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Energy products expected to boost the forest sector

Energy use of forest chips can increase the forest sector's turnover by 1.5 billion euros and create over 7000 new jobs in Finland by 2020. However, simultaneous increase in the use of forest chips and domestic industrial roundwood can result in a serious workforce shortage and lack of harvesting equipment. The high emissions trading price of carbon dioxide will significantly improve the profitability of energy use of wood, which may change the production structure of the forest sector.

15 million cubic metres of forest chips

According to a survey implemented by the VTT Technical Research Centre of Finland and the Finnish Forest Research Institute for the Future Forum on Forests, the amount of available raw material would enable the annual use of forest chips in Finland to be increased by four to five times in comparison to the present usage, reaching the total of 15 million m^3. Harvestable forest chip resources are most found in young thinning stands (6.9 million m^3), in crown bio-mass (4.8 million m^3) and stump bio-mass (2.5 million m^3) from spruce forests, and in crown bio-mass from pine forests (1.7 million m^3).

The 15 million cubic metres of forest chips would constitute approximately 10 percent of the total use of fuels in Finland in 2020. The price of wood in energy use and the value of energy products manufactured from wood could double in comparison to the current prices, and the value added in the use of forest chips would thus be 1.5 billion euros more than at present. Over 7000 new jobs would be created in the forest energy value chains.

There is a richness of forest chip resources especially in South and North Savo, Kainuu and North Karelia, where forest chips could be used not only for producing electricity and heat, but also bio-diesel.

Export potential for forest energy products

The European Council decided in March that the EU countries shall increase their use of renewable energy sources from 7 to 20 percent by 2020. Also the Finnish Government Programme commits to significant support measures regarding the use of bio-energy and ensuring its entry into the markets.

The increased subsidies and the likely continuance of political steering well into the future mean that in practice enterprises can rely on the stability of the bio-energy product markets and invest in the use of forest energy more confidently than for example a year ago.

Even if Finland decided not to subsidize the use of forest energy as much as the rest of the EU countries, the growth of the demand for forest energy products would not necessarily decline. Large amounts of wood fuels could be exported to the countries by the Baltic Sea, where the use of renewable energy materials is subsidized much more significantly than in Finland (Fig. 1). The markets for forest energy products, e.g. wood pellets and bio-fuels, are internationalizing.

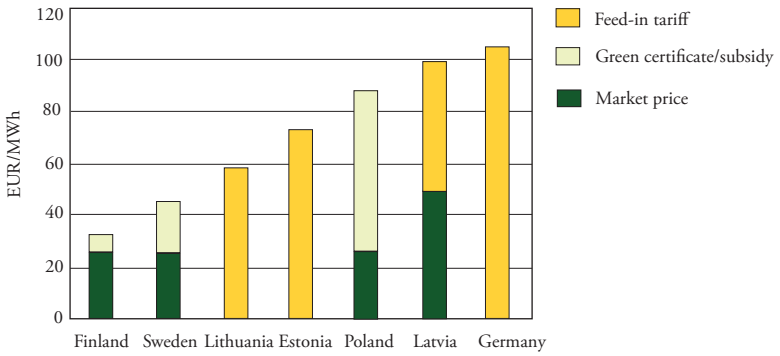

Figure 1. Value of electricity produced from wood in the countries by the Baltic Sea.

The workforce issue

Should the annual use of forest chips increase from 3 to 7.5 million cubic metres, as presented in the moderate scenario, the need for workforce in 2020 will add up to approximately 12 000 person-years. This is roughly 1 700 person-years more than at present. In a scenario where the procurement of forest chips increases to 15 million cubic metres and the domestic procurement of roundwood remains at approximately 55 million cubic metres, the need for workforce in forestry will add up to the total of 16 000 person-years.

In case of the use of forest chips increasing to 15 million m^3 and the domestic procurement of roundwood to 70 million cubic metres, as a result of wood export duties imposed by Russia, for example, the need for workforce in forestry will add up to no less than 18 500 person-years.

A Jaakko Pöyry Consulting survey commissioned by the Future Forum on Forests in 2005 foresaw that, without any special measures, only about 8 000 person-years will be available for forest management and harvesting in 2020. The workforce shortage can pose serious obstacles to increasing the procurement of forest chips and domestic roundwood.

As methods of tackling the problem of workforce availability have been suggested increasing the number of new study places, organising adult education, recruiting immigrants, improving the salary and working conditions, developing the full-time nature of the work and enhancing the image of the forest sector among the young. It is vital to start preparing for the threatening workforce shortage as soon as possible by resorting to various available methods simultaneously.

Will pulpwood find its way into energy production?

In addition to forest chips, also pulpwood could find its way into energy production, provided that its price in energy production climbs higher than what is paid for it as forest industry's raw material.

A comparison of the average energy values of pulpwood and forest chips reveals that forest chips are more cost-efficient in energy production than pulpwood. The smallest differences are found in birch pulpwood. The report shows that the average factory prices of Scots pine and birch pulpwood in March 2007 were 38-39 euros/m3, while for spruce pulpwood the average factory price was 45 euros/m^3. The energy value of birch pulpwood calculated on the basis of the factory prices is 16 euros per megawatt-hour (€/MWh), which is approximately 25% higher than the energy value of forest chips delivered to a factory. The use of Scots pine pulpwood in energy production is currently estimated to be 56% more expensive than the use of forest chips, and the corresponding percentage for spruce pulpwood is 100%.

The high emissions trading price of carbon dioxide (CO2) will increase the competitiveness of energy produced from wood. The emissions trading prices are expected to rise rapidly in the future. This means that there is a significantly increased potential for the energy use of wood to grow. In future it may turn out to be the most profitable to sell or use pulpwood, woodchips and sawdust for energy production.

In case of the emissions trading price of carbon dioxide rising to over 20 euros/tonne, for example, it will be profitable to replace peat by forest chips in such thermal power plants where this is technically possible. If the emissions trading price rises to over 50 euros, the energy value of wood will increase by approximately 40 euros per cubic metre. With the emissions trading prices at this high level at the latest, pulpwood can be expected to find its way into heat and electricity production.

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Future Forum on Forests
University of Joensuu
P.O. Box 111
FI-80101 Joensuu

Editor: Saija Miina
saija.miina@joensuu.fi

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