

6. Estonia

The Estonian energy market has historically been highly concentrated and oriented towards one energy source - oil shale. The significance of other sources, including renewable sources, has been low, especially before the EU accession. However, Estonia's entry into the European Union influenced its emphasis on renewable energy and the share of renewable sources has been growing steadily ever since. While Estonia is producing nearly double the target of renewables, use in the transport sector is greatly lagging behind, barely reaching 1% in 2017. The target for 2020 is 10%.

Based on the target for the transport sector, specified in the EU Renewable Energy Directive (2009/28/EC), Estonia will have to ensure that 10% of liquid fuels used in the transport sector come from renewable sources by 2020. Previous measures have not led to any considerable progress towards this target. The target can be met by using an optimal combination of various measures – the obligation to supply biofuels in the market of liquid fuels, promoting the use of biomethane in vehicles, use of biofuels with high renewable energy content in transport, etc. Estonia's transport sector is also affected by the requirement of Directive 2009/30/EC for fuel suppliers to reduce greenhouse gas emissions of supplied fuels or energy at least 6% by 31 December 2020.

Since 2017 Estonian Government launched additional support schemes to stimulate the uptake of renewable energies, especially biomethane, in transport sector.

6.1 Production of biogas

The first biogas plant in Estonia started operating in 1987 in Pärnu based at a local pig farm, however it was closed due to bankruptcy of the pig production facility. Biogas production in Estonia has been considered as an efficient manure management method that produces heat and electricity for local consumption. So far, no biogas purification plants have been built. The first one is expected to start operating in 2019 in Viljandimaa.

In 2017 there were 17 biogas plants in Estonia that can be divided into three types (see Figure 6.1):

- a) Based on agricultural waste (5 plants)
- b) Based on wastewater and industrial water treatment (7 plants, four and three respectively)
- c) Based on landfill gas production (5 plants)

In addition, construction of a biogas plant to purify biogas to biomethane has been started in the centre of Estonia, in Viljandimaa. The expected date for the start of production is in 2019.

Currently the plants produce heat and electricity from the biogas (table 6.1).

Table 6.1. Biogas Production in Estonia in 2017, based on the production type.

	No. of plants	GWh		MW
		heat	electricity	electricity
Wastewater treatment	4		0,8	0,4
Agricultural	5		28,9	6,41
Industrial	3	60		
Landfills	5		13,18	3,75

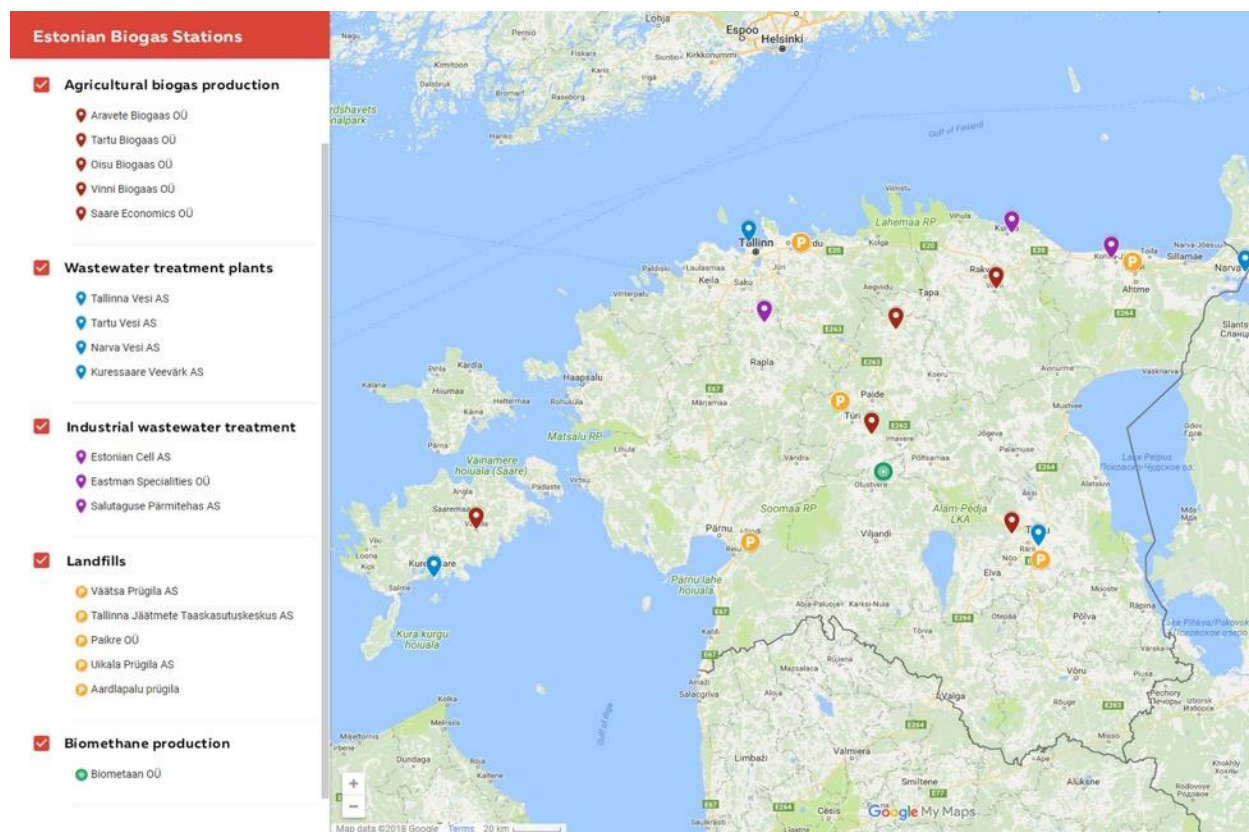


Figure 6.1: Estonian biogas plants in 2017

The biogas potential in Estonia was calculated with the preparation of the National Development Plan of the Energy Sector until 2030 and the accompanying action plans. The biogas potential for Estonia is estimated to be 633 million Nm³, of which 21 million Nm³ would be from landfills. This would enable us to produce 380 million Nm³ of biomethane. The study concluded that biogas has large unused energy potential. In addition to operational heating installations and power plants that produce heat and electricity from biogas, biomethane produced from biogas can be an important resource for increasing the use of renewable energy in the transport sector. Additional utilisation of the biogas resources is currently not required to meet Estonia's overall target for renewable energy by 2020, but there is a need to identify cost-effective options for meeting the renewable energy target of the transport sector. Based on the experiences of neighbouring countries, the Renewable Energy Action Plan until 2020 includes measures for placing biomethane on the market and those measures are listed among the actions for the implementation of the NDPES 2030 measures.

6.2 Utilisation of biogas

Currently, the produced biogas is used on site for heat and electricity production. However, measures have been taken in the past years to increase the use of biomethane in the transport sector.

Estonian private car stock is one of the least energy efficient in the European Union. Motorisation rate in Estonia is ca 500 cars per 1 000 inhabitants and it is steadily growing. Road transport and fuel consumption in transport have increased at the same rate as the economy, which is why Estonia has one of the most transport intensive and fuel intensive economies in Europe – for instance, Estonia uses twice as much transport fuel per unit of GDP than the EU average. This can partly be explained by low population density. The regional final energy consumption of transport sector was 8850 GWh in 2016.

The public transport of larger cities of Tartu and Pärnu is moving towards gas-buses that would use biomethane as a fuel in the future. In addition, the network of natural gas fuel stations is being developed

all over Estonia that would be able to also distribute biomethane when the necessary production levels are reached in the upcoming years.

6.3 Financial support systems

Estonia has no feed-in tariffs, but other support systems are used, mainly focused on increasing the use of biomethane as automotive fuel. There are currently two types of support systems:

1. Investment subsidies
 - a. Biogas plant construction – The support measure is organised by the Estonian Agricultural Information Board and they support 15-40% of the plant's costs, depending on the specific details. The yearly budget for the measure is 22,5 million euros.
 - b. Biomethane production unit development – the measure is managed by Environmental Investment Centre and its yearly budget is 28 million euros. They cover up to 35% of the costs.
 - c. Biomethane bus purchase for local governments – the measure is managed by Environmental Investment Centre and its yearly budget is 28 million euros. They cover up to 30% of the costs.
 - d. Biomethane station construction – the measure is managed by Environmental Investment Centre and its yearly budget is 2,23 million euros. They cover up to 35% of the costs.
2. Business promotion for selling biomethane
 - a. Electricity produced from renewable sources, including biogas. It is managed by the Estonian grid operator Elering AS and was 53€/MWh in 2017.
 - b. Sale of biomethane to the transport sector is managed by the Estonian grid operator Elering AS and is calculated as 100€/MWh less last month's natural gas average market price.