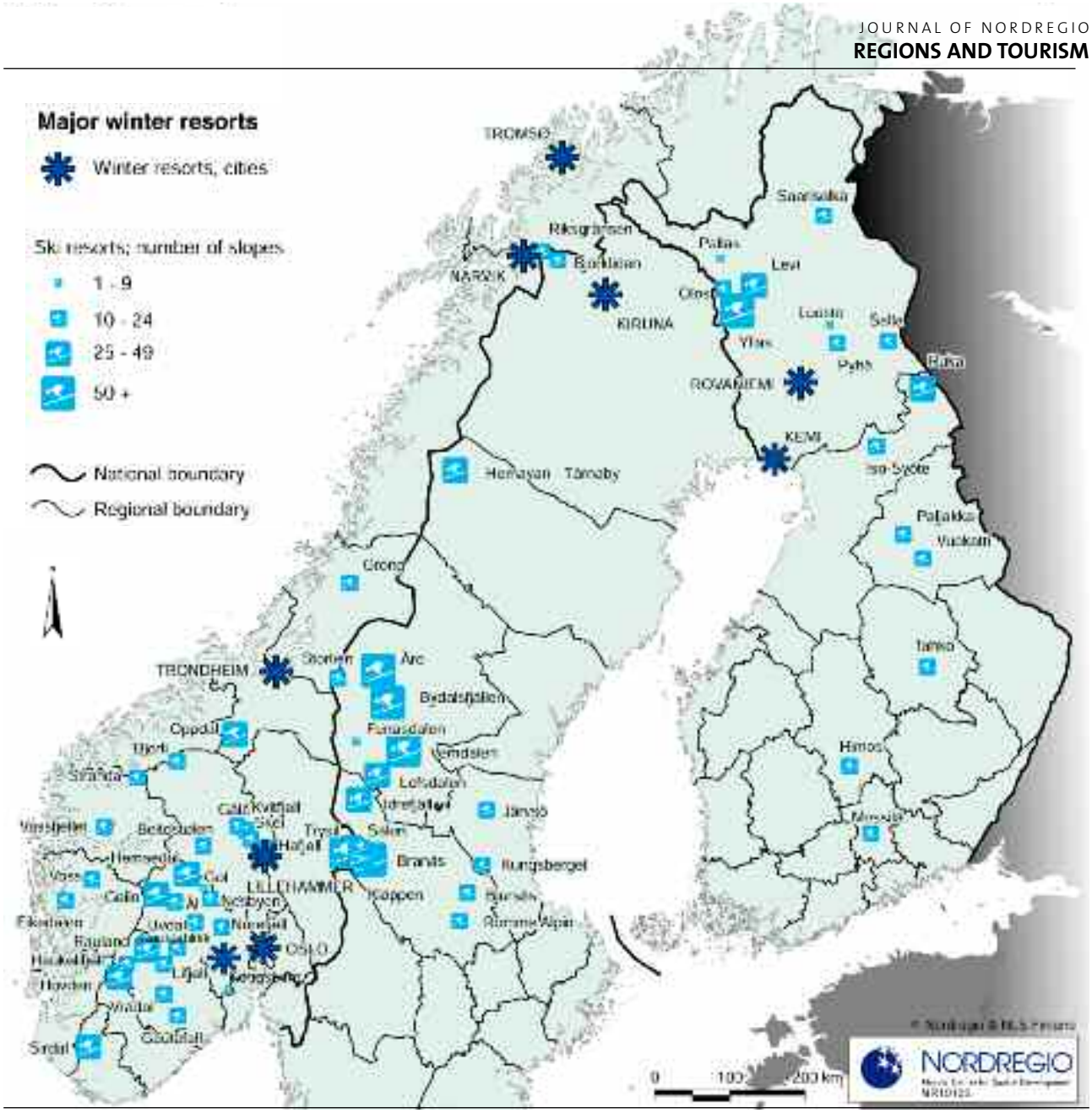
The major ski- and other winter resorts are shown on the accompanying map. The selection of the largest ski resorts is based on the total number of lifts, slopes and track kilometres. Visibility is also included here – each resort features in the commercial websites of www.goski.com, www.j2ski.com and www.skiinfo.com.

Altogether 63 skiing- and seven other sites are shown on the map. Sixteen of these skiing resorts are located in Finland, thirty in Norway and seventeen in Sweden. Regional destinations, like Sälen in Sweden with four peaks/fields (Lindvallen, Högfjället, Tandådalen and Hundfjället) are counted only once.

In addition, some cities with skiing and other winter facilities and events are included. The Finnish city of Rovaniemi can be cited as an example here with the ski resort of Ounasvaara and the famous Santa Claus village located directly on the Polar Circle.

The total number of beds and services is another way to measure the size and development plans of the resorts. Some of the main figures are shown in the table below.

By Johanna Roto and Odd Iglebaek



FINLAND

Resort	2007-beds	2010-beds	Restaurants	Jobs Low/ High season
Levi	21 000	27 000	29	1000 / 1700
Ylläs	20 000	-	9	-
Saariselkä	13 500	17 100	19	-
Pyhä-Luosto	8 000	10 000	13	-
Ruka	-	-	10	-

In Finland it is usual to include all tourist-beds in the statistics. For examples Kittilä calculates six beds per cottage. They do not however distinguish between cottages available or unavailable for rent. (Sources include: Resort homepages, satu.luiro@lapinlitto.fi and www.goski.com)

NORWAY

Resort	Beds to rent	Cottages	Restaurants	Jobs Low/ High season
Beitostølen	3300	7	23 % of total	-
Gol	2 600	-	12	-
Geilo	6 000	-	12	800
Hafjell	2100	8	15 % of total	-
Kvitfjell	3400	-	19 % of total	-
Hemsedal	7 200	-	8	-
Hovden	-	6	-	-
Norefjell	2 600	-	12	-
Trysil	20 000*	5700	20	1000 / 1500
Valdres	-	6	-	-
Voss		6	-	-

(Sources include: Resort homepages, liv.bjerke@oppland.org, bente.bjerknes@bfk.no, www.goski.com and Mayor Ole Martin Norderhaug, Trysil. Norderhaug notes that Trysil is the largest ski-resort in Norway with 1 million ski-days in 2008. The population in Trysil has however fallen from 8000 in 1950 to 6700 today. A majority of the extra workers in high-season are Swedes.* Beds in Trysil are calculated as in Finland.)

SWEDEN

Resort	2007-beds	2020-beds	Restaurants	Jobs Low/ High season
Åre	31 000	50 000	50	-
Sälen	50 000	-	43	1000 / 2500
Idre Fjäll	-	-	5	-
Björkliden	-	-	4	-

(Sources include: Resort homepages and www.goski.com)

Timber waiting for loading at Kalix-harbour in Swedish Norrbotten.
Photo: Odd Iglebaek