

# **Investigation and Choice of Possible Variants of Measures Ensuring Energetic Independence of Latvia and the Republic of Belarus**

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## ***Problem description***

Ensuring independence of electric energy supply can be best achieved by implementing self-ensuring i.e. by ensuring the energy supply of countries with their own generating capacities. Of course, this is connected with the greatest investments for the formation of infrastructure.

Both in Latvia and Belarus, there are worked out development strategies of the electric energy sectors and a motivated choice of generating capacities. But the plans of their implementation are corrected depending on the increase in the consumption of electricity and its demand. The variants of possible measures discussed below are applicable to gain the highest stability and reliability level of the electricity supply by implementing self-ensuring of electric energy supply, which might practically be unnecessary for free relations of the electricity market. Thus, at the present rate of the development of the free electricity market and the current comparatively low import prices on the “Spot” market, which predominantly constitute 50,-EUR/MWh, the construction of new electric power plants does not pay off. However, there is no reliable long-term prognosis of the prices of the imported electricity, although essential changes and an increase in the prices are expected in the nearest future.

## ***Method of research***

“The balance method” is applied as the main method of research, which is widely used in planning national economy and adapted for the analysis of the variants of the electric energy balance. Another important method is connected with long-term prognostication of the electricity consumption, including “the trend method”.

In order to justify an assumed increase in the consumption of electric energy, absolute values are analysed and the annual average increase rate of electricity consumption is determined in individual branches of national economy during the last 10 years, 1998-2008.

## ***Development of energetic links***

It will be of great importance to develop an electric link in Belarus. It should be noted that there is no direct electric link at present between Latvia and Belarus at all. The electric link is realised through a 330 kV “ring” Belarus-Lithuania-Latvia-Estonia-Russia-Belarus, i.e. practically through Lithuania or Estonia.

The ring is of great importance for increasing the reliability of the energy system, and each extra loop only raises it. Therefore a new direct 330 kV link between Latvia and Belarus (Daugavpils-Polotsk) will essentially increase the reliability of the entire energy system.

In order to ensure an energetic link Latvia-Belarus, it is recommended to build two high-voltage lines Daugavpils Polotsk of 330 kV with a 700 MW carrying capacity of each line, which would allow backing up of one block (1200 MW) of the Byelorussian NPP. The construction can be completed in two stages, with one line built at the beginning and another line constructed after launching the NPP.

## ***Management of the energy systems***

The history of cooperation among the energy systems of our five countries started in 1991 when the Baltic States regained independence. In the sphere of energy supply, the BRELL electric link of Russia, Belarus and the Baltic States became the basis of electricity provision. The most important stage of further management of the energy systems is connected with the implementation of the European integration plan “the Baltic Energy Market Interconnection Plan”. Embodiment of the Latvian-Byelorussian project, after electric energy independence of these countries is ensured, will require certain corrections in the management system of the BRELL ring, which might be discussed during the intended meeting in Belarus in 2012.

### ***Development of generating capacities***

The problems connected with the choice of the technologies of generating capacities in Latvia and Belarus are different – if in Latvia they are linked with a tendency to utilise widely the renewable energy resources, then in Belarus possibilities to develop nuclear energy are analysed and speeded up – to build the first NPP aggregate of 1200 MW already before the year 2020, which is hardly possible. The construction of an NPP in Latvia before the year 2030 is not discussed.

The prognosis of the generating capacities in Latvia are analysed assuming that the consumption of electricity will increase by 2% a year, which can be accepted as the lowest one in the post-crisis period (scenario “A”). According to this scenario, self-ensuring of electricity may be achieved (within the limits of +/- 10%) by already established new generating capacities (the first block of Riga CHP-2 of 400MW) and the second block of 400 MW of Riga CHP-2 which is still under construction. In a variant when the increase in the consumption is 3% a year, which was in Latvia in the period before the economic crisis with rapid development of national economy of the country, scenario “B” may be regarded as an optimistic prognosis for the achievement of self-ensuring with electricity on the level of the year 2020 if one more CHP – Liepaja CHP (400 MW) – is built before 2020.

### ***Ecological evaluation***

The energy sector is the main source of emissions causing the hothouse effect and contributing to global warming. The strategies of the development of electric energetics in Latvia and Belarus, which form the basis for the choice of the variants of measures, take into consideration the ecological factor. Up to the year 2030 the generating capacities are ensured predominantly by fossil fuel emitting gases that cause the hothouse effect. Great importance is attached to the technology of the generating capacities. Latvia has gained good results in its development by introducing the most up-to-date gas-vapour cycle technology. This allows reducing the fuel consumption and has an impact also on the reduction of the gases causing the hothouse effect.