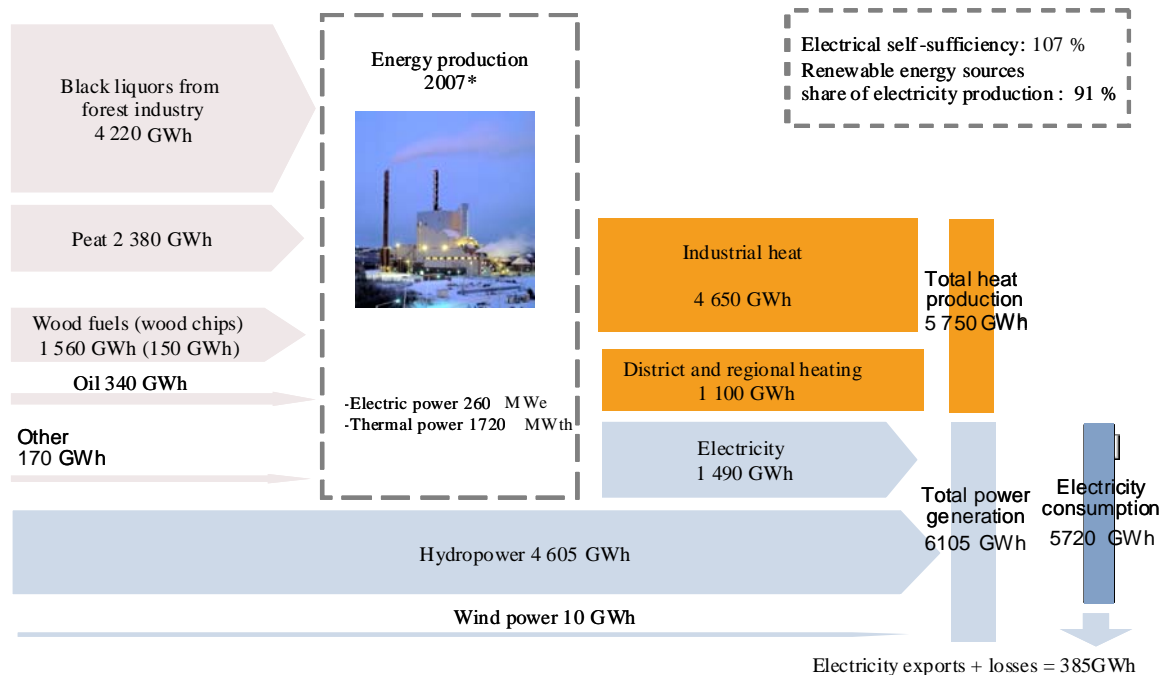




## LAPLAND'S ENERGY STRATEGY

### Summary

The abundant energy resources of Lapland have long enabled it to produce energy for its own needs and for the rest of Finland, too. Lapland utilizes a plenty of hydropower, local wood fuels, peat and waste liquor from the forest industry. At present, Lapland's self-sufficiency in electricity production is slightly more than it needs, and renewable energy accounts for over 90 % of electricity production. In industry, particularly, heat generated is used for its own production and in population centres it is supplied to the district heat networks.

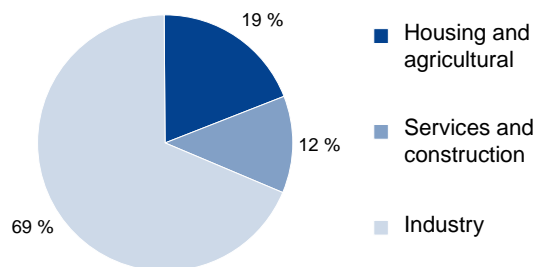


Picture: Energy balance in power and heat production in Lapland in 2007.

The trend in future energy consumption is above all dependent on the development of industry and the service sector in the Lapland. Forecasted development such as the investments of the Tornio steel mill, mining projects and growing tourism will increase energy consumption significantly. More renewable and low-emission energy production, especially, is also needed in the whole of Finland, as a nation. On the other hand, energy efficiency and new technology solutions should be developed further. Lapland's large energy resources make it possible to increase energy

production in a sustainable way and the northern conditions lay a good basis for development of new solutions and local know-how both in energy production and consumption.

Sustainability and self-sufficiency are Lapland's commonly agreed energy visions. The objective is to utilize Lapland's large energy resources so that Lappish knowledge and regional economy will develop and energy solutions support Lapland's vitality. Lapland's investments are channelled into competitive energy solutions, which also support means of livelihood and regional economy, making use of northern abilities and creativity. Energy resources are utilized respecting the environment and Lapland's unique nature. Energy production in the future will also be more diverse based on several different production technologies and fuels so that all potential will be utilized. The objective is that Lapland's own know-how and business activities are supported so that in the future Lapland will be known for its role as a developer and user of energy production and saving solutions which are suitable for northern conditions.



*Picture: Distribution of electricity consumption in Lapland in 2007.*

To attain the agreed objectives the strategy outlines key projects which focus on increasing the use of local energy resources, especially, forest energy, peat, hydro power and wind power, on starting nuclear power production in Lapland, and in addition, on developing energy saving. To ensure the development of Lapland's own knowledge and skill some key projects have been defined which support education and creation of innovations in schools, research institutes and companies. Developing networks of cooperation is particularly important.

The implementation of the projects according to the energy strategy has a direct effect on regional economy by bringing to Lapland more income from real estate and other tax revenues and by increasing employment. The most significant sources of real estate tax income are hydro power and wind power (in future to a more extent) and also possible nuclear power. The increase in the combined real estate tax of the energy projects according to the energy strategy is estimated at approximately EUR 16-17 million provided that all projects are carried out. In Finland real estate tax money goes to the local municipalities. Remarkable employment and income effect will come due to the construction of the mentioned investment projects and construction, operation and fuel supply of a biofuel-based new power plants and a possible biodiesel refinery. The construction of these energy projects could increase employment in Lapland with a total of even 7 000–10 000 man-years. The effects on employment figures during the operation of the plants are also significant. According to the strategy, the use of local fuels, primarily forest chips and peat, could mean a direct increase in annual

employment figures by 1000 man-years, in case a new big power plant in the city of Rovaniemi and a biodiesel refinery in the city of Kemi were implemented and the forest energy potential of Lapland were effectively utilized. In addition, the direct increase in employment figures during the operation of a nuclear power plant is estimated to be approximately 400-500 man-years.

Impacts on carbon dioxide emissions depend heavily on the quantity of forest energy which is used to replace peat and coal. Without a huge increase in the use of wood fuels, carbon emissions from power and heat production will grow in Lapland slightly from the current level by the year 2030. Efficient utilization of wood fuels can reduce emissions by about 30-40 % from the current level. Increasing the production of local renewable energy as specified in the energy strategy also supports significantly the achieving the objectives of Finland's and the EU's climate and renewable energy policy. It is important to notice, that already at the present situation, renewable energy accounts for over 90 % of all electricity produced in the region of Lapland.