

EUSUSTEL WP1 – Estonia

1. Factual information	2
1.1 Geographical description	2
1.2 Demographics	2
1.3 Economical situation	2
1.4 Energy	3
1.5 Electricity	3
1.6 Environmental issues	5
2. Trends – past, present and future	5
3. Policy – present, future and critical review	6
References	6

1. Factual information

1.1 Geographical description

Estonia gained its freedom in 1991. It joined both the EU and NATO in May 2004.

Estonia is situated in northern Europe at 59 °N. The climate is cold with an average yearly temperature of 6-7 °C. The land area is 45,226 km² of which 2,015 km² is water.

1.2 Demographics

The population is 1.36 million. 68% of population is Estonian, 26% Russian and 2.1% Ukrainian. The largest city is the capital Tallinn with about ½ million inhabitants.

The population by age group is given in Table 1. Population growth rate is -0.65%.

Table 1: Population by age in Estonia.

Unit 2005	
Population	1 000 1332
0-14 years	% 16
15-64 years	% 68
65- years	% 17

1.3 Economical situation

The GDP in 2002 totaled 19.2 billion \$ or 14,300 \$/capita of which 67% is services, 29% industry and 4.1 % agriculture. The GDP growth rate is around 5-6% (2004). Figure 1 shows the historical economic development compared to other countries.

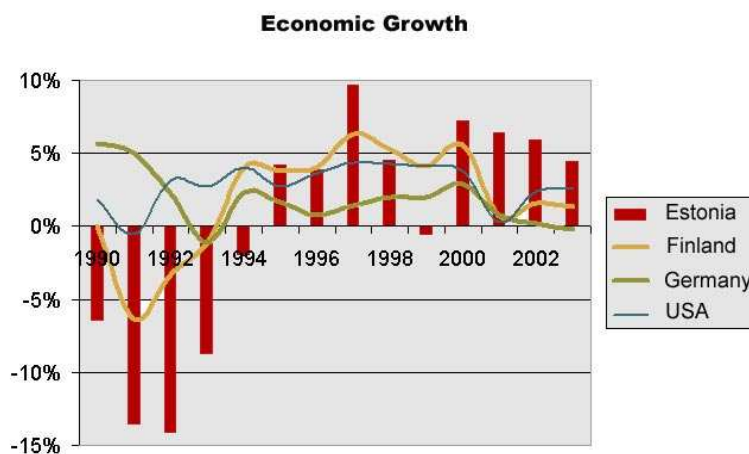


Figure 1. Economic growth in Estonia 1990-2002.

1.4 Energy

The TPES (2004) of the country is 4.51 Mtoe. The TPES/GDP is 0.77 toe/'000\$. Around 40% of the energy is imported. Oil shale is the key primary energy source, or over ½ of the primary energy production. Oil shale reserves in Estonia are vast. Renewables (mostly biomass and waste) represent 11% of total energy. The amount of fossil fuels is almost 90% of total.

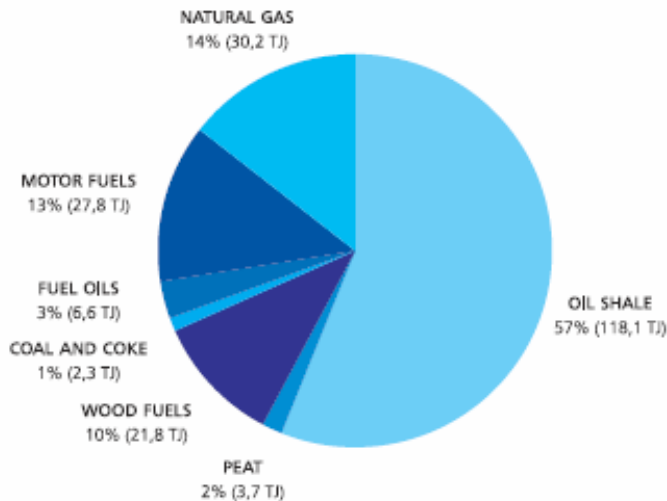


Figure 2. Primary energy sources in Estonia (2001).

1.5 Electricity

Estonia has 3400 MW of electric-generating capacity, providing the country with ample electricity to meet domestic demand. The majority of this generating capacity comes from Estonia's two oil-shale-fired power plants in the northeast of the country, the 1,610-MW Eesti plant and the 1,390-MW Balti plant. The two power stations, the Narva Power Plants, supply approximately 95% of Estonia's electricity. Although Estonia has a small amount of hydropower and other renewable energy capacity, the power produced at these facilities costs twice as much as the electricity generated at the oil-shale-fired power plants. Oil-shale is a domestic fuel.

93 % of electricity capacity is oil-shale based. Oil and gas makes some 7%. Estonia has a small amount of hydropower. CHP and DH is common in larger cities. CHP share in electricity production is 20-25%.

Figure 3 and 4 show the electricity consumption by sector as well as the historical development. The industrial decreased very much in the early 1990s. The electricity use seems to be now quite stable.

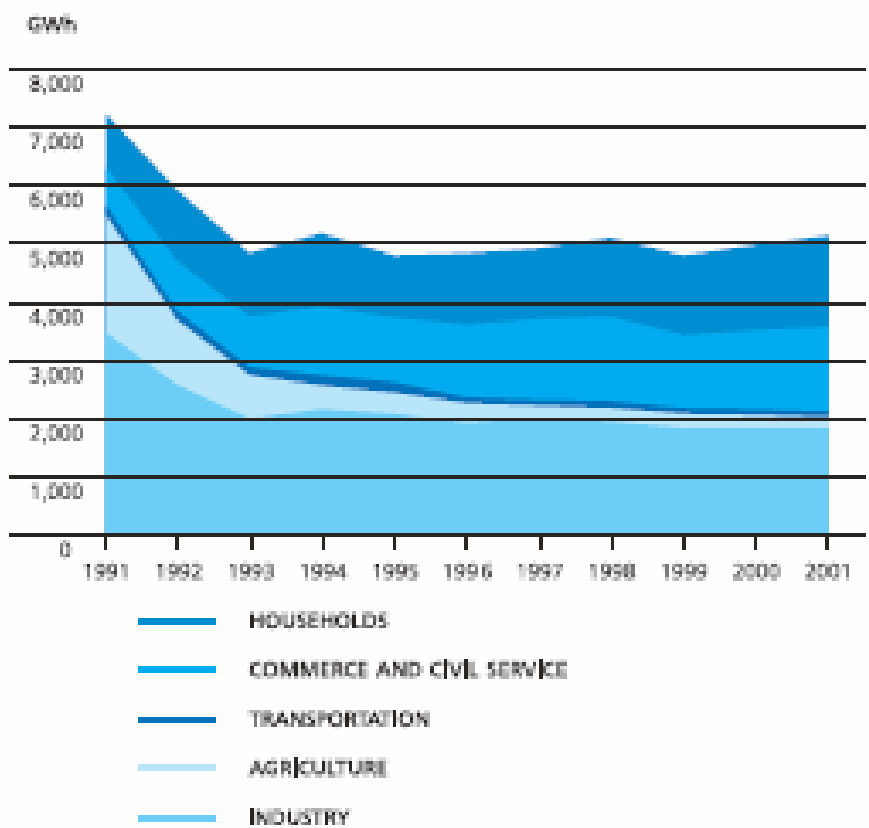


Figure 3. Electricity consumption in Estonia 1991-2001 (without losses and export)

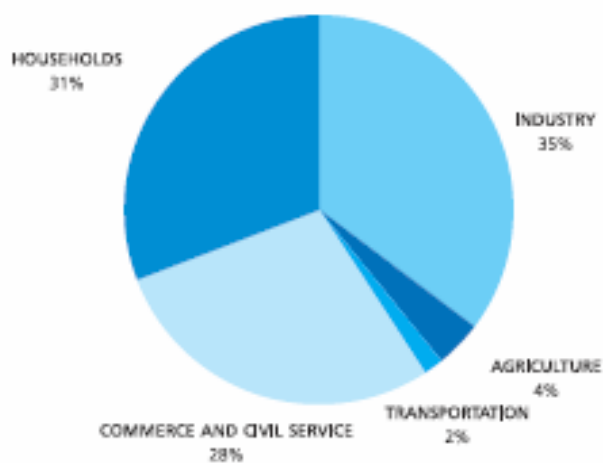


Figure 4. Electricity consumption by sector in Estonia.

The transmission system has connections both to Russia and Latvia due to historical reasons. The country has electric generation capacity exceeding its own use. A new cable cross the Gulf of Finland to Helsinki is planned (Estlink).

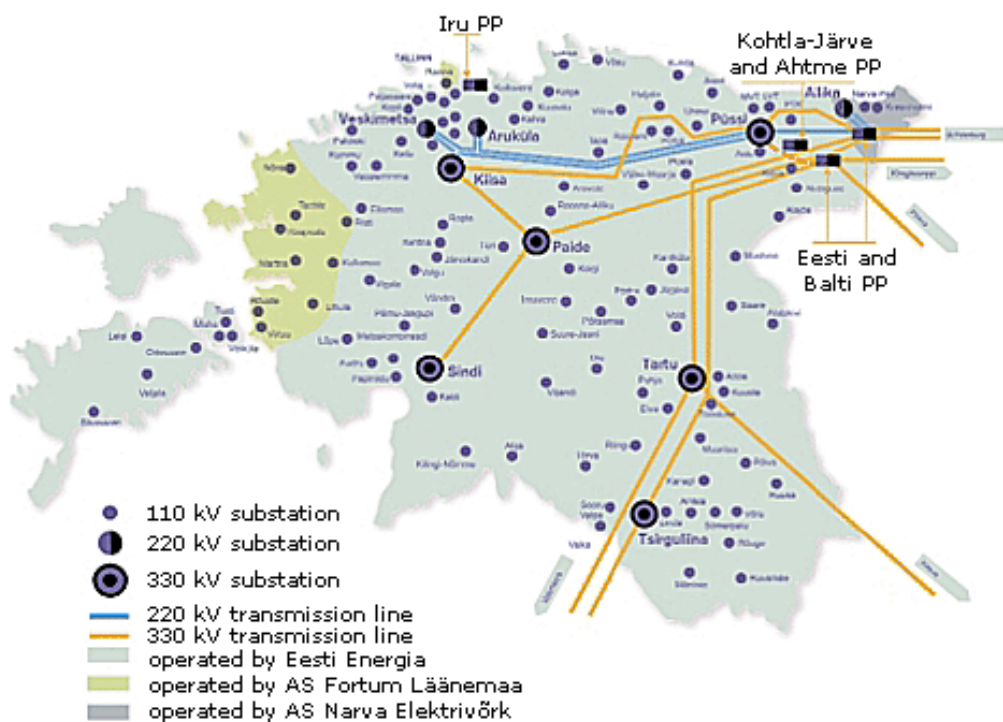


Figure 5. Electric system.

1.6 Environmental issues

Estonia's main environmental problems with energy were linked to sulphur emissions from oil shale. The emissions have been reduced dramatically through power plant renovations from 200 mg down to 10-20 mg per m³ but some improvements are still needed.

As to CO₂ emissions, Estonia is performing well and is presently about 40% under its targets. The State has retained the emission right to this so-called hot air.

Some other environmental problems with polluted land remain from the Soviet era.

2. Trends – past, present and future

The electricity production in Estonia has stabilized to around 7 TWh after the main structural changes in country in the 1990s. Oil shale as a domestic source is important for electricity production and will most likely dominate in the future as well. Next fuel of interest would be natural gas.

Oil shale reserves will last for 40-50 years, but the main concern of its use in the environmental problems and large ash contents.

Eesti Energia is the dominating electric utility in Estonia. It is a 100 per cent state-owned vertically integrated public limited company, engaged in power production, transmission, distribution and sales as well as other power-related services. The company invests both in power plants (renovation) and networks. At Narva power plant 3 units need to be renovated in the near future.

The privatisation of the company was discussed a few years ago.

Estonia's grid is linked to Russia and Latvia and in future also to Finland. Electricity exchange with the neighbours may increase in the future.

3. Policy – present, future and critical review

Estonia's energy policy has been dominated during the last years with the accession to the European Union. This has included incorporating EU legislation in Estonia and establishing corresponding official bodies. Opening of the electricity market is important. EU has put 2015 as time limit to renew the Narva power plant and to reduce the emission levels.

Domestic energy policies show interest in renewables (wind) and energy efficiency.

References

International Energy Agency

Ministry of Economics of Estonia

Statistical Centre of Estonia

Abbreviations

EU – European Union

NATO – North Atlantic Treaty Organisation

GDP – Gross domestic product

Mtoe – Millions of tons of oil equivalent

TPES – Total primal energy supply

CHP – Combined heat and power

DH – District heating