

# Supply of Raw Materials, Transport Needs and Economic Potential in Northern Europe

## Summary

The raw material resources of northern Europe are vital to all of the EU

Northern Europe accounts for a significant share of the EU's production of raw materials, such as iron ore and forestry products. For instance, 88% of the EU's total output of iron ore is produced in the Barents region. Gold, silver, copper, chromium, nickel and aluminium are other metals that are extracted in significant amounts in the region. See figure 1. In addition, rock waste, which is created as a by-product of mining operations, is gaining in importance for construction of infrastructure and for the production of concrete. The forest resources of the Barents region are the source of an important share of the EU's total production of paper, timber and other forest-based products. Forestry production in the Arkhangelsk Oblast and the Komi Republic in Russia is very high. See figure 2. Transporting the raw materials extracted in the Barents region to the market in the EU requires the existence of efficient and well-functioning transport systems linking the region to continental Europe and the rest of the world. See figure 3.

The Barents region is a significant producer of renewable energy. At present 70 TWh of hydro power are produced annually in the region, which corresponds to 23 percent of the EU production. This figure could be increased to 90 TWh by undertaking measures to enhance the efficiency of existing hydro power plants. In addition, the wind power potential in the region is estimated at some 60 TWh per year. However, a serious obstacle in realising the full potential of electricity from renewable energy sources is the insufficient capacity of the existing power grid. Expanding this capacity is a long and slow process. The Barents region also holds a wealth of bioenergy, mainly in the vast forests areas. See figure 4.

The Barents region offers potentials of EU-wide interest:

- extended, efficient extraction of raw materials with additional and strengthened transport infrastructure
- strongly extended extraction of renewable energy
- extended tourism industry based on complementary environments and four seasons
- development of a node for trade flows globally (north-south-east-west)

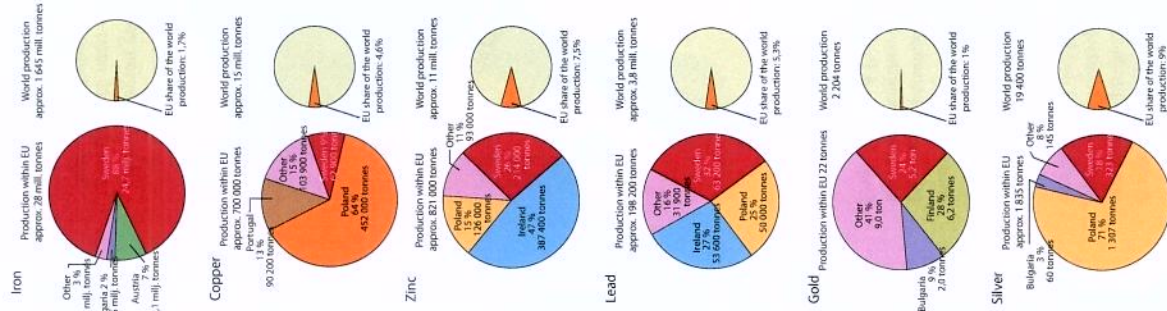


Figure 1: Mining production in EU27 and the EU's share of the world production. Source: SGU, 2007.

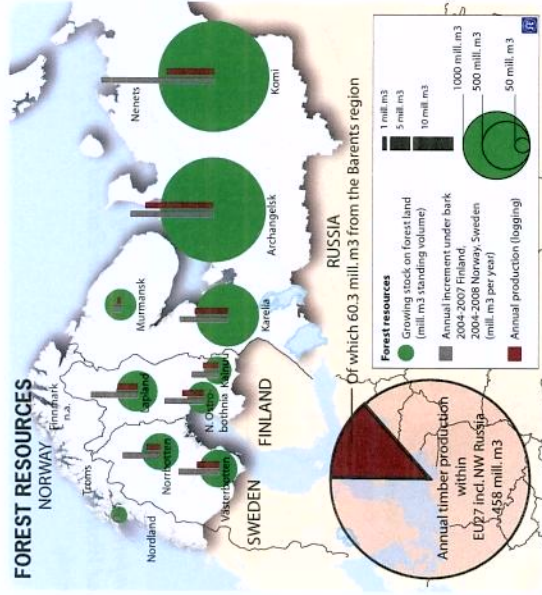


Figure 2: Forest resources

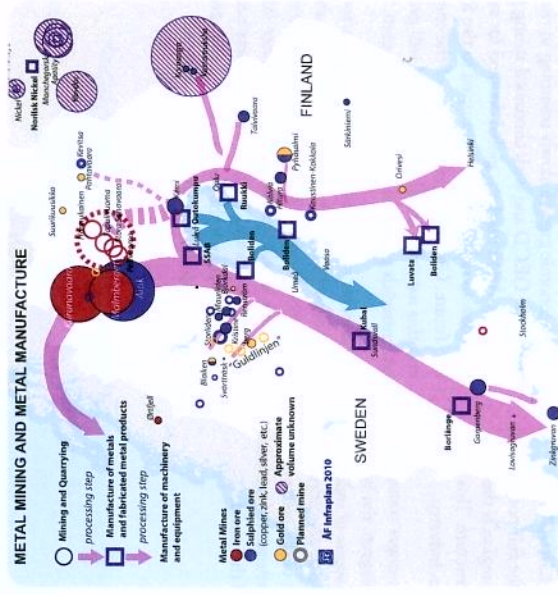


Figure 3: Ore and metal require well-functioning transport systems.



### How can the EU draw greater benefit from the natural resources of northern Europe?

A significant impediment to realising the full potential of raw material production in the Barents region is the inadequacy of the existing transport infrastructure. This risks inhibiting the development of European industry.

In addition, further development of passenger transport, in particular by rail, is needed to better integrate the labour markets of the region and improve the access of industry and citizens to facilities for research and higher education. Improving the passenger transport system of the region would also help strengthen the region as a destination for tourists from all around Europe and the rest of the world.

### Northern Europe in a global perspective

With economic growth slowly resuming in the EU and the rest of the OECD and with continued strong growth in the emerging Asian markets, global demand for and competition for access to raw materials is expected to rise for the foreseeable future. Given the global nature of the commodities markets this naturally entails that demand will grow also for the raw materials produced in the Barents region. See figure 6.

The Barents region could also gain in importance as a link for transporting goods and raw materials to and from Asia and North America. The proposed "NEW-corridor" would constitute an alternative route for container shipment between North America and China with containers being transferred from rail to ship at the port of Narvik, thus avoiding the congested transport corridors of central Europe.

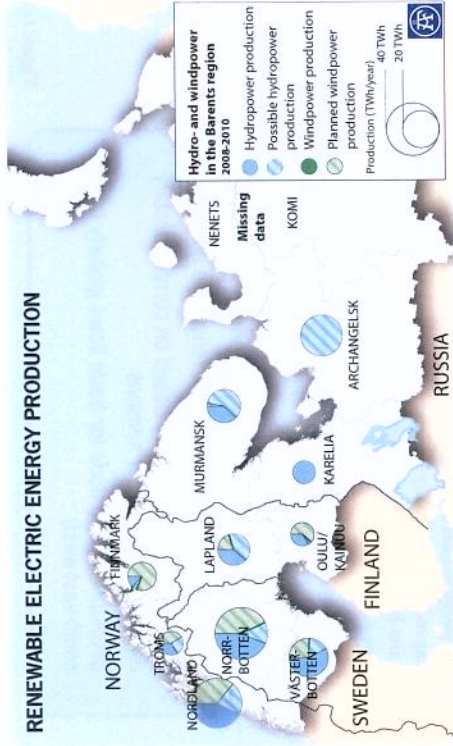


Figure 4: The Barents region produces a lot of renewable electric energy and has additionally a considerable potential.

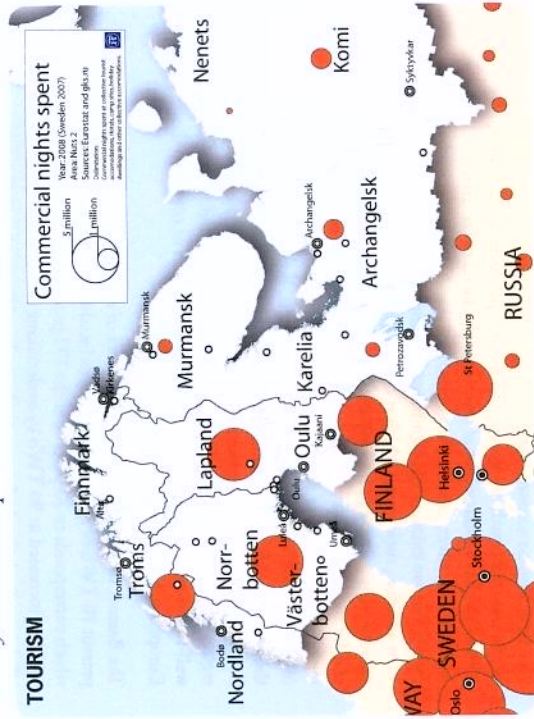


Figure 5: Each year visiting tourists spend some 16 million nights in the Barents region

Figures 2-5: There is further potential for the expansion of extraction of raw materials, generation of renewable energy and development of the tourism industry in the Barents region. Exploiting this potential would be of benefit to all of the EU.

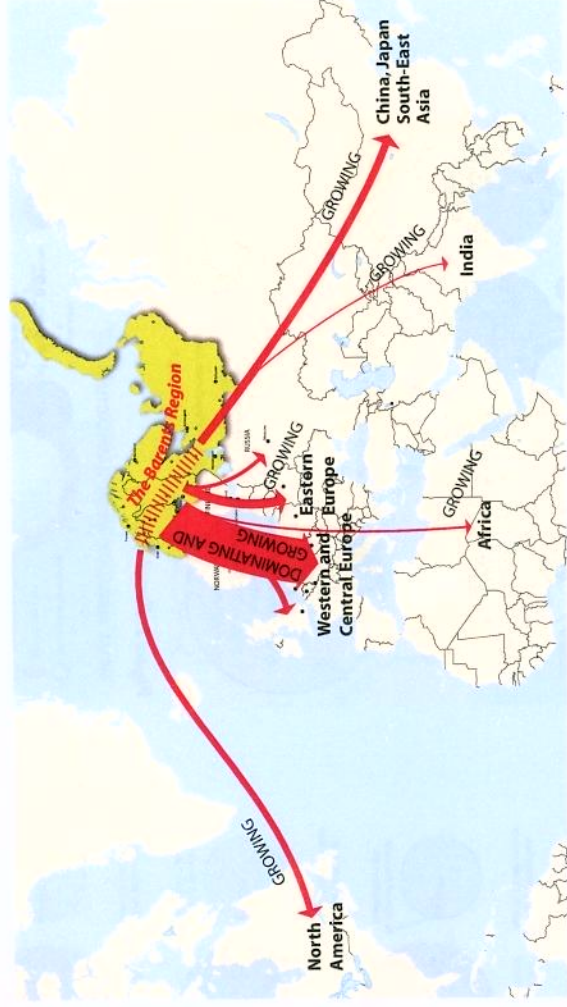


Figure 6: Northern Europe is an important part of EU and the surrounding world. A dominating part of exports from the region goes to Central and Western Europe. Exports to the Far East and some parts of Africa has shown vast growth rates over the past decade.

Source: IFA Infoplan.



## Transport infrastructure

If the EU is to benefit fully from the significant natural resources of the Barents region, the existence of adequate and relevant transport infrastructure is a necessary prerequisite. Industrial production in the region already accounts for a significant share of the total exports of the countries of northern Europe. Consequently, southbound transport flows both on rail and on sea from the Barents region are almost twice the size of northbound flows to the region. Road transport is of lesser importance to the industry in the region with northbound flows somewhat higher than southbound flows. Due to the bulky and heavy nature of the goods being produced by industry in the region, efficient rail transport is of particular importance for linking the region to outside markets.

As shown in figure 7 below there is no connecting north-south transport corridor between the Nordic Triangle and Northern Axis corridors identified by the EU Commission. Today these two corridors are connected via the Bothnian Corridor which runs through both Sweden and Finland connecting the east-west and north-south trans-national axes in Sweden, Finland, Norway and Russia. This is already today a strategically important trans-national link carrying large flows of freight transport. The Bothnian Corridor also fulfils an important function in

connecting the east-west transport corridors between Finland-Sundsvall-Östersund-Trodheim and between Vaasa, Umeå and Mo i Rana.

Figure 8 shows existing and potential flows of rail freight transport in northern Europe. This highlights the need for efficient capacity for railway connections running in a north-south direction in this region. In addition to its importance for freight transport, the Bothnian Corridor also has a vital role to play in integrating the labour markets of the region, enhancing the supply of skilled labour and improving the access of industry to research centres. It could also serve as a way of further developing climate friendly forms of tourism in the region.

The capacity of the Malmbanan line is planned to be enhanced in order to accommodate increasing freight and passenger traffic. The planned new mines in Sweden and Finland will need an optimal transport system. Planning and negotiations are under way.

Furthermore, there is a need to strengthen the capacity between Kajani and Vartiuss in order to cope with an increase in border-crossing traffic. The signal system on the Ledmozero-Kotkoma line which connects the Finnish and Russian railway systems needs to be upgraded, and there are significant bottlenecks on Belomorsk-Archangelsk route which need to be removed.

In addition, ports and land-based connections need to be developed in order to cope with the increasing use of inter-modal transports which form an essential part of many of the transport chains in the region. Intermodal terminals have been and are currently being constructed. More efficient terminals need to be built and existing terminals need to be made more efficient in order to create a more sustainable transport system.

The rail gauge used in Russia and Finland is 1,520 mm but 1,435 mm in Sweden and most of Europe. This obstacle to efficient international rail transport in the region needs to be overcome by the development of new technologies able to cope with the harsh climate.

## Joint comprehensive action is needed to meet the present challenges

The challenges outlined above are gradually being addressed within the framework of the national infrastructure plans of the countries in the region. However, if the region and the rest of Europe and the world are to benefit fully from the abundance of natural resources available in the Barents region, there is a need for a joint, comprehensive effort to tackle the infrastructure challenges which are currently faced. This will strengthen the economic growth both in the region and for Europe as a whole.

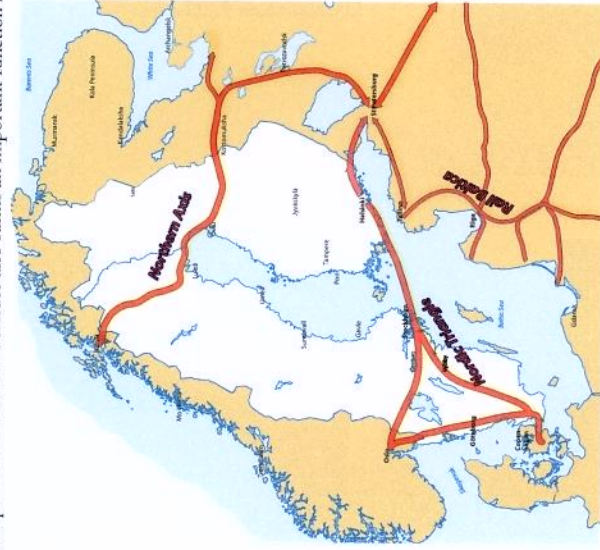


Figure 7: Comparing the existing network of EU transport corridors (above) with current transport flows (right) demonstrates the need for a strategic north-south corridor in Northern Europe. Source: Bothnian Corridor/AF Infraplan.

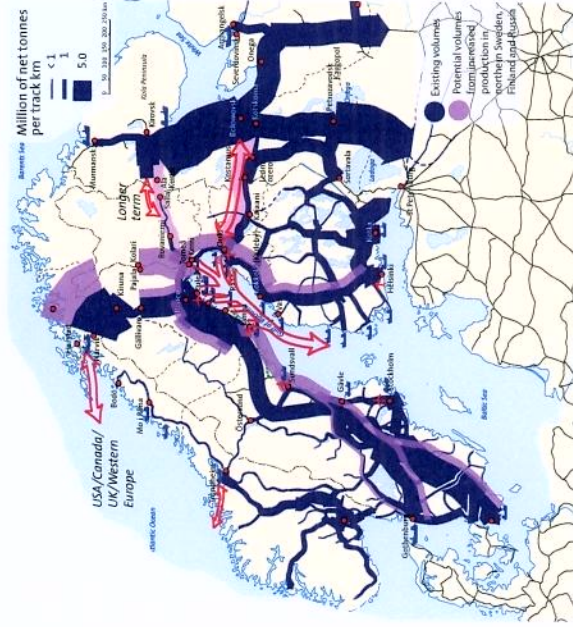


Figure 8: Freight volumes on the railway system in the Nordic countries and Northwestern Russia. Current and potential volumes. Source: AF Infraplan.

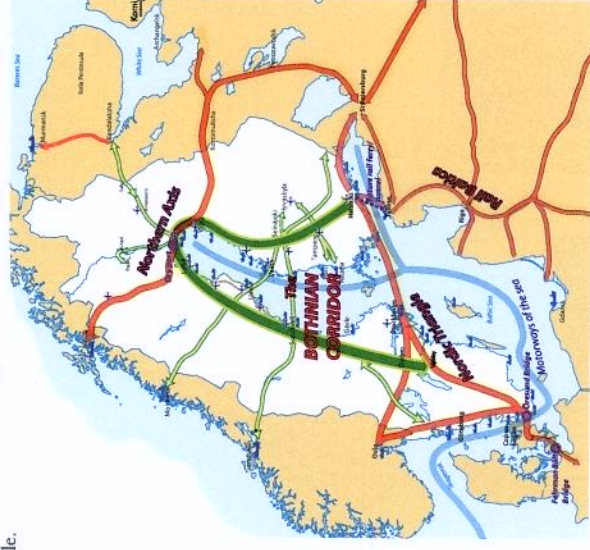


Figure 9: Complementary corridors are needed to make the EU benefit from the growing production of raw materials and value added products in the Barents region. Source: Bothnian Corridor/AF Infraplan.