

## **EUSUSTEL WP1 – Lithuania**

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# 1. Factual information

## 1.1 Geographical description

Lithuania declared independence in 1990, and was recognized as a nation one year later. It joined both NATO and the EU in the spring of 2004.

Lithuania is situated in Eastern Europe, on the coast of the Baltic Sea, between 53 and 56 °N. The climate is temperate; the yearly temperatures average 5.5°C. The land area is 65,200 km<sup>2</sup>.

## 1.2 Demographics

The population is 3.6 million. 83.4% of population is Lithuanian, 6.7% Polish and 6.3% Russian. The largest city is the capital Vilnius with approximately 542,000 inhabitants.

The population by age group is given in Table 1. The population growth rate is -0.3%.

*Table 1. Population by age group in Lithuania.*

	Unit	2005
Population	1000	3597
0-14 years	%	16.1
15-64 years	%	68.7
65 years and over	%	15.2

## 1.3 Economical situation

The GDP estimate in 2004 totaled \$45.23 billion or \$12,500 per capita of which 60.5% is services, 33.4% industry and 6.1% agriculture. The GDP growth rate is 6.6%.

## 1.4 Energy

The TPES in 2002 was 8.61 MToe. Lithuania relies strongly on nuclear power which represents 40.9% of total energy. Oil and gas occupy each a share of some 25% of TPES. The country has limited oil reserves. Renewables make up 7.9% of total energy. Altogether, Lithuania's primary energy sources are not substantial and have not been thoroughly explored. More than 90% of TPES is imported, mostly from Russia.

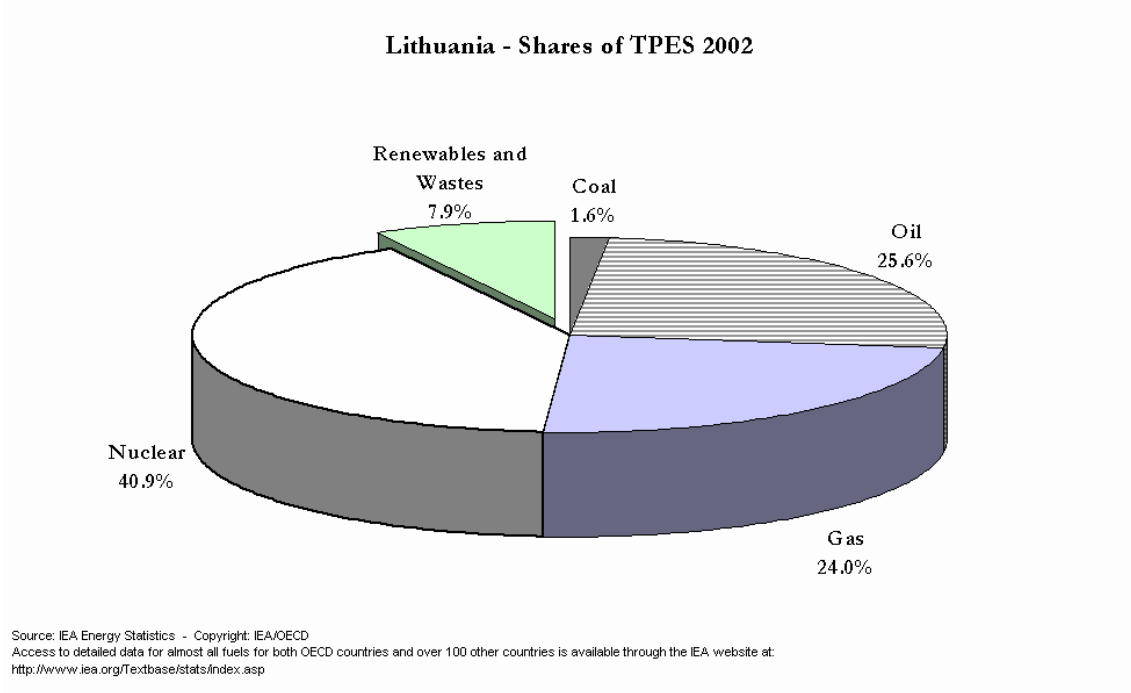


Figure 1. Shares of TPES in Lithuania (IEA, 2002).

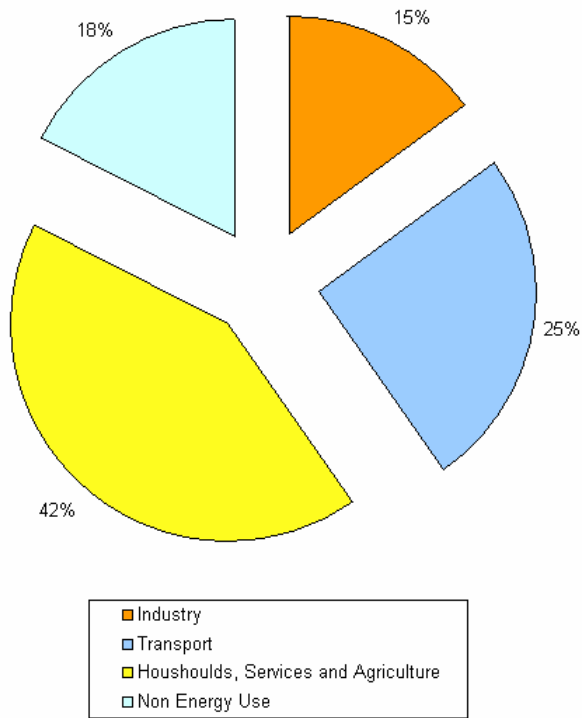


Figure 2. Final energy consumption per sector, 2002. (Austrian Energy Agency)

## 1.5 Electricity

Lithuania produced 19.3 TWh of electricity in 2004, which is substantially more than its domestic consumption. Some 7.3 TWh of excess electricity is exported to neighbouring countries, namely Latvia, Belarus and Russia. Further transmission lines, for example across Poland, are under consideration.

The greatest electricity producer is the Ignalina Nuclear Power Plant with 78.2% of the total generated electricity in Lithuania. Thermal power plants supply 17.1% of electricity and hydro power plants and the pumped storage power plant 4.7%. The state-owned energy utility Lietuvos Energija AB is the main actor in the Lithuanian electricity field: it owns the country's largest non-nuclear power plants and holds a monopoly on electricity transmission and distribution in Lithuania.

Table 2. Electricity balance, TWh (Ministry of Economy of the Republic of Lithuania)

	2003	2004*
Gross production	19.5	19.3
Nuclear power plant	15.5	15.1
Thermal power plants	3.0	3.3
Hydro power plants	0.3	0.4
Pumped storage power plant	0.7	0.5
Import	-	0.1
Export	7.5	7.3
Total consumption	12.0	12.1
Own needs of electricity producing companies	1.6	1.5
Input for water raising in pumped storage power plant	0.9	0.7
Transmission and distribution losses	1.4	1.3
Consumed by energy enterprises	0.9	1.0
Final consumption	7.2	7.6
in industry	2.6	2.7
in the transport sector	0.1	0.1
in agriculture	0.2	0.2
in the trade and services sector	2.4	2.5
in households	1.9	2.1

\* preliminary data

## 1.6 Environmental issues

The current environmental concerns in Lithuania involve its urban and industrial centers, military installations, and energy facilities. For example, the contamination of soil and groundwater with petroleum products and chemicals is a problem at military bases.

Carbon dioxide emissions amount to 11.6 million tons or 3.2 tons per inhabitant (2003). The emission of pollutants into the atmosphere is presented in table 3.

Table 3. Emission of pollutants into the atmosphere in thousand tons (Statistics Lithuania)

	1995	1999	2002
<b>Total</b>	<b>152,1</b>	<b>120,0</b>	<b>94,2</b>
Solid	11,8	5,8	4,7
Gases and liquids	140,3	114,2	89,5
<i>sulphur dioxide</i>	54,7	55,3	29,7
<i>Carbon oxides</i>	14,6	23,8	21,0
<i>nitrogen oxides</i>	13,3	13,4	11,0
<i>sulphuric acid, t</i>	34,9	39,7	16,4
<i>fluorides, t</i>	57,6	28,1	22,2
<i>chlorine, t</i>	1,8	0,7	0,4
Other	40,0	21,6	27,8

## 2. Trends – past, present and future

The energy sector of Lithuania is strongly based on nuclear energy. In 2003, nuclear power supplied nearly 80 percent of Lithuania's electricity, which is the largest market share for nuclear power in the world. Together with the powerful energy industry and low energy consumption, Lithuania has been able to export a considerable amount of electricity on a yearly basis.

The power production in Lithuania has relied highly on their single nuclear power plant, Ignalina, with its two reactors. Dating from the times of the Soviet Union, the power plant was not considered safe by the EU. So, as a pre-condition for the membership in the EU, the Ignalina power plant had to be closed. The shutdown is done in two stages beginning in 2005 and ending in 2009.

The closure of the Ignalina power plant is a major challenge for Lithuanian economy and energy production. Lithuania is facing a complete restructuring of its energy infrastructure. It has indicated interest in developing a new nuclear facility. However, at least on the short term, Lithuania's dependence on oil and gas imports from Russia will double. The electricity generation will shift from nuclear power towards oil and gas, which will increase electricity generation costs as well as emissions.

## 3. Policy – present, future and critical review

The membership in the EU directs the energy policies in Lithuania. The electricity infrastructure is under major changes, and the government has set some outlines to direct the decisions. Lithuania wants to reduce its dependence on primary energy source imports from Russia, which at present amount up to 90% of TPES. Renewable energy sources of main concern are peat and biomass. Further improvements on energy efficiency and the security of energy supply by diversification are also on the agenda.

Future integration with EU energy market will have two decisive outcomes. First, new independent electricity producers will have free connection to the national electricity grid provided by the Energy Law. Second, a free electricity market will be established.

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## **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