



Background paper: Who is burning Estonian wood for energy?



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This background paper is intended for decision makers and policy advisors in Estonia and the European Union. Those include members of the Estonian government and parliament, Members of the European Parliament, and officials inside and outside Estonia. It is also intended to inform stakeholders, such as journalists, businesses, NGOs and others.

Estonian Wildlife Fund, March 2023

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Design: Mudu

The document was produced with the support of Biofuelwatch

During discussions about the energy crisis and the volume of logging in state forests over the past year, there has been a lot of focus on the supply of woodchips for district heating. It has been said that environmental protection schemes in forests, such as a logging ban during the bird nesting season or logging restrictions in Natura 2000 forest habitats, reduce Estonia's energy security and leave district heating plants without fuel. At the same time, doubts have been expressed as to whether lack of woodchip supplies accounts for any or more than a very small fraction of the shortfalls in district heating.

We have therefore examined available sources of wood energy to find out what is happening to more controversial uses of wood for energy in different sectors, sectors that directly compete with biomass heat plants. The results of this research show that, over the past three years, the demand for wood from those other sectors has grown to match the total use of wood for district heating in Estonia.

How much wood is used for energy in Estonia?

According to the Statistical Office of Estonia, 3,393,000 m³ of wood was used for energy in Estonia during 2021. It is important to note that this includes wood used for both heat and electricity generation. It is difficult to distinguish between their respective shares at the level of fuel consumption. Based on the results of a study commissioned by the Estonian Association of Power Plants and District Heating and undertaken by researchers at Tallinn University of Technology about the use of wood for thermal energy, an estimated 2 million cubic metres of wood per year are burned exclusively for heat generation. In addition to district heating, an estimated 2-3 million m³ of wood a year are used locally for heat generation, both by industry and in homes. In autumn 2021, the state-owned energy company Eesti Energia started large-scale co-firing of oil shale and wood at the Balti Power Plant and retrofit the Auvere Power Plant in order to start large-scale co-firing there, too. Over the course of a few months, the company's annual wood consumption rose by 0.7 million tonnes per year.

Pellets

The largest pellet producers in Estonia are Graanul Invest and Warmeston, with four pellet plants each in the country. Graanul Invest's Estonian plants are located in Osula, Imavere, Ebavere and Helme, Warmeston's in Sõmeru, Sauga, Purila, and Järvere. Both companies increased their pellet outputs between 2018 and 2021. Their pellet production is split into higher quality 'premium' pellets and industrial pellets. The former are mostly used for domestic heating and the latter for industrial energy in converted coal plants or new cogeneration plants.

The lion's share of production is exported, with the main markets being in Denmark, the United Kingdom, and the Netherlands. In most of the pellet plants, roundwood accounts for more than half of the feedstock.

Some other companies, such as Lemeks Group and Hiiu Graanul, also produce wood pellets, but on a smaller scale. At the end of 2021, OÜ Baltania's torrefied pellets plant in Vägari was about to start operations with a wood requirement of 200 000 cubic metres per year, according to the SBP report. Torrefied pellets could in theory be used in coal-fired power plants without major retrofitting as well as in industrial processes instead of coal. Production of torrefied pellets has not proven to be successful anywhere in the world and the evidence of Vägari success is absent. They've failed to respond to phone and email queries on the matter.

Woodchips

In addition to pellets, woodchips are also exported from Estonia. Depending on their quality and the customer's specifications, exported woodchips may have alternative uses, for example in pulp and paper production, in addition to bioenergy production. However, most of the woodchips exported from Estonia are used to meet the energy demand of neighbouring countries. The price of woodchips is heavily influenced by the cost of transport; therefore woodchip exports are mostly coming from the coastal regions and islands in Estonia, where maritime exports are competitive with supplying the domestic timber market due to the higher mileage cost of road transport.

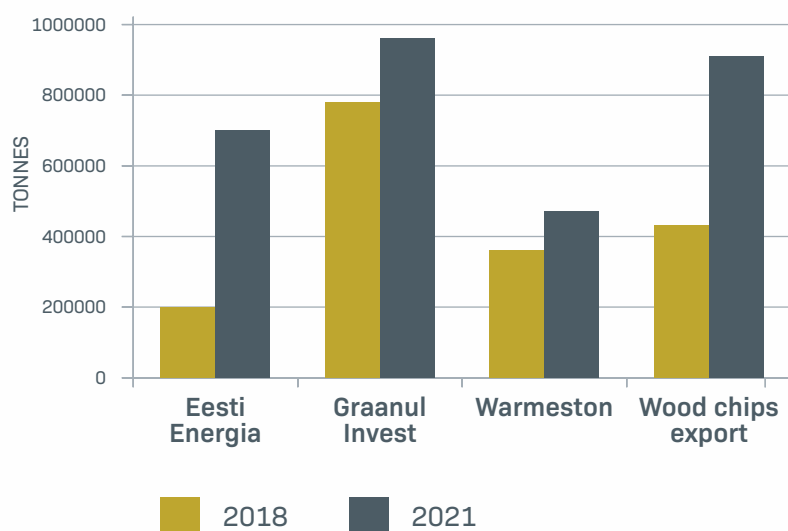
Wood combustion in Eesti Energia's plants

In autumn 2021, Eesti Energia commenced large-scale wood combustion in the Balti Power Plant. Subsequently, they started burning wood in the retrofitted Auvere Power Plant, too. The former produces not only electricity but also heat for the city of Narva, whereas the latter generates electricity only. Both of them now co-fire wood with oil shale. Eesti Energia has not disclosed the precise volumes or origin of the biomass burned in these plants, but during previous discussions, the amount of wood burned in both plants was estimated to amount to several million of tonnes. In addition to conventional woodchips, Eesti Energia also uses post-consumption waste wood and agricultural biomass. No data is available to allow us to estimate the shares of different types of biomass.

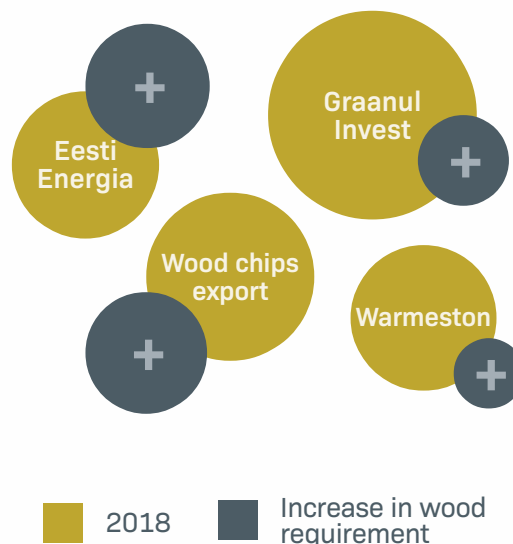
Increase in wood consumption

	Million tonnes in 2018	Million tonnes in 2021	Total wood requirement in cubic metres (2021)	Increase in wood requirement in cubic metres
Eesti Energia ¹	0.20	0.70	1.05	0.75
Graanul Invest ²	0.78	0.96	2.11	0.40
Warmeston ³	0.36	0.47	1.03	0.24
Wood chips exports ⁴	0.43	0.91	1.37	0.72
TOTAL			5.56	2.11

Increase in wood consumption



Total wood requirement



1 Eesti Energia's Annual Reports: www.energia.ee/ettevottest/aastaaruanne

2 Graanul Invest's Annual Reports for 2018 and 2021

3 Warmeston's Annual Reports for 2020 and 2021

4 globaltimber.org.uk/eutradefuelwoodchipsresiduespellets.htm

Recommendations:

- Within the context of free movement of goods, it is difficult to directly restrict the export of wood used for energy purposes, but it is necessary to systematically review and modify measures that indirectly promote exports. Such policies, including those related to the sale of timber from state-owned forests as well as subsidies for exporters of wood for bioenergy purposes should be reviewed.
- The burning of wood in Eesti Energia's power plants must be stopped. This is particularly critical for wood that is used in the least efficient way, i.e. for electricity generation only.
- The need to burn wood in district heating must be reduced. Investments in insulation of buildings and in combustion-free technologies such as heat pumps will help with this.
- Estonia must defend positions in the EU regarding the use of biomass which reduce the demand for wood for energy purposes.
- In the debates about energy security and forestry, claims that retaining environmentally friendly forestry measures such as permanently or temporarily excluding some forests from logging have impact on the availability of must be rejected.