Ministry of Economic Affairs and Communications

Objective of Estonian energy savings policy

Notification of Estonia to the European Commission on the basis of Articles 3(1) and 24(1) of Directive 2012/27/EU

CONTENTS

1 INTRODUCTION

This notification has been drawn up pursuant to the notification obligation of Estonia as a Member State of the European Union set out in the Energy Savings Directive 2012/27/EU. Pursuant to Article 3(1) of the Directive, Estonia must notify the European Commission of the indicative national energy savings target not later than on 30 April 2013. Pursuant to Article 24(1) of the same Directive, by 30 April each year starting in 2013, Estonia must also provide an overview of the efficiency of implementation of the current energy savings policy.

Directive 2012/27/EU lays down that Member States explain how the indicative energy savings target has been calculated, and what data it is based on. This report describes in detail how the final energy consumption in 2020, presented as the energy savings target in Estonia, has been calculated and how the corresponding primary energy consumption in 2020 has been found.

Estonia has launched a process for updating the national long-term development plan of the energy sector. The process will involve a detailed forecast of the future of the energy sector, which would specify, first and foremost, the production scenarios of electricity, heat, oil shale and secondary fuels in the energy sector. As the results of the forecast had not been completed by the date that this report was prepared, the primary energy consumption in 2020, corresponding to the final energy consumption, has been found with the help of a simplified calculation model.

1.1 Energy savings targets approved in development plans

Energy savings policy is part of the Estonian energy policy. The Estonian energy policy has been described in the "National Development Plan of the Energy Sector up to 2020", approved by the Riigikogu on 15 June 2009. Its subdocument "Energy Efficiency Plan 2007–2013", approved by the Government of the Republic on 5 November 2007, describes in detail the national energy savings target of Estonia, and activities to improve energy efficiency and achieve energy savings.

The Estonian energy policy has set targets for the energy savings policy on several occasions in the past. The energy savings target of Estonia as described in quantitative terms has previously been set in the following development plans:

- the "National Long-term Development Plan of the Fuel and Energy Sector up to 2015", approved in the Riigikogu on 15 December 2004, set a target of keeping the quantity of primary energy consumption at the 2003 level until 2010;
- the overall target stipulated in the "Energy Efficiency Plan 2007–2013", as approved by the Government of the Republic on 5 November 2007, is to fulfil two-thirds of the target set forth in Directive 2006/32/EC, and to ensure 5.1 PJ or 1417 GWh (transport sector not included) fuel and energy savings in their final consumption during the period 2008–2013. The total target for the energy savings of Estonia through 2008–2016 as set on the basis of Article 4(1) of Directive 2006/32/EC is to achieve energy savings of 9.9 PJ in the final energy consumption by 2016, as a result of energy-saving measures;
- pursuant to Guideline 5 of the Annex to Council Recommendation 2010/410/EU, the "National Reform Programme "Estonia 2020"", approved by the Government of the Republic on 28 April 2011, set a target for Estonia to keep the final energy consumption at the 2010 level (2866 ktoe, i.e. 120 PJ, forecast) until 2020. Taking account of the forecasts set out in the "Renewable Energy Action Plan up to 2020", approved by the Government of the Republic on 26 November 2010, the baseline scenario of final energy consumption (the final energy consumption in 2020 will be 137 PJ) and later data on the final energy consumption in 2010 (final energy consumption was 119 PJ), as published by

Statistics Estonia, the target means that, as a result of implementation of the Estonian energy savings policy, a saving of 18 PJ/y, i.e. 13.1%, will be achieved in the final energy consumption for 2020.

Currently valid energy savings targets have been established by the "Energy Efficiency Plan 2007–2013" and the "National Reform Programme "Estonia 2020"".

In summer 2011, in line with the energy savings target of the "National Reform Programme 'Estonia 2020'" as approved by the Government of the Republic, the Ministry of Economic Affairs and Communications prepared, pursuant to Article 14(2) of Directive 2006/32/EC, "Mid-term overview of implementation of the 'Energy Efficiency Plan 2007–2013' and of further implementation of the Plan" and presented it to the European Commission in September 2011.

1.2 Preliminary work for setting the energy savings target and justification for the selected target type

On 21 February 2012 the Ministry of Economic Affairs and Communications, the Estonian Development Fund, Enterprise Estonia and Elering AS agreed to launch a cooperation network that aims to establish a knowledge base required for preparing a new development plan for the energy sector. Substantial work on preparing a new development plan for the energy sector started in October 2012. Under the leadership of the Estonian Development Fund, thematic expert groups were formed, one of which focussed on analysing Estonian energy consumption trends up until 2050. As a result of the work of the expert group, in March 2013 the baseline scenario for energy consumption and the scenario for energy efficiency in Estonia were completed.

On the basis of Article 3(1) of Directive 2012/27/EU, Member States may set their energy savings target in respect of either primary or final energy consumption. As Estonia participates and will participate actively in transnational energy trade, being an exporter of several energy carriers (electricity, shale oil, wood pellets), the use of primary energy in Estonia depends largely on the situation on electricity markets in neighbouring countries and on the export of wood-based fuels and products made of oil shale. Therefore, it is not expedient for Estonia to set a target in respect of primary energy consumption. Setting a target in respect of final energy consumption will ensure that the measures applied by the state have a direct impact on the final energy consumption in Estonia and will help energy consumers in Estonia to cope. As a result of setting a target in respect of primary energy consumption, problems to be dealt with would be mainly those of the energy sector and energy savings in final consumption would deserve little attention. **Due to the listed justifications, Estonia sets its energy savings target in respect of final energy consumption.**

Calculations for converting the energy savings target to primary energy consumption were made by the Energy Department of the Ministry of Economic Affairs and Communications.

2 FORECAST FOR FINAL ENERGY CONSUMPTION FOR 2020

This part provides a general overview of the forecast for the energy savings target in Estonia: assumptions and calculation methodology used and results broken down by final consumption sectors and in total.

Forecasts for energy consumption were prepared in the working group for energy consumption formed at the Estonian Development Fund. The working group included energy experts from various companies and authorities in Estonia. The members of the working group were Elering AS, Eesti Gaas AS, Tallinn University of Technology, SEI Tallinn, Tartu Regional Energy Agency, Estonian Member Committee of the World Energy Council, Estonian Biogas Association, Estonian Geothermal Association, Estonian Owners Central Association, Estonian Development Fund, Fund KredEx, Harju County Government, Ministry of the Environment, Ministry of Economic Affairs and Communications, etc.

The forecast for the final energy consumption was made considering two possible scenarios:

- **baseline scenario** where future energy consumption was calculated on the basis of current trends. According to the scenario, no additional measures other than those currently used are applied in energy policy in order to improve energy efficiency, and the growth in energy efficiency will be achieved through technological development or replacement of current technologies. A prerequisite for technological development and replacement of current technologies in this scenario is their economic efficiency;
- **energy efficiency scenario** – according to the scenario, additional measures to those currently used are applied in the state in order to improve energy efficiency. A prerequisite for the application of the measures is their efficiency and contribution towards development of society and the state. Possibilities arising from technological development support the application of the scenario.

2.1 Household energy consumption

Household energy consumption was forecast in two ways:

- the consumption of electricity has been calculated using the top-down calculation method, where consumption is determined at the level of the sector as a whole, without analysing the sector in detail;
- the consumption of heating fuels and heat was estimated using the bottom-up calculation method, where consumption is determined by a detailed analysis of the parts of the sector.

Future electricity consumption was calculated on the basis of the estimated changes in consumption. The forecast for household electricity consumption is based first and foremost on the assumption that the growth in electricity consumption depends on growth in GDP. As a result of the discussions held in the working group, a decision was made to use the following assumptions in the calculations of energy consumption: in the case of the baseline scenario, electricity consumption in households increases constantly by 1.75% a year up until 2050 and, in the case of the energy efficiency scenario, the annual growth in consumption decreases from 1.50% to -1.50% in 2050. The consumption of electricity was estimated separately in the case of electricity used for heating buildings, which depends on climatic conditions, and consumption, which does not.

The consumption of heating fuels and heat was estimated using the bottom-up calculation method, according to changes in the heated area of buildings. The factors considered were reconstruction of buildings, addition of new buildings to the existing ones and removal of old buildings from use. In the model, the energy consumption in private houses and apartment buildings was calculated separately. The difference between the baseline scenario and the energy efficiency scenario arose from the assumptions about the pace of reconstruction of the buildings. The estimate of the baseline scenario was that it would be possible to reconstruct 10% of the residential area within 10 years, while the energy efficiency scenario used an assumption that 15% of the residential area could be reconstructed within 10 years. The volume of new building was calculated according to the estimate that the residential area will increase 10% compared to the base area within 10 years, while the drop-out of use of old buildings was estimated 3% from the total area of buildings within 10 years.

The forecast for household heat consumption is based on the estimates of the future heat consumption of buildings, which in turn arises partially from the requirements of Directive 2010/31/EU on the energy performance of buildings. As no better data were available, the heat consumption in buildings being reconstructed was estimated using the assumptions of the RE100 vision of the Estonian Renewable Energy Association, while the results obtained by analysing the data of Statistics Estonia were used for existing buildings. Historical data about energy consumption were normalised by the outside temperature (degree days).

Energy used for motion in households was calculated while analysing energy consumption in the transport sector.

2.2 Energy consumption in commercial and public service sector

The fastest increase in energy consumption was in the commercial and public service sector in the period of 2000–2011 – the increase in the consumption of both electricity and heat in the final consumption sector in this period was approximately 1.5-fold.

The consumption of electricity and heat in the commercial and public service sector was calculated separately. The increase in the consumption of electricity in the past years has also correlated quite closely with the GDP growth. Therefore, the forecast for electricity consumption is based on estimates obtained as a result of working group discussions about how the GDP growth and change in electricity consumption correlate with each other. The GDP growth forecast was based on estimates by the Ministry of Finance and, according to that, the average GDP growth in Estonia through 2011–2020 is forecast at 3.5% a year. According to the baseline scenario, the annual growth in electricity consumption will be a 0.37-fold GDP growth, while according to the energy efficiency scenario the annual growth in electricity consumption is expected to be a 0.24-fold GDP growth. In the period of 2000–2010 the annual increase in average electricity consumption was equal to a 0.44-fold GDP growth. As in the case of households, a difference was also made between electricity consumption that depends on climatic conditions and consumption that does not.

The methodology and some assumptions in the calculations were similar to the assumptions used for buildings in the household sector. Heat consumption in existing buildings was determined on the basis of data from the register of construction works and on estimates of heat consumption in buildings, produced by analysing data from various sources. The forecast also predicted heat consumption levels in new and reconstructed existing buildings. Based on the data obtained, the weighted average special consumption of heat was found in commercial and public service sector buildings. The calculations of the area of the buildings determined the area according to data from the register of construction works and estimates of the pace of new construction (in the period of 2011–2020 the area of new buildings in the sector will be 15% of the base level), pace of reconstruction and the speed at which the buildings fall out of use (in the period of 2011–2020 the area of buildings that will fall out of use will form 3% of the base level). Assumptions about the pace of reconstruction varied by scenarios: according to the energy efficiency scenario, in the period of 2011–2020 15% of the area of the buildings in the sector will be reconstructed, while according to the baseline scenario the share will be 10%. Heat consumption was determined on the basis of data on weighted average special consumption of heat and the area of the buildings.

2.3 Energy consumption in industry and agriculture

As the share of agriculture and fishery in Estonia's energy consumption is very small, the working group decided to review and estimate the energy consumption in industry, agriculture and fishery together. The availability of data on industry sector means that no energy consumption forecasts other than the top-down method can be used. In the case of both heat and electricity, the interrelations between GDP changes and energy consumption changes were analysed in the first place. As a result of the discussions, the working group for energy consumption determined the interrelations between GDP changes and energy consumption changes. The values used in the calculations are set out in the following table:

Energy consumption scenario	Average increase in energy consumption per percent of GDP change in the period of 2000–2010	Average increase in energy consumption per percent of GDP change in the period of 2011–2020

Baseline scenario – electricity	0.74%	0.74%
Energy efficiency scenario – electricity	0.74%	0.52%
Baseline scenario – heat	0.98%	0.70%
Energy efficiency scenario – heat	0.98%	0.50%

The GDP growth forecast was based on estimates of the Ministry of Finance, according to which the average GDP growth in Estonia through 2011–2020 is forecast at 3.5% a year.

2.4 Transport

Similarly to the industry sector, there is not enough data about the transport sector in order to use the bottom-up method for calculating energy consumption, and therefore the top-down method was used to calculate energy consumption in the transport sector. According to the method, energy consumption was calculated on the basis of historical data, GDP changes and interrelation between GDP changes and energy consumption changes. The interrelation between GDP changes and energy consumption changes depended, in turn, on the energy consumption scenario. The values used in the calculations are set out in the following table:

Energy consumption scenario	Average increase in energy consumption per percent of GDP change in the period of 2000–2010	Average increase in energy consumption per percent of GDP change in the period of 2011–2020
Baseline scenario	0.68%	0.65%
Energy efficiency scenario	0.68%	0.45%

Of the gross energy consumption, the consumption of single fuels was calculated on the basis of an assumption about the fuel use structure, which depended on the energy consumption scenario. According to the baseline scenario, in 2020 60% of the energy consumed in transport will come from diesel fuel, 38% from petrol and the remainder will come from other energy sources. According to the energy efficiency scenario, in the same year 58% of the energy used in transport will come from diesel fuel, 36.5% from petrol, 1.5% from electricity and 4% from gaseous fuel (mainly methane fuels).

2.5 Gross final energy consumption

As a result of energy consumption modelling, the consumption of electricity, heat and fuels in the sectors under review was calculated according to the energy consumption scenarios. The results of electricity consumption modelling are set out in the following table:

Energy consumption scenario	**Electricity consumption, GWh**		
	2000	2010	2020
Baseline scenario	**4895**	**6893**	**7902**
incl. households	1466	2023	2269
incl. industry	2049	2281	2921
incl. service	1380	2543	2626
incl. transport		46	86
Energy efficiency scenario	**4895**	**6893**	**7664**
incl. households	1466	2023	2222
incl. industry	2049	2281	2751

incl. service	1380	2543	2530
incl. transport		46	160

The results of heat consumption modelling and fuel consumption modelling concerning fuels used in block heating are set out in the following table. The consumption of heat in households, industry, and commercial and public service sector has been normalised (in order to reduce the impact of climatic variations between different years on the result, incl. also on years 2000 and 2010).

Energy consumption scenario	**Heat consumption, PJ**		
	2000	2010	2020
Baseline scenario	**60**	**59**	**57**
incl. households	36	35	33
incl. industry	18	17	19
incl. service	6	8	6
Energy efficiency scenario	**60**	**59**	**54**
incl. households	36	35	32
incl. industry	18	17	18
incl. service	6	8	5

Data on gross energy consumption obtained as a result of the modelling are set out in the following table. The data for 2010 as set out in the table do not coincide with the energy statistics as the energy consumption has been normalised (in order to reduce the impact of climatic variations on energy consumption in 2000 and in 2010).

Energy consumption scenario	**Final energy consumption, PJ**		
	2000	2010	2020
Baseline scenario	**102**	**117**	**126**
incl. households	42	42	41
incl. industry	25	25	29
incl. service	11	17	15
incl. transport	24	33	41
Energy efficiency scenario	**102**	**117**	**119**
incl. households	42	42	40
incl. industry	25	25	27
incl. service	11	17	14
incl. transport	24	33	38

3 TARGET FOR FINAL ENERGY CONSUMPTION FOR 2020

As it appears from the energy consumption forecast carried out in the working group for energy consumption, the energy savings target approved in the “National Reform Programme ‘Estonia 2020’” by the Government of the Republic is currently in compliance with the final energy consumption in 2020 as calculated in the energy efficiency scenario.

The base level of the valid target for final energy consumption in 2010 has not been recalculated in order to reduce the impact of climatic conditions on the indicator. The final energy consumption for 2020 currently approved in the Government of the Republic as the target does not take into account the possible variation in climatic conditions. The basic data used in the energy consumption modelling showed energy consumption of the sectors through 2000–2011. In the same period the variation in the degree days of the warmest and the coldest year was 1.29-fold (calculated in respect of temperature 17°C). The share of energy consumption in Estonia that depends on climatic conditions may be estimated as approximately 55%. It means that, in the case of the current level of final energy consumption, the fluctuation in the consumption may be up to ±9 PJ, depending on variation between different years.

The indicative energy savings target of Estonia pursuant to Article 3(1) of the Energy Savings Directive 2012/27/EU is set according to:

- the analyses made in the working group for energy consumption and the vision submitted by the working group about the energy efficiency scenario for energy consumption;
- the need to take into account climatic variations between different years in setting the energy consumption target.

The indicative energy savings target of Estonia pursuant to Article 3(1) of the Energy Savings Directive 2012/27/EU is:

To ensure that the gross final energy consumption in Estonia in 2020, taking into account climatic variations between years, is not higher than the final consumption in 2010 according to the energy statistics data of Estonia (119 PJ).

According to the Ministry of Economic Affairs and Communications, this target is in compliance with the energy savings target set in the "National Reform Programme 'Estonia 2020'".

4 ENERGY SAVINGS TARGET EXPRESSED IN PRIMARY ENERGY

If a Member State sets its indicative energy savings target in respect of final energy consumption, then pursuant to Article 3(1) of the Energy Savings Directive 2012/27/EU the energy savings target must also be expressed as the consumption of primary energy. The information is necessary in order for the European Commission to estimate the feasibility of achieving the general energy savings target of the European Union for 2020 as described in Article 2 of the same Directive.

Primary energy consumption has been defined in Article 2(2) of Directive 2012/27/EU. According to the definition, primary energy consumption means gross inland consumption, excluding non-energy uses.

To calculate primary energy consumption, the following steps (stages) were carried out:

1. Determining the share of district and block heating in heat consumption

   A considerable share of heat used by final customers is bought from district heating networks, through which heat is marketed to consumers both by combined heat and power plants as well as by district heating boiler plants. The model for calculation of final energy consumption was used to find only the gross heat consumption, which covers fuels used in block heating, and district heating. The share of district heating for 2020 was forecast according to the share of district heating through 2000–2011. A summary of the data is set out in the following table:

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2020 min	2020 max
Households	47.1%	49.6%	49.1%	47.5%	47.1%	50.4%	50.7%	44.8%	42.1%	40.9%	42.0%	43.3%	45.0%	47.0%
Service	95.0%	93.3%	85.4%	81.2%	80.5%	84.0%	89.1%	80.5%	78.5%	79.6%	79.8%	87.0%	82.0%	85.0%
Industry	49.8%	43.1%	50.6%	45.8%	45.7%	44.8%	43.9%	35.5%	35.2%	44.4%	47.8%	39.3%	44.0%	46.0%

The factor increasing the share of district heating is the connection of large consumer areas using block heating in cities to the district heating network, provided that the price of the district heating service for a consumer is more favourable than the use of block heating. The share of district heating may be reduced by terminating the operation of district heating networks with a small consumer base in small rural settlements.

2. Determining production volumes of transformed energy

This step involved the forecast of the self-consumption volume of the energy sector, the volume of export and import of electricity and the volume of fuel-free energy sources used in the production of electricity in order to discover the total quantity of electricity and heat produced in power stations and installations servicing district heating systems. Fuel-free energy sources used in the production of electricity in Estonia are wind, hydropower and solar. The model has not taken into account the potential renewable energy statistics trade. According to the calculations, the estimated production of electricity from renewable energy sources in the combined heat and power plants is 600 GWh, pursuant to the Electricity Market Act under legislative proceedings in the Riigikogu, the quantity of electricity produced from renewable energy sources should total up to 1.5–1.6 TWh. Therefore, electricity to be produced from fuel-free energy sources should amount to 1000 GWh.

The self-consumption of the energy sector in Estonia increases on account of extending the volume of oil shale extraction and shale oil industry. The calculations estimated that the consumption of electricity in the energy sector will increase by 27.42% compared to the level of 2010 and 2011.

The calculations used the assumption that the export and import in 2020 will be equal, i.e. this does not increase the production of electricity in thermal power stations in Estonia.

3. Determining fuel consumption in combined heat and power plants

To find the quantity of fuel consumed in combined heat and power plants, the calculations estimated the share of electricity being produced in combined heat and power plants in 2020 in the total production of electricity in thermal power stations. It is estimated that the indicator in 2020 will be 14–16%. Thus, the quantity of thermal energy produced in combined heat and power plants is slightly less than 50% of the consumption of heat in district heating networks. According to the estimates used in the calculations, the use of renewable energy sources and garbage in combined heat and power plants will increase, forming in 2020 approx. 45% of the fuels consumed there, while the share of fossil solid fuel in combined heat and power plants will remain below 30%. Due to the growth of processing of oil shale, the consumption of producer gas in combined heat and power plants will also increase.

4. Determining fuel consumption in all power stations

The production of electricity in condensation power plants was determined by subtracting the quantity of electricity produced in combined heat and power plants from the total production of electricity as determined in stage 2 of the model. The primary energy consumption in condensation power plants was calculated according to the estimates of the efficiency of electricity production of in condensation power plants and their fuel use structure. The most important fuels in condensation power plants in 2020 will be oil shale and producer gas arising from processing of oil shale; the use of other fuels in condensation power plants is limited for technological purposes.

The calculations showed that the consumption of oil shale in condensation power plants in 2020 will total 9.5–11 million tons.

To determine fuel consumption in all power stations, the primary energy consumption in condensation power plants and in combined heat and power plants was summed up.

5. Determining fuel consumption in district heating boiler plants

The production of heat in district heating boiler plants was calculated by subtracting the quantity of heat produced in combined heat and power plants from the total heat production as determined in stage 2 of the model. The primary energy consumption was calculated according to the estimates of the efficiency of heat production in district heating boiler plants and their fuel use structure.

The most important fuels in boiler plants are renewable energy sources (their share will make up more than 40% of the fuels consumed in district heating boiler plants in 2020), natural gas (approx. 25%), shale oil (approx. 15%) and peat (approx. 10%).

6. Transformation of fuels into other fuels

   The solid fuels that are transformed into other fuel types in Estonia are oil shale and peat. Processors of oil shale have considerable plans for extending the production of secondary fuels in Estonia. The planned units for the production of diesel fuel from oil shale will consume the remaining share of the 20 million tons of oil shale that may be extracted, keeping in mind the restrictions laid down in the Earth's Crust Act. A certain part of oil shale is also used as a raw material in the construction materials industry, but industry consumption is not expected to exceed 50 000 tons in 2020. The estimated quantity of oil shale to be consumed in 2020 by industrial undertakings that process oil shale will total 9–10.5 million tons. The production of diesel fuel in Estonia also requires the production of hydrogen from natural gas; the estimated import of natural gas related to this 2020 will be up to 200 million m^3 a year.

   The calculations have not taken into account the possible establishment of a petroleum refinery in Estonia, planned by AS Tallinna Sadam in cooperation with a foreign partner[1].

7. Determining primary energy consumption

   To determine primary energy consumption, the quantity of fuels consumed in the final energy consumption sectors, the fuel consumption in all power stations as found in stage 4, the fuel consumption in district heating boiler plants as determined in stage 5 and the primary energy consumption in the transformation of fuels into other fuels as calculated in stage 6 were summed up. The quantities of secondary fuels that are produced and consumed in Estonia, and that are probably not imported (in order for their energy content not to be included in the primary energy consumption twice, e.g. shale oil, producer gas, peat briquette) were subtracted from this amount. Despite the plan to launch production of diesel fuel from oil shale in Estonia, the delivery of this to the Estonian market was not forecast in the model, i.e. all diesel fuel consumed in Estonia has been imported.

Using the above methodology, which consists of seven principal stages, it was found that the primary energy consumed corresponding to the set indicative energy savings target in Estonia in 2020 will be 272 PJ. The primary energy consumption also includes oil shale that is consumed to produce exportable energy (particularly shale oil and its derivatives).

Primary energy consumption was calculated using a simplified calculation model. In order to model the energy sector while updating the development plan of the energy sector, a more detailed model is used for forecasting energy consumption and production until 2050, but the results obtained with the help of the model were not yet available when this report was prepared.

5 OVERVIEW OF TAKING INTO ACCOUNT THE CONDITIONS LAID DOWN IN ARTICLE 3(1)

According to Article 3(1) of the Directive, Member States may take into account national circumstances affecting primary energy consumption. In preparing this report, the following circumstances have been taken into account:

a) remaining cost-effective energy-saving potential
   The calculated energy savings target is partially based on the bottom-up calculation method. In the case of buildings, the work took into account the levels of minimum energy performance requirements that were found in order to determine cost-optimal levels of minimum energy performance requirements. The energy savings potential of other final consumption sectors and the costs for achieving this will be analysed when updating the long-term development plan for the energy sector.

[1] http://www.e24.ee/358879/paldiskisse-tahetakse-ehitada-diislitehast/.

b) GDP evolution and forecast

When forecasting GDP changes, the analyses have used data from the Ministry of Finance. In the period 2010–2020 the average GDP growth used in the forecasts is 3.5%.

c) changes in energy imports and exports

The calculations of primary energy consumption indicate an increasing production of shale oil and diesel fuel from oil shale. However, the primary energy consumption calculated for 2020 does not take into account the export of products made from oil shale or the reduction in imports of motor fuels in connection with possible production of local diesel fuel from oil shale. According to an initial estimate, the export of products made from oil shale in Estonia may be within 44–52 PJ a year. It remained unclear for persons drawing up the model for calculating primary energy consumption how the possible export of products made from oil shale should be taken into account. It is not unambiguously clear in the EUROSTAT data how the production, use, import and export of shale oil are recognised in preparing the EUROSTAT energy balance sheets.

d) development of all sources of renewable energies, nuclear energy, carbon capture and storage

Although the renewable energy target of Estonia for 2020 will be achieved soon, it is possible that the increase in the share of renewable energy in energy consumption will continue and this has also been taken into account in setting the energy savings target. The development of nuclear energy, carbon capture and storage in Estonia by 2020 is unlikely.

e) early action

The energy savings target has been set taking into account the impact on the achievement of the energy savings target of activities carried out before the Energy Savings Directive entered into force, e.g. in the case of buildings.

6 OVERVIEW OF EFFICIENCY OF IMPLEMENTATION OF CURRENT MEASURES PURSUANT TO ARTICLE 24(1)

6.1 Part a) – estimates of indicators for 2011:

i) primary energy consumption: **256 246 TJ, i.e. 6120 ktoe**;

ii) total final energy consumption: **115 477 TJ, i.e. 2758 ktoe**

iii) final energy consumption by sector:

- industry: **607 ktoe** (Eurostat)
- transport (split between passenger and freight transport, if available): **784 ktoe** (Eurostat)
- households: **936 ktoe** (Eurostat)
- services: **406 ktoe** (Eurostat)

iv) gross value added by sector:

- industry: **23.9%** (Eurostat, basic prices, share, construction sector not included);
- services: **66.3%** (Eurostat, basic prices, share);

v) disposable income of households: **EUR 10 920** (Eurostat, real adjusted gross disposable income of households per capita);

vi) gross domestic product (GDP): **EUR 15.97 billion** (2011, in current prices);

vii) electricity generation from thermal power generation: **11 169 GWh** (Eurostat);

viii) electricity generation from combined heat and power: **1133 GWh;**

ix) heat generation from thermal power generation: **3497 GWh** (generation in power stations, except self-consumption of power stations for generation of electricity);

x) heat generation from combined heat and power plants, including industrial waste heat: **2977 GWh**;

xi) fuel input for thermal power generation:

Fuels consumed for production of heat (TJ)	
Hard coal	94
Coke**	0
Oil shale	4077
Milled peat	1196
Sod peat	206
Peat briquette	17
Firewood	350
Wood chips and waste	13 194
Wood chips	10 634
Wood waste	2560
Wood bricks and pellets	94
Wood bricks	29
Pellets	65
Natural gas	14 933
Liquid gas	17
Residual fuel oil	66
Shale-derived fuel oil (heavy fraction)	1882
Shale-derived fuel oil (light fraction)	1125
Light heating oil and diesel fuel**	265
Light heating oil**	153
Diesel fuel	112
Motor vehicle petrol	0
Aviation fuels	0
Oil shale gas**	1090
Biogas*	53
Other biomass**	937
Total fuel	39 596

xii) passenger kilometres (pkm), if available: **4 771 146** (thousand pkm, total passenger turnover);

xiii) tonne kilometres (tkm), if available: **14 299 099** (thousand tkm, total cargo turnover);

xiv) combined transport kilometres (pkm + tkm), in case (xii) and (xiii) are not available;

xv) population: **1 320 976.**

6.2 *Analysis of energy consumption trends in 2011*

Sector	*2010*	*2011*
Industry	575	607
Transport	786	784
Households	1028	936
Agriculture/forestry	95	109
Service	427	406

When comparing 2010 and 2011, energy consumption has increased only in industry and agriculture. This can be explained mainly by more intensive economic activities following the crisis: more companies were established, the productivity indicators improved and production volumes increased. In addition to domestic consumption, 2011 was also a year of record export volumes. The increase in energy consumption in the agricultural and forestry sector can also be explained by increased production volumes. The number of people employed in the timber industry is one of the largest among processing industries.

Although the number of people employed in industry has not reached the pre-crisis level, the production volumes have already exceeded the pre-crisis level. This indicates that companies are creating products of higher value and using their resources more efficiently. For example, the total number of people employed in the metal industry decreases, but production volumes increase due to the growth in exports and domestic consumption. The trend will be reinforced by energy savings measures in industry.

7 MATERIALS USED OR REFERRED TO WHEN PREPARING THE NOTIFICATION

1. National Long-term Development Plan of the Fuel and Energy Sector until 2015
2. National Development Plan of the Energy Sector until 2020
3. Energy Efficiency Plan 2007–2013
4. National Reform Programme “Estonia 2020”
5. Renewable Energy Action Plan until 2020
6. Mid-term overview of implementation of the “Energy Efficiency Plan 2007–2013” and of further implementation of the Plan
7. 100% renewable energy – transition to clean energy (RE100), Estonian Renewable Energy Association 2012
8. Statistical Yearbook of Estonia 2011, Statistics Estonia
9. Statistical Yearbook of Estonia 2012, Statistics Estonia