



## FOCUS NORTH

### Forestry and Minerals

*Prepared by the research company Ocean Futures, Oslo for the Norwegian Atlantic Committee*

#### Introduction

Forestry and mineral resources play an important role in the regional economy of the Barents region. At the same time, exploitable minerals and forest resources are distributed unevenly in the region, and there are considerable differences in technology and infrastructure.

#### Forestry in northern Norway

Forestry has been an important economic activity in Norway for hundreds of years. Production of wood products, pulp and paper generates about €4.5 billion per year, representing 0.3 percent of the gross national product.

In northern Norway, however, forestry is of minor significance. The region has the least forested area of the entire country: although the three northernmost counties make up a third of the country's land area, they contain only 7 percent of its forests. Less than 3 percent of Norway's timber harvest comes from the North; its gross value was €7 million in 2004.

#### Forestry in northern Sweden

More than half of Sweden is covered with forest. Nationwide, the Swedish forestry sector has a combined production value of €19 billion, representing 3.5 percent of the gross national product.

Forestry has played a pivotal role in the development of Norrbotten, Sweden's northernmost county. Norrbotten contains 40,000 square kilometres of forest, or 18 percent of the country's forested area. By volume, the county contains 270 million cubic meters of timber, or 9 percent of the national total.

Some 6 million cubic meters of timber are felled annually in Norrbotten. In addition to local resources, the forest industry imports 60 to 70 percent of the wood it uses, principally from Finland and Karelia.

Piteå, Munksund and Karlsborg are the forestry sector's major industrial centres in Norrbotten. Europe's largest cardboard and kraft paper producer is Kappa Kraftliner in Piteå, with an annual production of more than 700,000 tons. In total, Norrbotten produces more than 1.3 million tons of cardboard and paper and 900,000 tons of pulp per year.

#### Forestry in northern Finland

Three-quarters of Finland is covered with forest, making it the most forested country in Europe. Production of wood products, pulp and paper accounts for 30 percent of Finnish exports and 8 percent of the gross national product. The forestry sector employs nearly 100,000 people, or 4 percent of the labour force.

Lapland has large, continuous tracts of forest covering more than 90,000 square kilometres. By volume, the county contains 300 million cubic meters of timber, one-quarter of which is located in nature preserves or areas that limit commercial enterprise.

Forestry is less economical in Lapland than in southern Finland, earning one-eighth as much per hectare. The three main reasons for the poorer economics are that the trees grow more slowly in the North, their timber quality is lower, and transport costs are higher.

Nevertheless, Lapland has a well-developed forest industry, located principally in Kemi and Kemijärvi. Kemi annually produces 1 million tons of paper and 290,000 cubic meters of lumber, while Kemijärvi produces 230,000 tons of pulp.

Some 3.5 million cubic meters of timber are felled in Lapland each year. In addition to local resources, the forest industry in Lapland imports 50 to 60 percent of the wood it uses.

#### Forestry in northwest Russia

Arkhangelsk county and the Republics of Karelia and Komi in northwest Russia are major centres for the Russian forestry sector. Together, the northwest region produces a third of Russia's raw timber, a quarter of its lumber, and 60 percent of its pulp and paper.



The region's forestry sector is still in a transition phase. Because of its old equipment and outdated methods, the sector wastes a quarter of the timber it fells. Production is less efficient, less profitable, and less environmentally responsible than it could be, making the sector ripe for modernization.

According to the Russian Association of Pulp and Paper Organizations, an investment of €10 billion in the pulp and paper sector over the next ten years could increase production by €17 billion and improve profitability by 15 percent.

### ***Arkhangelsk county***

Forests cover some 300,000 square kilometres of Arkhangelsk county. The forestry sector is the most important industry in the county, accounting for half of the total industrial production.

Several large timber companies, sawmills, and pulp and paper factories are located in the county. The largest sawmills are in Onega and Solombala, and the largest pulp and paper mills are in Archangel, Kotlas and Solombala. Together, the forestry sector employs 75,000 people—nearly half of the county's industrial labour force.

Poorly developed infrastructure makes forestry difficult in many areas of the county with good forest. Having already felled the forests nearest rivers and existing roads, the industry must turn to remote areas, which increases production costs. Expanding the transport network is thus essential to improving access and lowering costs.

### ***The Republic of Karelia***

Timber is the most important natural resource in Karelia. Forests cover 180,000 square kilometres—more than half of the republic's land area. By volume, Karelia contains 900 million cubic meters of timber.

In relation to neighbouring Russian regions, Karelia's infrastructure is well-developed. This gives it both better access and higher levels of forest utilization.

Forestry is Karelia's largest industrial sector and accounts for half of its industrial production. In 2004, Karelia produced 6 million cubic meters of round wood, 760,000 cubic meters of timber, 860,000 tons of paper and 90,000 tons of pulp. The largest producers are located in Kondopoga and Segezha.

Production has increased markedly in recent years. This trend is expected to continue. In this regard, Karelia benefits from being close to the large, well-established forestry industries in Finland and Sweden, where it sends much of its round

wood. Karelia is also attracting foreign investment: IKEA-Swedwood, for example, has built a wood-working factory in Kostomus.

### ***The Komi Republic***

Forestry is the second-largest industrial sector in the Komi Republic after petroleum and accounts for 20 percent of its industrial production. Komi has 290,000 square kilometres of forest, which cover nearly three-quarters of the republic's land area.

There is considerable potential for growth in Komi's forestry sector. At present, the industry fells only a quarter of the allowable timber harvest. Conditions are especially good to the south, where the trees grow three times as fast as in the north, and where the trees' greater thickness yields higher productivity rates.

Most of the forest industry is located around Syktyvkar. Neusidler-Syktyvkar, the largest paper and cardboard producer, produced 1.6 million tons of cardboard and 530,000 tons of paper in 2002. In total, Komi exported 5.3 million cubic meters of round wood and 4.9 million cubic meters of processed timber in 2002.

### ***Mineral industry in northern Norway***

In Norway, the five most important non-petroleum minerals by value are crushed stone, chalk, coal, stone blocks, and sand and gravel. In 2004, the exploitation of non-petroleum minerals accounted for €1 billion of Norway's industrial production and €600 million of its exports.

Together with Svalbard, northern Norway accounts for half of the country's non-petroleum mineral production by value, at €510 million. Employment-wise, however, the sector is relatively small, employing only 1300 people.

Nordland is the largest mineral producer in northern Norway at €230 million. It produces chalk, dolomite, gabbro, gneiss, gravel, iron, marble, quartz, quartzite, syenite, and talc. Troms county produces graphite, slate and soapstone at an annual value of €120 million. Finnmark is the smallest mineral producer in northern Norway at only €30 million. It produces gneiss, nepheline syenite, quartzite, and slate.

Coal has been mined on Svalbard for more than a century. Four mines are in operation today: three Norwegian and one Russian. Norwegian coal production rose ten-fold over the last decade to 2.9 million tons in 2004, worth €120 million. Russian exports fell from 485,000 tons to 132,000 tons over the same period.

## Mineral industry in northwest Russia

Russia is one of the world's leading mineral producers, accounting for 14 percent of global mineral extraction. Mining and metallurgy play a central role in the Russian economy. About 15 percent of the Russian export income is connected to mineral production. The key mineral producing regions are East Siberia, northwest Russia, North Caucasus and the Urals. In the northwest, three provinces have significant mineral processing industries: Murmansk, Karelia and Komi.

### *Murmansk county*

The Kola Peninsula is known for its rich endowment of minerals, 60 of which are in exploitable concentrations. Kola's commercially important minerals are iron, copper-nickel and apatite-nepheline. Apatite is used in fertilizer, and nepheline is a source of aluminium. Kola also has some of Russia's largest commercial deposits of rare earth metals, including the principal source of columbium and tantalum.

Non-ferrous metals account for 40 percent of Kola's mineral production by value. Murmansk county produces all of Russia's apatite, 43 percent of its nickel, and 14 percent of its copper. Today, the non-ferrous sector is growing dynamically. However, the sector's success is a result of high metal prices and low resource and energy costs rather than improved efficiency.

The largest mining enterprise in Murmansk is Kola GMK, owned by Norilsk Nickel. In 2004, the company produced more than 80,000 tons of nickel. It also opened a new copper-nickel mine on the Kola Peninsula that replenishes the local mining base to maintain nickel production at 40,000 tons per year until 2030.

The ferrous metal sector began growing in earnest in 2001, primarily due to a revival of the domestic market. At the Kovdor and Olenegorsk iron enterprises on the Kola Peninsula, growth exceeded 10 percent in 2004—twice the industry average. Analysts believe the favourable conditions will continue to at least 2010.

### *The Komi Republic*

The Komi Republic contains about 8 percent of the total Russian mineral reserve. Of the most important are energy minerals (oil, gas and coal), plus bauxite, titanium, gold and diamonds.

Today, mineral development is largely focused on extracting energy minerals. Oil, gas and coal production accounts for two-thirds of Komi's mineral production by value.

Komi has a relatively well-developed infrastructure and great potential for developing other minerals. The republic has plans to expand its mining capacity for titanium, manganese and barite. A new aluminium complex with a projected output of 1.4 millions tons of alumina will increase Russia's alumina production by 50 percent and decrease its alumina imports by 30 percent.

### *The Republic of Karelia*

More than 50 different minerals are found in Karelia, including iron, titanium, vanadium and diamonds. Although forestry is clearly the most important economic and industrial sector in the republic, it also has extensive mineral activities, of which the ferrous metal sector is the most important.

Ferrous metal production accounts for 14 percent of Karelia's economic production. The largest producer is Karelsky Okatysh in Kostomuksha, which produces iron ore, concentrate and pellets. About 13 percent of its production is sold to Finnish companies.

A new ferromanganese mine and ore concentrating plant in Ilinskiy will increase Karelia's ferrous metal production. When completed, it will produce 50,000 tons of manganese concentrate per year.

## Mineral industry in northern Sweden

Norrboten is rich in minerals and has a long history of mining. Of Sweden's 16 largest mines, three are in Norrbotten. They produce a large share of the total Swedish mineral production.

Two of these mines are in Kiruna and Malmberget, from which the company LKAB produces more than 22 million tons of iron ore each year. LKAB processes the ore into pellets, worth €540 million annually. Three-quarters of the iron ore is exported. A portion of the remainder goes to the Swedish Steel smelter in Luleå, which annually produces 2 million tons of steel.

Norrboten also has Europe's largest copper mine: Nya Bolidens mine Gällivare. In 2004, it produced 18 million tons of copper ore, most of which went to the Rönnskär smelter in Skelleftehamn. From this ore, Rönnskär produced 65,000 tons of copper, 2 tons of gold and 45 tons of silver.



### Mineral industry in northern Finland

Finland's mining and mineral sector employs some 35,000 people and produces 7 percent of the country's total industrial production.

Lapland contains reserves of many different minerals, but mining of chrome stands in a class by itself. East of Kemi is located one of the world's largest mines that produce chrome-bearing ores. Operated by Outokumpu, the mine produced 1.2 million tons of ore in 2004. From this, Outokumpu produced 580,000 tons of chrome and 270,000 tons of ferrochrome at its facility in Tornio.

### Future challenges and opportunities

Several challenges in the region could have significant future consequences for forestry and mineral activities in the North.

#### *Climate change*

During the course of this century, climate change is expected to cause a number of effects that could directly influence forestry in the North. As vegetation zones move northwards, forests will establish themselves in new areas, and new tree species will move into existing forests. Although these changes present new opportunities for the forestry sector, insect and fire damage will also be more common, posing new challenges.

Warming temperatures will thaw the permafrost in some areas. Roads, buildings, utility lines and other infrastructure in the Arctic can be destabilized as the permafrost thaws. Extensive improvements and reconstruction of existing infrastructure may be necessary, and different techniques may be required for the building of new infrastructure.

#### *Infrastructure development*

Many count on a substantial development of transport infrastructure in the North as petroleum production in the Barents Sea comes on line. Several large infrastructure plans exist, such as a new harbour in Murmansk and expanding the harbour in Kirkenes. Other plans include an extensive expansion of the rail network in Russia, and better techniques for shifting between different rail gauges. A comprehensive renovation of the rail

connections between Russia and China is also under consideration.

Such infrastructure developments could lead to further development of the mineral sector and possibly the forestry sector.

#### *Exploiting existing and new resources*

The tree harvest in Finland and Sweden remains well within sustainable limits. This means the timber harvest can increase without compromising the forests' ability to reproduce.

The most important mineral resources in northern Finland and Sweden are so large that they will be commercially exploitable at today's level far into this century. Mining companies are already planning how to expand the mines as current areas are depleted.

In the Russian mining and mineral sector, the situation is less clear. Although Russia has enormous mineral reserves, some estimate that 30 to 70 percent are not economically exploitable without new technology.

Furthermore, Russia's reserves need to be recalculated, as the old estimates did not take into account considerations of a market economy. Fortunately, some major companies, such as Norilsk Nickel, have engaged respected international firms to audit and revise their reserve estimates in accordance with international standards.

#### *Improving efficiency*

Much of the equipment used in the forestry and mineral production sectors in Russia is out of date and worn out. Outdated equipment reduces production efficiency and increases labour costs, resource waste, and polluting emissions. For example, aluminium smelters in Russia are about 20 percent less efficient than smelters in Nordic and other European countries.

This presents new opportunities for improving efficiency in all phases of forestry and mineral exploitation, from exploration to extraction and processing. There is also great potential for improving energy efficiency, transport capacity and emissions control. These present valuable opportunities for companies that deliver equipment and technical solutions.

*Summarized from "Forestry and Mineral Industry in the Northern Areas" (11/2005), available (in Norwegian) at [ocean-futures.com](http://ocean-futures.com)*

