

Promoting renewable energy

The European Union has set objectives according to which the EU should reduce greenhouse gas emissions by at least 20% in relation to 1990 levels, increase the share of renewables in overall EU energy consumption to 20% and reduce primary energy use by 20% compared with the alternative without measures by the year 2020.

According to objectives national emission reduction targets will no longer be set for energy production and industrial branches that are included in the emissions trading system. Instead, the emissions trading sector will have an emissions ceiling at the Community level.

By 2020 Finland must reduce emissions in the non-emissions trading sector by 16% from the level in 2005, increase the share of renewables in overall energy consumption to 38% and increase the share of renewables to at least 10% of the petrol and diesel fuel that is sold.

To achieve the targets agreed in the European Union, the key objectives and means of Finland's climate and energy policy have been set out in a long-term climate and energy strategy that the Government submitted to Parliament in 2008. In 2005 the Government submitted a report on energy and climate policy for the Kyoto period (2008-2012).

The state spends about 160 million euros a year on steering energy conservation and energy efficiency. Roughly 90 million euros goes to research and development, 60 million euros to various energy subsidies and 10 million euros to tax subsidies. The amount of the subsidies will increase and in 2020 it will be significantly larger than at present.

The main question in the audit was how and what energy and climate policy objectives have been achieved and can be achieved by promoting the use of renewable energy.

Preparation related to promoting renewable energy as part of climate and energy strategies has been systematic, coordinated and

implemented through cross-sectoral cooperation. Proper plans have been made to monitor the implementation of measures and the achievement of objectives. In the 2008 climate and energy strategy, objectives concerning renewable energy were expanded considerably and figures were clarified compared to the 2005 report.

According to strategies, increasing the use of domestic renewable energy will reduce dependence on imported energy, so it also has significance for security of supply in the energy sector and will support employment and regional policy objectives. The use of renewables will also reduce greenhouse gas emissions. The main renewable energy source is wood.

In Finland the use of renewables and energy conservation/efficiency are steered with the help of technological development, economic instruments, regulations, standards and operational activities.

Energy support has been a key economic instrument in promoting the use of renewables. The amount of support increased significantly in 2008 and 2009. The production of electricity with wind power, small hydroelectric plants, wood chips, biogas and recovered fuel has been promoted with the help of tax subsidies. Precise cause-and-effect relations between measures and the increase in the use of renewables are impossible to evaluate on the basis of the audit. The use of renewables, which policy measures are meant to promote, has increased steadily during the past decade.

In the 2008 climate and energy strategy, the objective of increasing the share of renewables in overall energy consumption to 38% by 2020 was judged so large that new and efficient means are needed to achieve it. The main emphasis in the strategy is on increasing the use of wood chips, wind power and transport biofuels.

In 2011 a guaranteed price system (feed-in tariff) will be introduced for electricity produced with wind power, biogas, wood chips and wood fuel. Costs are to be covered with a budget appropriation. The feed-in tariff will remain in effect for 12 years. The current tax subsidy will be replaced with fixed support for electricity production. Fuel distributors will be required to supply biofuels according to levels that will be set annually and increased gradually so as to meet the EU objective by 2020.

The intention is to increase the amount of electricity produced with wind power to six terawatt-hours by 2020 with the help of a

feed-in tariff. Paying the guaranteed price will require an estimated 10 million euros in state funds in 2011. The cost will rise annually and reach about 200 million euros a year in 2020-2022, after which the need for funds will gradually decrease.

The objective is to increase the use of wood chips to 25 terawatt-hours. This will be achieved mainly with the help of a guaranteed price system for forest chip power plants and wood-fueled power plants. The feed-in tariff will cost about 34 million euros a year for wood fuel and about 22 million euros a year for forest chips at the 2020 level. Support for wood fuel will be tied to the price of electricity and for forest chips will depend on the price of emissions allowances. Forest energy production would also be promoted with subsidies for harvesting small timber, which would cost an estimated 36 million euros a year in 2020. At least forest chip power plants' investments in multi-fuel boilers would still be supported with energy subsidies. Forest energy subsidies would thus total about 92 million euros in 2020, not counting investment subsidies.

In the opinion of the National Audit Office, the feed-in tariff in its proposed form is not the best possible way to achieve renewable energy objectives from an economic viewpoint. The amount of subsidies is impossible to know in advance and the system will bind public funds long into the future.

The intention is to increase the use of transport biofuels to seven terawatt-hours in 2020. The distribution target will be increased to 20%. The cost of this obligation will be around 110 million euros in 2020 if the obligation can be met entirely with second-generation biofuels. Their share can be expected to double. With traditional biofuels alone, the cost would be about 20 million euros higher.

According to research data examined in the audit, greenhouse gas emissions can be reduced significantly by using wind power and wood chips. Using wood chips in combined heat and power plants is the most cost-effective way to reduce greenhouse gas emissions in Finland.

The audit also found research results according to which replacing fossil fuels with domestic bioethanol or biodiesel production would not reduce greenhouse gas emissions. In the light of these findings producing domestic grain ethanol or rapeseed biodiesel would not make sense from the viewpoint of climate policy.

Producing biofuels from crops on a global scale contains the risk of rising food prices on world markets. Using palm oil as a raw material for biodiesel contains the risk of destroying rainforests, thereby accelerating global warming. The National Audit Office considers that adequate attention should be paid to these factors when decisions are made to increase transport biofuels.

Promoting renewable energy will require substantial public funds, as much as 300-400 million euros a year at the 2020 level. For this reason the National Audit Office considers it very important to study the costs of different forms of support and impacts on emissions as thoroughly as possible so as to achieve the maximum net benefit.

The object of the audit was the promoting of renewable energy. For that reason the audit was not aimed at the steering of energy conservation and energy efficiency. However, energy efficiency and energy conservation should be promoted, because they will certainly reduce greenhouse gas emissions and at the same time reduce the amount of the emission target and the state subsidies and other resources to reach it.

On the basis of the audit, the answer to the main question is that promoting the use of renewable energy has achieved and can achieve a reduction in greenhouse gas emissions and dependence on energy imports to some extent. The possibility of a significant decrease in production in the forest industries, however, presents a risk that Finland will not be able to reduce greenhouse gas emissions and increase the share of renewables to meet the European Union's targets.