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LITHUANIAN ENERGY POLICY IN 1990—2009 AND THE PROSPECTS OF ITS DEVELOPMENT UNTIL 2020

This article considers the key stages of Lithuanian energy evolution since 1990 and the factors that affected the strategy of Lithuanian energy sector development in the period of preparation and accession to the European Union. The author offers the estimations and general strategic recommendations regarding national energy policy, which were developed by the specialists of the Lithuanian Energy Institute.

Key words: energy, energy strategy, European Union, liberalisation of energy markets, global energy market, energy efficiency.

After the dissolution of the Soviet Union, Lithuania inherited a strong power industry, the capacity of which surpassed the internal needs of the country: power plants of a total capacity of 5.5 mln kW, oil refinery designed to process 10 mln tons of oil per year, and a developed gas distribution network. More than a half of the republic's population enjoyed the benefit of central heating.

Furthermore, Lithuanian energy is connected with the common energy system of the Baltic States, Belarus, and Russia. It might be called the positive balance of the heritage.

But the republic's energy system found itself in a state of a consumer who is not used to taking into account the energy costs, while the whole infrastructure was designed in view of cheap energy usage. Energy was supervised by state monopolies and managed by rather conservative, reform-shy administrators. The situation also deteriorated due to the lack of primary energy sources in Lithuania: with the exception of an insignificant amount of coal, all of them (oil, gas, nuclear fuel) were imported from a single country - Russia. The share of local renewable energy sources was approximately 3%.

The political and economic leaders of the country faced very difficult problems in the field of energy. Ensuring stable power delivery to all consumers – manufacturing industry, transport, agriculture, and public utilities – was on the top of agenda.

At the same time, it was urgent not only to solve practical problems related to power supply but also to form an energy policy and strategy for the next 10-20 years. In the conditions of changes both in the country and abroad it was extremely difficult. The economic reform, the rupture of economic connections with former partners, and, above all, a deep economic crisis led to a sharp decrease in energy demand. So, the consumption of primary energy resources in the republic, which, in 1991, amounted to 17.5 mln tons of oil equivalent dropped to 8 mln tons (pic.1). The power (fig. 2) and central heating (fig. 3) consumption reduced quite as much.

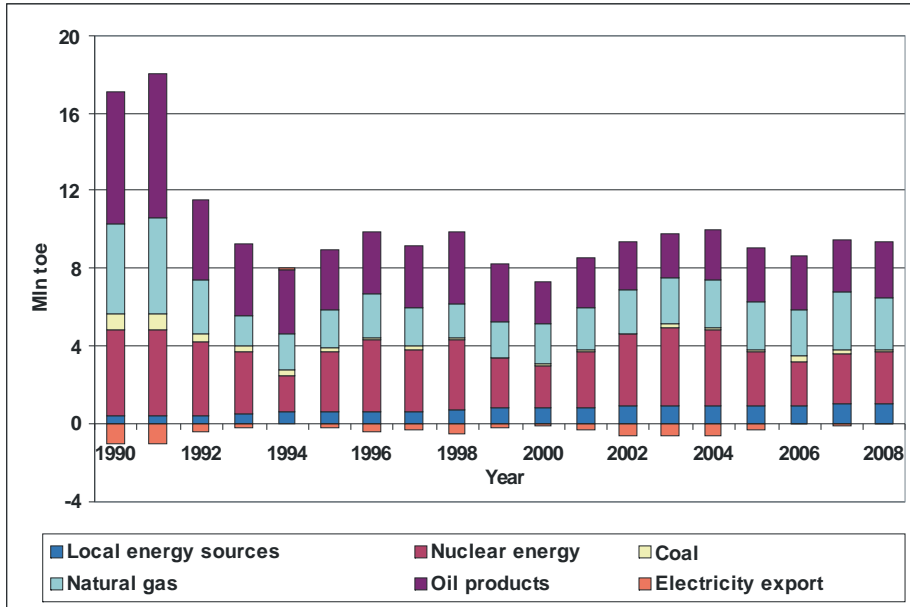


Fig. 1. Total energy consumption in Lithuania

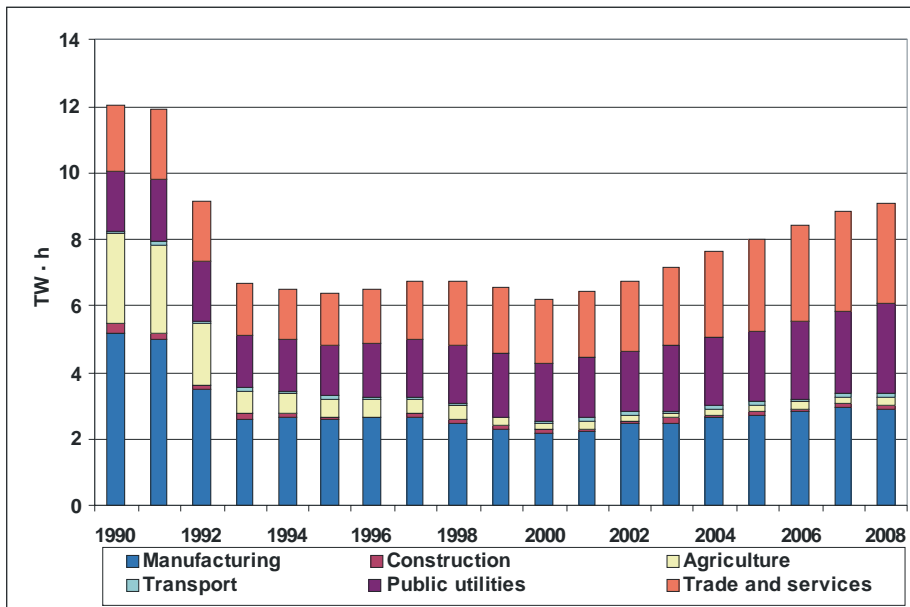


Fig. 2. Lithuanian electricity consumption

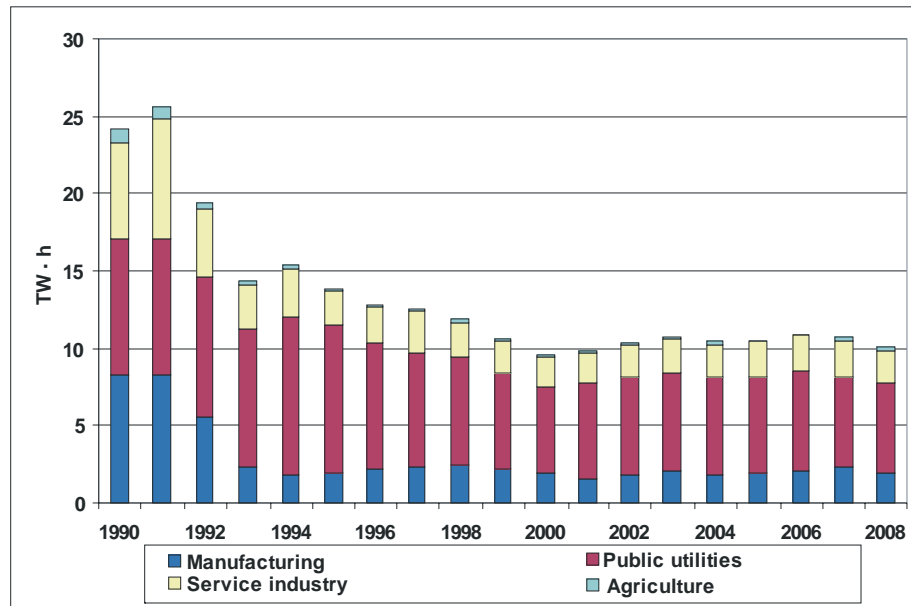


Fig. 3. Central heating output

The leading Lithuanian energy facilities – a number of CHPPs, a large NPP and an oil refinery – were not designed only to meet the needs of the country; on the contrary, a significant part of their output was exported to the nearest neighbours, which, after 1991, were facing the same situation of economic crisis and reducing energy consumption. Thus, the total capacity of the power plants was three times as much as the internal demand and the dramatically decreased export volume. The oil refinery industry was affected by the irregular oil supply from Russia. Of course, these excessive energy facilities could not be efficient and, to a certain extent, were a burden for Lithuanian economy. In the late 1990s, Lithuania charted a course towards the Integration with the West. One of the basic requirements of the EU, in this context, was to close down the Ignalina NPP – the source of the cheapest electricity in the whole region. The NPP contained two 'Chernobyl-type' reactors, which, according to European experts, could not be safe. The contrary opinion shared by Lithuanian and Russian specialists was not taken into account. For Lithuania, the number one political priority was to accede to the European Union; therefore, none of the post-Soviet governments could oppose the absolute, stringent requirement: the accession to the EU is possible only on condition that the Ignalina NPP is closed down. In the set terms, Unit 1 was closed late 2004; Unit 2 was taken out of operation late 2009.

The circumstances mentioned above not only significantly influenced the formulation of the republic's energy policy and strategy but also required their regular update and revision due to the continuously changing both internal and external conditions. The first Lithuanian energy strategy was designed and approved by the government at the beginning of 1994. It stipulated gradual demonopolization of the energy industry, the diversification of

energy supply and forecasted moderate increase in energy consumption (not exceeding 3% over the next decade). However, there was a period in the history of Lithuanian energy industry (1994-1998) marked by a general reduction in electricity consumption. According to the provisions of the first strategy, new power generating capacities would not be required before 2015. Reforming was a painful process. Only in 1997, the government adopts a resolution to cede the central heating facilities -then a part of Lietuvos energija, the successor of the former Litenergo - to corresponding municipalities. The second strategy (1999) formulated the main ideas of the restructuring and privatisation of both electricity and gas supply industries. Power industry was supposed to be divided into generation, transmission, and distribution via independent companies. Transmission (the national grid) and the NPP remained in state ownership; other energy facilities were privatised.

To date, only 50% of the distribution network and almost all heating (generating), gas supply and oil processing facilities have been privatised. The second strategy specified that Unit 1 of the NPP was to be closed in December 2004.

Today one can positively state that the reforms in the industry (the deregulation of heating sector and the privatisation of its considerable part) saved it from the total collapse, especially in big cities. Despite the limited consumer involvement in the promotion of heat retaining (very slow winterizing of buildings), Lithuanian heating facilities did remain functional; moreover, they have been efficiently upgraded and now are being increasingly aimed at renewable energy sources.

Lithuanian energy policy was significantly affected by the preparation to the accession to the EU. The second strategy did not stipulate the closure of Unit 2 of the Ignalina NPP. But the EU demanded to settle the date of closure. It was specified in the third 2002 strategy – December 2009.

Of course, the situation regarding the Ignalina NPP – the source of the cheapest electricity that met 80% of the country's demand – had a special influence on the future of the whole of Lithuanian power industry. The formation of a more or less reliable and feasible strategy for the period following the closure of the Ignalina NPP required a detailed modelling of the most probable scenarios of the future energy industry development, which would take into account not only the fate of the Ignalina NPP but also the state of international energy markets, the actions and plans of the neighbours and forecast the development of the economy and, therefore, the demand for energy.

The analysis of possible scenarios is being conducted by the experts of the Lithuanian Energy Institute. It paints an encouraging picture of the development of the republic's energy industry: despite the closure of the Ignalina NPP, Lithuania can meet its electricity demands with existing generating capacities in view of the most probable 4-5% GDP growth; local energy production can successfully compete with imported energy until there is demand for new energy capacities; more than a 5% increase in consumption can lead to power shortage. It can be alleviated by the construction of new CHPPs of a lower capacity in the cities devoid of such facilities. Great hopes

are placed on the construction of a new 400 MW CCU; in a longer perspective, after 2020, provided a considerable increase in fossil fuel prices and the fulfilment of Kyoto Protocol commitments, the most economical electricity source will be the NPP, which by then will have been set in operation again.

Without going into detail of the existing 2007 energy development strategy, I will give an outline of the main strategic objectives specified in this document, namely: energy security, energy efficiency, introduction of competition principles into the field of energy, gradual integration into the EU energy systems, diversification of primary energy sources; rapid increase in the use of local and renewable energy sources; reduction in the role of natural gas in Lithuanian energy balance.

The following measures were planned to achieve these objectives:

- the fulfilment of the EU requirement regarding the liberalisation of electricity and natural gas markets;
- the creation of a common electricity market in the Baltic States and perspective joining the common EU energy market;
- the continuous use of nuclear energy; it requires the construction of a new NPP until 2015, which will meet the demand of all Baltic States and the region;
- the connection of Lithuanian electric networks with those of Poland and Scandinavian countries by 2012;
- the fulfilment of EU directives on building oil product (90 days') and natural gas (60 days') reserves;
- the increase in electricity generated from renewable sources to 20% by 2025; simultaneously, the share of the electricity generated by CHPPs should reach 35%;
- the construction of a new 400MW combined cycle unit at the Elektrėnai Power Plant;
- the continuous increase in the efficiency of the use of all energy types in order to reach the level of developed European countries by 2025.

Looking back from 2010, one can try to define how justified were a number of provisions of the acting 2007 strategy. Firstly, it is important to mention that some objectives of the strategy were formulated in the specific conditions of 2006-the beginning of 2007, when the centre of public and political attention was energy security issues related to Russia's disputes with Ukraine and Belarus over oil and gas supplies to European countries. The concern that Russia can use the heavy dependence of Europe and Lithuania on the supplies of Russian gas for political purposes was a factor that had a significant influence on the formation and adjustment of Lithuanian energy policy.

Moreover, during the then worldwide economic boom, the problems with providing world economy with fossil fuels seemed imminent as well as the inevitable sharp increase in fuel prices (which did take place in 2008). It was also expected that high taxes on green house gas emissions would be introduced at least in Europe, which would significantly affect the economic

attractiveness of a certain type of fuel. Nuclear fuel and renewable energy sources would be of crucial importance in these conditions.

All these factors created a favourable atmosphere for speculation about energy supply security and the inclusion of knowingly both timewise and financially impossible tasks in the 2007 strategy. First of all, it is the construction of a new NPP by 2015. Today, all hopes are placed on foreign investors and there is little chance that the power plant will have been constructed by 2020.

Another impossible task is apparently the idea to build power bridges with Poland and Sweden by 2012. Currently, these projects are in the initial phase and they are expected to be implemented by 2016. These power bridges are supposed to increase energy security both in the republic and the neighbouring countries and to enable the Baltic States to join the common Scandinavian energy market and will become the first important link of the future integrated European energy system. Thus, today, the establishment of connections is the number one strategic priority of the partners.

The closure of the Ignalina NPP shifts the focus on the rapid creation of a common electricity market of the Baltic States. The implementation of this project is expected within the periods specified in the Strategy, i.e. by 2015-2016.

The problems related to the use of renewable energy sources have been successfully dealt with. Lithuania will apparently implement its commitment to the EU: provide 23% of consumers with electricity generated from renewable resources by 2020. A new law on renewable electricity use will be adopted in 2010, which will significantly stimulate both producers and consumers in this sector of energy. Since 1993, Lithuania has been constantly reducing the energy intensity of the gross national product (fig. 4) and, thus, is likely, to fulfil another commitment, namely, to reduce the energy consumption per a GNP unit by 20% below the 2005 level by 2020.

The construction of a new 450 MW combined cycle unit at the Elektrėnai Power Plant is already underway; it will be set in operation in 2012, i.e with a slight schedule delay.

As mentioned above, the consumption of all types of energy has dramatically decreased in Lithuania since 1991, leading to a significant reduction in the CO₂ and other GHG emissions (fig. 5). Thus, even after the closure of the Ignalina NPP can implement its Kyoto Protocol commitments – to reduce the emission of GHG by 8% below the level of 1990 by 2010.

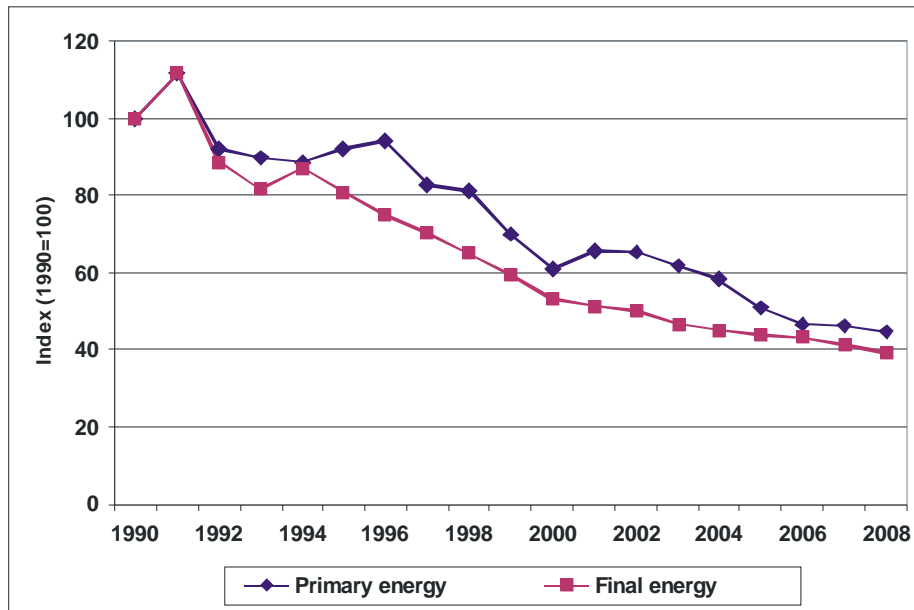


Fig. 4. Fluctuations in the energy intensity of Lithuanian economy

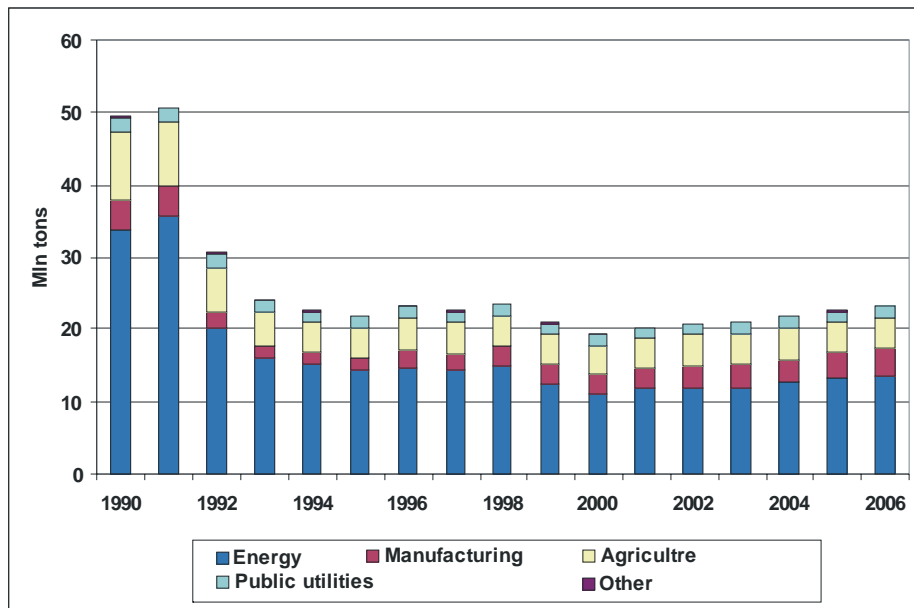


Fig. 5. Fluctuations in GHG emissions

The forecasted increase in electricity consumption and required peak capacity of power plants aimed to meet internal demand (fig. 6, 7) shows that electricity consumption will approximate the 1991 level only by 2025. With a 500 MW wind farm to come online in the next years, a new 450 MW

combined cycle unit to be set in operation at the Elektrėnai Power Plant by 2012, and the planned renovation of the Kaunas Power Plant, Lithuania will apparently be able to satisfy its energy needs at least until 2025.

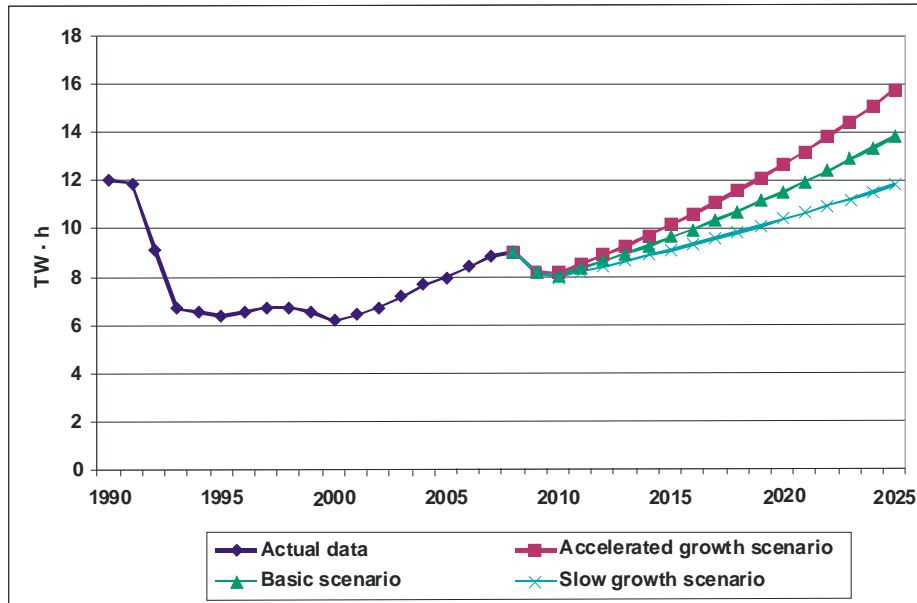


Fig. 6. Electricity consumption forecast (without losses and auxiliaries)

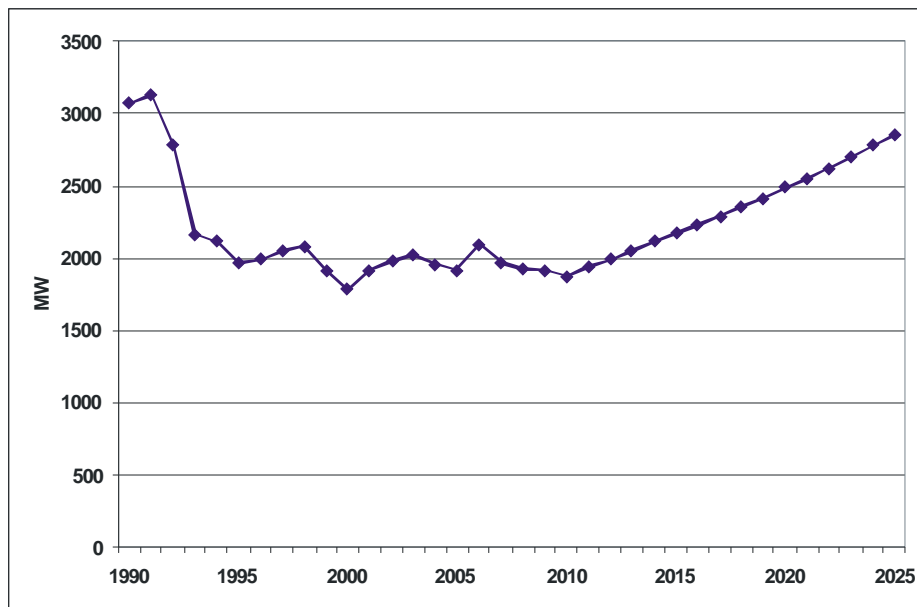


Fig. 7. Maximum power plant capacity required to meet internal demand

In conclusion, we would like to express confidence that Lithuania will successfully employ its energy heritage, favourable geographical position, EU-membership, and the professionalism of its energy experts for the stable provision of the consumers with all types of energy at reasonable costs and with minimal environmental impact.