USDA Foreign Agricultural Service
GAIN Report
Global Agricultural Information Network

Voluntary _ Public

Date: 7/7/2016

GAIN Report Number:

Estonia

Post: Warsaw

Production and Consumption of Renewable Energy.

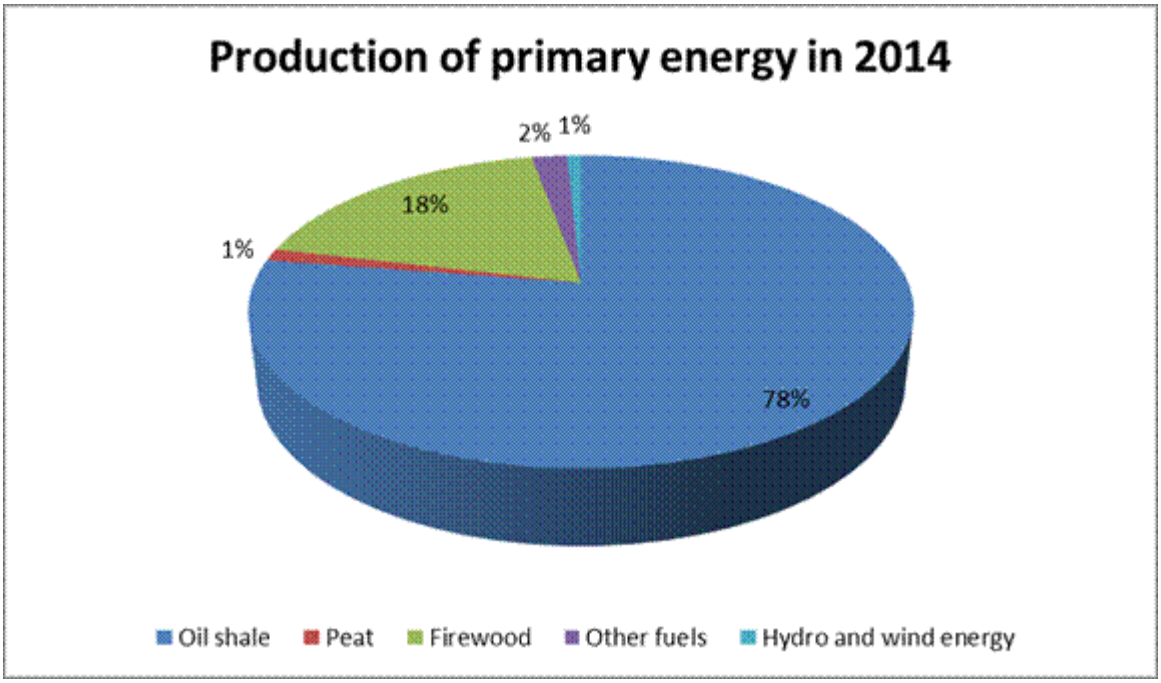
Report Categories:
Biofuels
Approved By:
Russ Nicely, Agricultural Attaché
Prepared By:
Piotr Rucinski, Agricultural Specialist

Report Highlights:
In 2014 Estonia's primary energy production exceeded 244 thousand TJ with over 77 percent produced from shale oil and 18 percent from wood. Estonia energy demand is satisfied through domestic production (70 percent) and imported supplies, mainly natural gas and both gasoline and diesel oil (30 percent). Estonia already fulfilled the target of 25 percent of Renewable Energy Sources (RES) in gross final energy consumption set by the National Renewable Energy Action Plan. However, actual share of bio-fuels in transport sector in 2015 is estimated at only 0.26 percent, very far from the EU target requiring 10 percent of RES in transport by 2020.
Please Note: This report is to be read in conjunction with the Annual 2016 EU28 Consolidated Report on Biofuels (Biofuels Annual_The Hague_EU-28_6-29-2016) and provides further information on Estonian market of biofuels.

General Information:

Energy production

In 2014 Estonia's domestic energy production accounted for about 70 percent of total energy supplies. The balance of requirements (30 percent) was met through imported energy resources (mainly natural gas, gasoline and diesel oil). The structure of primary energy production in Estonia is presented on the chart below. Over the past few years the structure has changed only slightly.



Source: Estonian Statistical Database

In Estonia the structure of energy production shows that shale oil is of prime importance. The renewable energy sources (RES) with the highest potential are biomass, wind, and hydropower. Energy production from firewood accounted for over 18 percent in 2014. In 2015, the share of other renewable energy sources (hydro- and wind energy) was estimated by the Department of Energy in the Ministry of Economic Development and Communications (MEDC) at 3-5 percent of total energy production. However, a positive trend is emerging as those energy sources have been on the rise recently.

Mandatory EU targets for renewable energy

According to the National Renewable Energy Action Plan, Estonia's target for 2020 is a 25 percent share of energy from RES in gross final energy consumption with at least 10 percent share of biofuels in final energy consumption in the transport sector. According to the National report on RES submitted to the EU in 2015, Estonia already fulfilled the EU requirement of over 25 percent share of RES in total energy in final energy consumption. However, the requirement of 10 percent of RES in transport is very far from the required 10 percent required by the EU.

Share of RES in energy supplies in Lithuania (%)

	2013	2014
RES in heating and cooling	43.2	45.2
RES in electricity production	13.0	14.6
RES in transport	0.2	0.2
Overall share of RES	25.6	26.5

Source: National Report on RES to the EU, 2015

Renewable energy sources

The renewable energy source with the greatest potential is biomass as over a half of Estonia's land area is forested and about a quarter is in agricultural production. The second largest potential RES is wind power due to Estonia's geographical location off the Baltic Sea. Hydro energy production also is a possibility but only via small hydro power plants. Solar and geothermal energy productions are insignificant as renewable energy sources. The table below shows the major energy sources used in electricity production.

Energy source	Production, Mtoe			
	2011	2012	2013	2014
Solid Fuels	11.0	9.8	11.5	10.4
Gases	0.7	0.6	0.4	0.6
Wind energy	0.4	0.4	0.5	0.6
Biomass and Renewable Wastes	0.8	1.0	0.7	0.8
Total	12.9	12.0	13.3	12.4

Source: Eurostat, Energy Statistics - Estonia

As over half of county's territory is forested, the country has also a great potential for energy production from wood based fuels - firewood, wood by-products, forest residues or waste wood. National Renewable Energy Action Plan shows that forest that can be potentially used for biomass production cover over 2.2 million hectares. The most common tree species are willow, grey alder, birch, and aspen. Those trees are characterized by a rapid increment of branches, especially during the first years of growth. Therefore, the cultivation of those trees on short rotation lands (less than 15 years) seems the most promising way to supply the biomass. Renewable Energy Policy Review reports that the firewood and wood chips are mainly used in households for heating.

Biofuels

In 2015 Estonia was far from the objective of reaching 10 percent of renewable energy in transportation as the share of biofuels in final consumption in transport sector was calculated at 0.26 percent (source: Biofuels Platform http://www.biofuels-platform.ch).

Currently in Estonia there is no technical capacity for production of bioethanol and biodiesel. In 2011

there were plans to build a new bioethanol plant Narva, however it has never been completed. The only one existing biodiesel plant, AS Biodiesel Paldiski with capacity of 100,000 tons of biodiesel per year, went bankrupt in 2010.

Estonia is a small producer and consumer of biogas. It is estimated that in 2015 over 70 percent was produced from landfill, 23 percent from sewage sludge and 6 percent from manure. Biogas produced is consumed by the domestic market.

As most of Estonian rivers are short (less than 10 kilometers) and the terrain is relatively flat there are unfavorable supply conditions for large hydropower plants. Nevertheless, there are many sites suitable for small hydropower plants, so the country has over 30 small hydropower plants operating with total capacity estimated at over 5 MW.

Wind is the important source of renewable energy. Due to its location by the Baltic Sea, mean wind speeds are high throughout the area. The wind potential in the coastal zone is regarded to be higher than in the other Baltic countries. The total wind power production is rising. According to the Department of Energy in the MEDC in 2015 the total installed wind capacity for wind production amounted to 300 MW compared to 149 MW in 2010. One of the largest operational wind installations are the Viru-Nigula wind farm, with a capacity of 24 MW, and the Pakri-1 wind farm, with a capacity of 18.4 MW.

Geothermal energy does not play any big role as a RES, as the geothermal conditions are not favorable and the geothermal gradient is lower than the average level. No thermal waters are found in Estonia.

Solar energy has limited potential as a renewable energy source due to the very small territory (about 45,230 square kilometers) and Estonia's geographical location (northern latitudinal placement). Conditions are unfavorable for making use of solar energy. Only seasonal use of solar plants would be possible.

End of the Report