

## IRENES - Integrating RENewable energy and Ecosystem Services in environmental and energy policies

### IRENES case study factsheet: Estonia

This documents aims at introducing the very general aspects of nature conservation, energy production and the related policy frameworks in Estonia.

#### 1. Biodiversity, Nature protection and related policy instruments

Including both water and land areas, around 23% of the Estonia is currently under protection, with more than 900 protected areas and 6 National Parks. Estonia hosts a wide range of habitats of European importance, including a large variety of forests, wetlands and semi-natural meadows. Although the proportion of habitats in favorable status has increased in Estonia according to the last Habitats Directive report, still 48% of habitats in Estonia show a *bad or inadequate status*.

In Estonia, the management procedure of protected areas is established on the basis of the *Nature Conservation Act*. In addition, the *Nature Conservation Development Plan (NCDP)* sets the strategic goals for the development of sectors related to the conservation. Ultimately, the *Environmental Strategy 2030* is a strategy for developing the sphere of the environment which builds upon the principles of the National Strategy on Sustainable Development “Sustainable Estonia 21” and serves as the basis for the preparation and revision of all sector-specific development plans within the sphere of the environment.

#### 2. Mapping and Assessment of Ecosystem Services under the Biodiversity Strategy to 2020

Although Estonia has been a late adopter of the Biodiversity Strategy to 2020 mandate to map and assess ecosystem services, the Mapping and Assessment of Ecosystem Services (MAES) will soon be released in October 2020. Within the project *Establishment of tools for integrating socioeconomic and climate change data into assessing and forecasting biodiversity status, and ensuring data availability* (funded by the European Union Cohesion Fund and the foundation Environmental Investments Centre), the Environmental Agency of Estonia together with the Estonian University of Life Sciences and University of Tartu have mapped the supply of several key ecosystem services and assessed the status of forest, wetland, grassland and agricultural ecosystems. The outputs of the MAES process in Estonia are expected to serve as a foundation for several spatial planning processes in Estonia.

### 3. Energy statistics

The primary energy supply in Estonia is dominated by oil shale (Figure 1). Oil shale is extracted from both opencast and underground mines located in North-East Estonia. Through an enrichment process, limestone is removed from the mix and oil shale is extracted and subsequently used in electricity and heat generation.

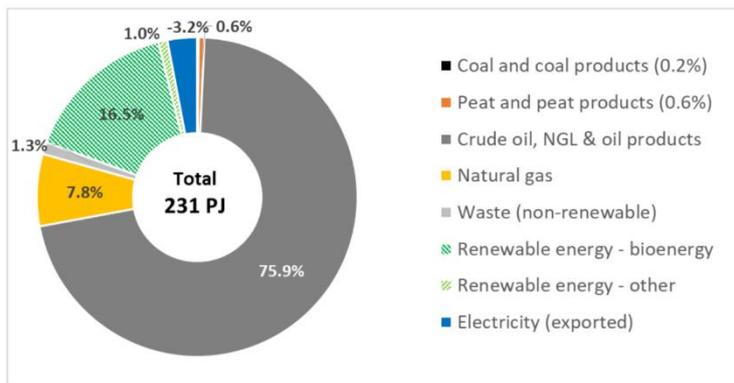


Figure 1. Share of energy supply in Estonia (Source IEA Bioenergy Country report 2018)

The share of renewable energy consumption in Estonia has been steadily increasing until 29.2% of the total energy consumption in 2017 (Figure 2).

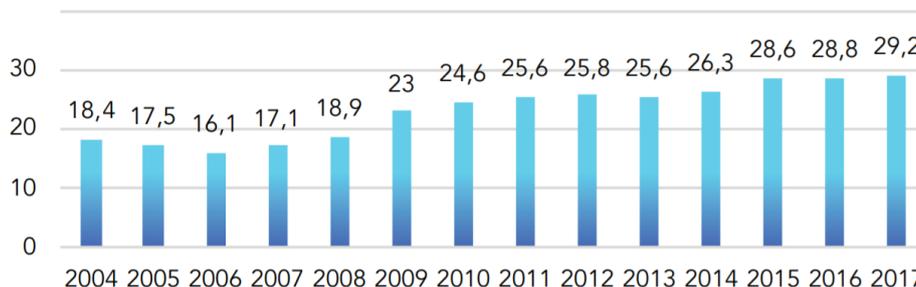


Figure 2. Share of renewable energy consumption in Estonia (Source Renewable Energy yearbook, 2018. Renewable Energy Association of Estonia)

Figure 3 presents the current share of renewable energy sources within the renewable energy supply in Estonia.

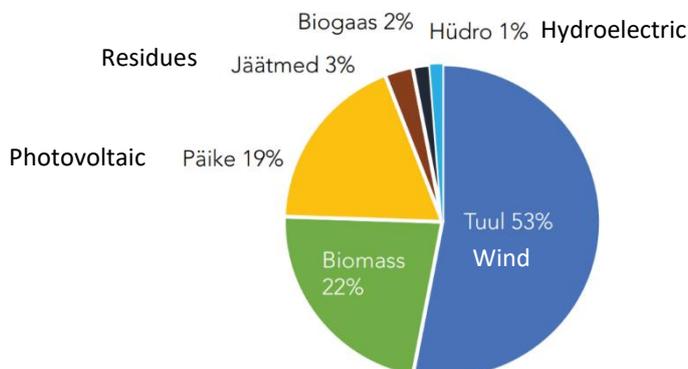


Figure 2. Share of renewable energy sources in Estonia (Source Renewable Energy yearbook, 2018. Renewable Energy Association of Estonia)

Among the key objectives of the Estonia's 2030 National Energy and Climate Plan (NECP), *the share of renewable energy in total final consumption must be at least 42% by the year 2030*. The NECP also sets a renewable energy share in heating of 63% by 2030, with a foreseen increase in the use of wood fuels for heating.

In spite of an energy landscape largely dominated by oil shale, during the first quarter of 2020, renewable electricity exceeded the oil shale energy for the first time. This can be explained by an increase in wind energy production due to favorable wind conditions and a good reliability of wind farms. Photovoltaic energy has also experience a very rapid increase. Since 2019, the number of renewable energy producers has grown over 3 times, due mostly to the fast construction of solar power plants.

#### 4. National and local renewable energy policies in Estonia

Estonia is moving towards achieving climate neutral, competitive, environmentally-friendly and socially responsible economic model by developing the energy communities and markets that consider the consumers, intermediating the best practices and applying up-to-date technology solutions. Based on the general principles of climate policy, the current government is developing Estonian economy into competitive low-carbon economy by the mid-century according to the government's action program Estonia 2035 that is currently under preparation and will be finalized in April 2020. Policy document setting the measures for achieving the climate-neutral economy by 2050 are currently under development. In the context of IRENES project, a handful of renewable energy related policies are relevant:

- Estonian national energy and climate plan until 2030, which is the main policy, bringing together many sectorial legislative documents (see section 4.1 for an in-detail description)
- Estonian National Energy Development Plan 2030+
- Electricity Market Act
- Climate change adaptation plan by 2030 and respective development plan
- Sustainable Development Act

##### 4.1 Estonian National Energy and Climate Plan until 2030

In December 2019 Estonia published the Estonian national energy and climate plan until 2030 (NECP 2030), which is required from all member states. The plan is financed under the responsibility of the Ministry of Finances based on the budget that is prepared together with other ministries. Three ministries are responsible for planning, implementation and implementation monitoring of the measures planned in the sectors covered by the plan – Ministry of Environment, Ministry of Economics and Communication Affairs, Ministry of Rural Affairs.

National objectives and measures that are required in the mandatory energy and climate plan of the Member States are set primarily in the sectoral development documents and policy principles:

- 1) General Principles of Climate Policy until 2050 (hereinafter GPCP 2050);
- 2) Estonian National Energy Development Plan 2030 (hereinafter ESDP 2030);

- 3) Climate change adaptation plan by 2030;
- 4) Transport development plan 2014-2020 (2021-2030 plan is under preparation);
- 5) Forestry development plan 2011-2020 (2021-2030 plan is under preparation);
- 6) National waste management plan 2014-2020 (2021-2030 plan is under preparation);
- 7) Estonian rural development plan 2014-2020 (2021-2030 plan is under preparation).

NECP 2030 shall be updated in the coming years based on the development plans under preparation for the next decade and submitted to the European Commission by 30 June 2023 and in connection with supplementing the national targets by 30 June 2024. NECP 2030 describes the provisions in these development documents and highlights the measures and trends under discussion. The strategic assessments of the environmental impact (SEA) were conducted on the sectoral development plans underlying NECP 2030 according to the Environmental Impact Assessment and Environmental Management System Act. The latter regulates national strategic planning documents but not the process of initiating and drafting the SEA of the documents drafted for compliance with EU and other international requirements. For these reasons, the SEA process has not been performed during drafting the NECP 2030 but it was conducted for the underlying national regulations.

Key objectives of NECP 2030 are as follows (see also table 1):

- **Achievement of 80% reduction of Estonian greenhouse gas emission by 2050 (incl 70% by 2030):** in 1990, greenhouse gas (GHG) emission was 40.4 Mt CO<sub>2</sub>ekv (excl LULUCF), in 2017, the Estonian GHG emission was 20.9 Mt CO<sub>2</sub>ekv (incl 14.7 Mt CO<sub>2</sub>ekv from the energy sector). The projected GHG emissions for 2030, when existing and additional measures indicated in NECP 2030 are applied, is 10.7-12.5 Mt CO<sub>2</sub>ekv, (excl LULUCF).
- **Achieve 13% reduction of GHG emissions by 2030 compared to 2005 levels in the sectors covered by the shared effort regulation** (transport, small-scale power industry, agriculture, waste management, forestry, industry). According to the GHG inventory of 2019, the year 2005 GHG emissions in the sector of the shared effort regulation totalled to 6.3 Mt CO<sub>2</sub>ekv<sup>1</sup> or in 2030, the emissions of the sector may be 5.5 Mt CO<sub>2</sub>ekv (an exact target for 2030 will be clear in 2020, when the national emission levels for 2021 to 2030 of the sectors covered by the shared effort regulation will be established).
- **Share of the renewable energy from the gross final consumption in 2030 shall be at least 42%:** in 2030, production of renewable energy is 16 TWh or **50% from the gross final consumption**, incl renewable electricity 4.3 TWh (2018 = 1.8 TWh), renewable heat 11 TWh (2018 = 9.5 TWh), transport 0.7 TWh (2018 = 0.3 TWh)
- **The gross final consumption of energy shall remain on the level of 32-33 TWh/yr until 2030.** The Estonian economy is growing and hence keeping the consumption on the same level needs significant measures. The general energy savings obligation in the amount of 14.7 TWh during the period of 2020-2030 that is applied based on the Energy Efficiency Directive (2012/27/EU) helps keep the final energy consumption on the same level. Energy consumption can be reduced by the means of making the primary energy more efficient.
- **Reduction in consumption of primary energy by up to 14% (compared to the peak of the last years):** in the period of 2020-2030, Estonia is capable of reducing primary energy consumption, among others, by modernising the oil shale industry.

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<sup>1</sup> Estonian GHG emissions inventory from 1990 to 2017: <https://www.envir.ee/et/eesmargid-tegevused/kliima/rahvusvaheline-aruandlus/kui-palju-eestis-kasvuhonegaase-tekib>

- **Ensuring energy security by keeping the rate of dependency on imported energy as low as possible:** use of the local fuels is kept as high as possible (incl increasing the use of the fuel-free energy sources), biomethane production and use potential is exploited.
- **Meeting the minimum criteria of interconnectivity** Increase in capacity towards Latvia and synchronisation of power grid with Central European frequency band in 2025.
- **Use of research and development and innovation in measures to keep the competitiveness of economy:** implementation of the energy sector's research and development enables to apply the measures by using the research and innovation achievements.

Table 1. Estonian main energy and climate policy targets.

Targets for 2030	Policies
National target for reduction of Estonian greenhouse gases compared to 1990 emission level is 70% by 2030 (General Principles of Climate Policy until 2050)	The long-term objective for Estonia is to transfer to the low-carbon emission economy that means iterative purposeful reorganisation of the economy and energy system more resource efficient, productive and greener.
The binding national objective of 13% reduction of greenhouse gases for 2030 compared to the level of 2005 according to the Effort Sharing Regulation ((EU)2018/842)	Reduction in use of the fossil fuels and energy efficiency will reduce the carbon emissions in transport, agriculture, waste management and industrial processes, also in small-scale energy production where energy is produced in equipment with less than 20 MW of rated capacity.
Carbon emission in land use, land use change and forestry (so-called LULUCF) sector shall not be higher than capture (as per (EU) 2018/841)	Volume of lignocellulosic (wood) fuel production and use is primarily influenced by the carbon capture obligation of the managed forest land, that is established in the national forestry accounting plan <sup>16</sup> and with the measures of the drafted forestry development plan 2021-2030.
Final energy consumption, 32TWh/yr	For 2021-2030, maintenance of the final energy consumption needs achievement of energy savings that form 0.8% of an average final energy consumption of 2016-2018 every year. The achieved energy saving must be cumulative, i.e. the volume of the saving achieved during previous years must be stable during the whole period.
Up to 14% reduction in primary energy consumption	The primary energy intensity in Estonia is the highest in the Member States of EU17. According to the projections for 2017-2030, consumption of primary energy will drop by a quarter
42% share of renewable energy in gross final consumption of energy	Share of renewable energy is increased by changing the fossil fuel boilers to renewable fuels, increasing electricity generation on fuel-free energy sources and use of biofuels in transport.
Share of renewable electricity 40%	Increase of production volumes in wind energy (by the means of land as well as offshore wind farms), solar energy and use of lignocellulosic (wood) fuels is applied and hydraulic pump stations will be built.
Share of fuel free energy sources in the final power consumption, >25%	Building of land and offshore wind farms and use of the solar energy potential.

Cogenerations's total electrical power of >600MW <sub>el</sub>	In realisation of the cogeneration potential, the cogeneration forms 1/4 of the electrical power
Share of renewable energy in heating sector, 63%	Potential of the woodfuels is used in the area of the heating and cooling energy and the share of heat pumps is successively increasing.
Share of renewable transport fuels, 14%	Primarily covered with domestic biomethane by considering the perspective of using gaseous fuels in Estonia. It is planned to produce up to 340 GWh of biomethane (actual needed volume without multipliers).