Miškinis Vaclovas[1], Konstantinavičiūtė Inga[2], Tarvydas Dalius[3]

MAJOR CHANGES IN THE LITHUANIAN ENERGY SECTOR DURING TWO DECADES

[1] Lithuanian Energy Institute, 370 37 401 959, miskinis@mail.lei.lt
[2] Lithuanian Energy Institute, 370 37 401 952, inga@mail.lei.lt
[3] Lithuanian Energy Institute, 370 37 401 956, dali@mail.lei.lt

OVERVIEW

The Lithuanian energy sector inherited from the Former Soviet Union (FSU) was largely developed. Capacities of major energy units (power plants, oil refinery and even district heat systems) constructed through 1990 were too large compare with the country's size and access to primary energy. Forecasts of energy demand during the period 1960-1990 were based on assumptions of very fast growth of economy in particular of manufacturing and agriculture as well as taking into consideration vast possibilities for export of goods to eastern market. Primary energy sources (coal, natural gas, crude oil and petroleum products) were imported from various republics of the FSU, mostly from Russia. At the same time electricity generated in Lithuania was exported to large North-Western region of the FSU. Similarly petroleum products from the Mazeikiai oil refinery and other goods were to neighbouring countries. In addition economy inherited from the Soviet past was energy intensive.

On March 11, 1990, the Supreme Soviet proclaimed the restitution of Lithuanian independence. The policy for reforms in the national economy and the energy sector has been stated by the Lithuanian Parliament and Government. The most important goal of the Government was establishment of an independent economic system and introduction of market relations instead of central planning. The loss of former market in the East, dramatic increase of prices for energy resources and raw materials were accompanied by striking decline of Gross Domestic Product (GDP) and significant reduction of energy demand.

After collapse of the FSU, sudden political upheaval was followed by deep and complicated changes in all sectors of the Lithuanian economy, including the energy sector. These changes were related with necessity: to create an appropriate legal framework and institutional structure; to perform relevant reforms in the management of the energy sector; to modernize the most important energy units and networks of the power system, district heat systems and gas system; to increase energy efficiency on both energy demand and supply sides; to create team of energy experts competent to perform an integrated analysis of the energy sector development based on application of modern strategic planning methods; to use efficiently new opportunities and markets of the developed the EU countries for development of the national economy owing to the membership in the EU; to comply with all the EU directives and country's international obligations in particular on terms for final closure of units at Ignalina Nuclear Power Plant (NPP), etc. Paper describes changes in the Lithuanian energy sector which are important for its future development.

METHODS

The analysis is based on application of methodology of international energy statistics, comparative analysis and detailed analysis of changes in tendencies of economic development and structure of the country's energy balance.

RESULTS

One of the major challenges for the Lithuanian Government was to implement all messages necessary for safe and stable operation of Ignalina NPP. This power plant was playing very important role as a stabilizing factor especially during an extremely difficult transition period of fundamental changes in the national economy. Over the period 1984-2009 it generated more than 307 TWh of electricity which was cheaper than produced by any thermal power plant using fossil fuels. This was an important factor accelerating development of the national economy, softening social problems and increasing energy security [1]. However, Unit 1 of Ignalina NPP was closed in 2005 and Unit 2 in December 2009 because these terms were established in the Accession Treaty before Lithuania joined the European Union. Thus, since 2010 Lithuanian Thermal Power Plant equipped with comparatively old and inefficient units is the major source of electricity generation. The role of combined heat and power plants as well as electricity from renewable sources increased significantly. Nevertheless dependence on import of natural gas used for electricity and heat generation and on import of electricity increased significantly.

One of the most important changes during two last decades was enhancement of energy efficiency. Since 1990, energy intensity, measured as the gross primary energy consumption per unit of GDP at constant prices, has been decreasing by 4.4% per annum. In 2008, this indicator in Lithuania was by 2.2 times lower than in 1990. Based on data prepared by methodology of international statistics [2-3], primary energy intensity (in a case when GDP in all countries is adjusted using indicators of purchasing power parities) in Lithuania is approaching to an average in the EU-27 (Fig. 1). Final energy intensity during the period 1990-2008 in Lithuania decreased even more – by almost 2.6 times. However, in 2009 due to global economic recession energy intensity in Lithuania increased by about 7%.

Primary energy resources in Lithuania are rather scarce. Therefore share of renewable energy sources in the structure of country's primary energy balance during the period 2010-2020 should increase significantly. Based on performed analysis their contribution could be increased in 2020 up to 25-28%.

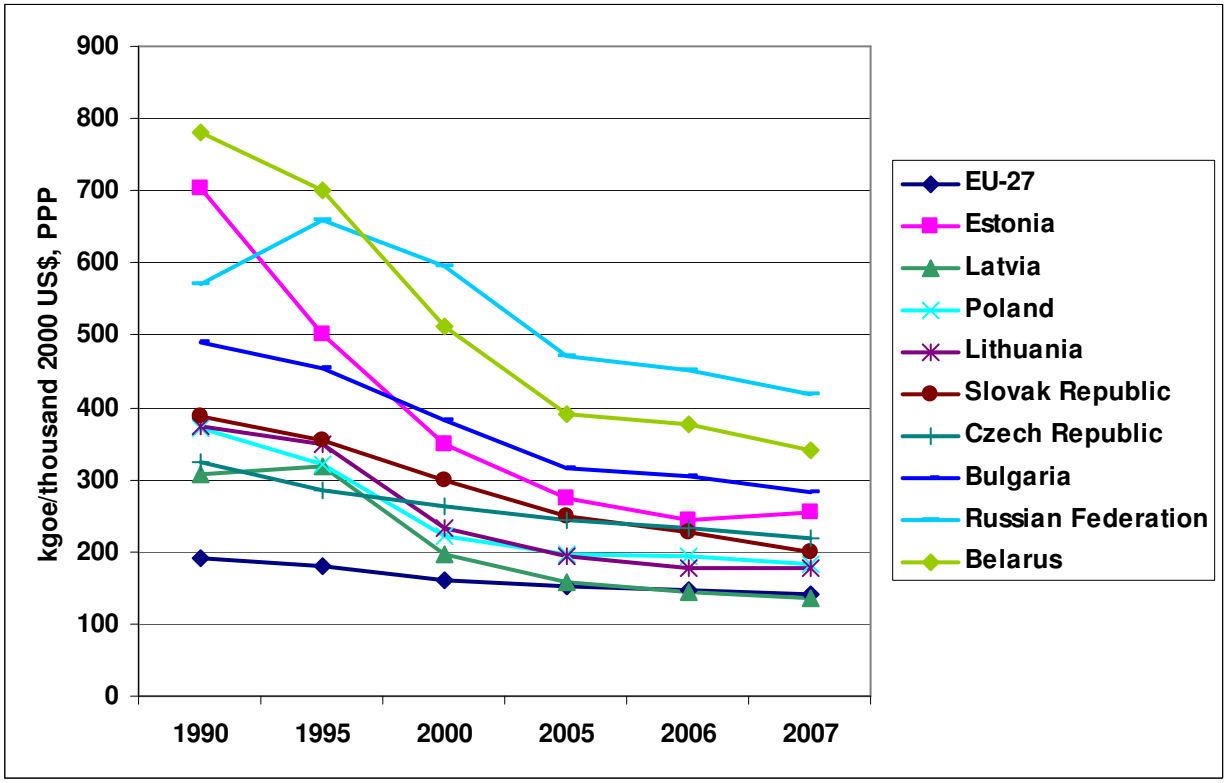

Figure 1. Changes of primary energy intensity in EU-27 and countries of the former Eastern Block [2,3]

CONCLUSIONS

1. The most important changes in the Lithuanian energy sector are the following: final closure of Ignalina NPP and dramatic changes in the structure of power generating sources, alteration in structure of the

national economy, significant reduction of primary energy and final energy intensity, creation of preconditions for introduction of market relations and growing contribution from renewable energy sources.

2. The 25% target for the overall share of renewable energy sources from the gross final energy consumption, the 50% target for renewable energy in the district heating sector, the 10% target for renewable energy in transport sector and the 28% target for the share of electricity generation form renewable sources could be appropriate and achievable objectives for Lithuania in 2020.

REFERENCES

1. Miškinis V. (2004), Atomausstieg und Abhangigkeit. Energieversorgung in Litauen // Osteuropa. ISSN 0030-6428 /T. 54, Heft 9-10, p. 238-379.
2. International Energy Agency (2009a), Energy Balances of OECD Countries 2006-2007, Paris.
3. International Energy Agency (2009b), Energy Balances of Non-OECD Countries 2006-2007, Paris.