

Lietuvos Respublikos Seimas

SEMINARAS

Kokių galimybių Lietuvai atveria atsinaujinantys energijos ištekliai

**Naujos galimybės pastačius naujas
elektros jungtis ir SGD terminalą**
*New opportunities after construction of
new interconnectors and LNG terminal*

prof. Jurgis VILEMAS

Energetikos ekonomikos asociacija

2013 m. balandžio 22 d.

Situation at the moment in the power sector of Baltic States

- Estonia, Latvia and Lithuania compose the BALTSO pool, which is synchronously interconnected with IPS/UPS system of the Russian Federation and other CIS states.
- Three Baltic countries together possess adequate generation capacities.

Table 1.

Generation capacities in the Baltic States at 2011

	Generation capacities (netto), MW		
	Lithuania	Latvia	Estonia
Net generation capacity	2756	2360	2430
Conventional thermal including CHP	2457	743	2310
CHP	873	441	357
Hydro	122	1520	5
Wind	200	91	~150
Biomass/waste	18	26	40
Peak load	1800	1200	1350
Gross consumption, TWh	11.56	7.34	9.33
Import (+) export (-)	6.74	1.24	-3.56
<u>Import/export</u> Brutto consumption	58%	17%	38%

- Kaliningrad district operates two modern CCGT CHP units with total capacity 900 MWe. District self-sufficient in nearest years.
- Significant capacities under construction:
 - in Lithuania 450 MW CCGT operational from October 2012, 50 MW waste/biomass after 2013;
 - in Latvia 350 MW CCGT CHP operational after 2013;
- In Estonia 300 MW oil shale FBC new unit in Narva after 2014.

- Lithuania has large hydropumpstorage plant 900 MW with possibility to expand up to 1600 MW.
- Problems arrives after 2016 when EU Large Combustion Installations Directive must be implemented in all three countries.
Majority of old conventional thermal plants must be shut down or equipped with de-NOx installations.
- Greatest problem for Lithuanian old CHP's in Vilnius (350 MW) and Kaunas (180 MW).
No final decisions up to now.

- Probable shortage of capacities complying with new regulations after 2016 in

Lithuania ~ 500 MW

Latvia balanced

Estonia balanced

Table 2. Capacity of interconnections

Interstate high voltage links	Capacity P_i , MW	P_i/P_{\max}
Belarus – Lithuania	1400	0.70
Kaliningrad – Lithuania	700	0.35
Latvia – Lithuania	1300	0.65
Estonia – Latvia	1400	0.50
Latvia – Russia	400	0.33
Estonia – Russia	1400	0.96
Lithuania – Sweden (after 2015)	700	0.35
Lithuania – Poland (after 2015)	1000	0.50
Estonia – Finland (after 2014)	1000	0.69
Total Lithuania with all neighbors	5100	2.55
Total all Baltic countries with all neighbors	6600	1.48

P_{\max} – the peak load in the country

- Majority of EU countries has $P_i/P_{\max} < 0.1$.
Only Netherlands has 0.5, Sweden – 0.26, Finland – 0.22

Main benefits of interconnectors

- Very high security and diversification of supply.
- Possibility to install large generation units in the region (nuclear power plants and very large wind parks).
 $\frac{30}{1200} = 0.025 \rightarrow 2.5\%$
- Integration of **30 TWh** Baltic electricity market with **1200 TWh** Northwest European electricity (BEMIP).

$$\frac{30}{1200} = 0.025 \rightarrow 2.5\%$$

- Strong multidirectional interconnectors open more possibilities: more options, more choices, more flexibility.
- Participation in balancing of intermittent generation of large wind parks in Northwest Europe by conventional and hydro generation in Baltic countries and Russia.
- Possibility in the future to interconnect Nordic-Baltic market with IPS/UPS.
Important step to panEuropean electricity market.

Probable new capacities in the Baltic countries

- To reach 2020 renewable energy target about 500 MW wind generators should be installed in each country. Latest analysis performed by Estonian company “4 Energia” indicate that is cheapest option even including additional cost of balancing capacities.
- Economical attractiveness of wind energy and available conventional capacities for balancing of intermittency will drive further expansion of that kind of generation.
- Utilization of biomass for electricity production will be determined by the needs of district heating.

Final comments

National energy markets are disappearing.

Investments are made where they are most profitable.

The deployment of intermittent renewables requires back-up capacity. Great demand in the region will be for flexible generation.

The production of decentralized electricity will grow with accelerating intensity.

All these factors requires: more, stronger, better and smarter grids and more flexible generation.

It looks that Baltic countries and region in general have good chance to be between leaders of this historical transformation. We must exploit that opportunity.

One of these opportunities – import of electricity from the regions of low production (market) cost.

The requirement for each country to have generation capacity equal or larger than peak demand not corresponds with latest developments in the European electricity markets and long term energy policy of the EU.

Construction of LNG terminal and other important factors inevitably reduce the price of natural gas in the Baltic region.

New modern CCGT power plants should become competitive and regain their market share.

Thanks for Your attention

vilemas@mail.lei.lt