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NATIONAL OPEN ACCESS SCIENTIFIC CENTRE FOR FUTURE ENERGY TECHNOLOGIES

OPEN R & D LITHUANIA

Baltic region cooperation in the energy field. Regional solutions - national benefits

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Message nr. 1

Lithuania sees a Swedish electrical energy system as a very good climate/environmental friendly system and an example to follow. We'll ready to follow this track!

Let's join our efforts!

CONTENT

- Introduction
- Lithuania energy sector: before and after 2009
- Renewal of the Lithuanian National energy strategy
- Nuclear energy in Lithuania
- EU - BRILLIANT project:
  Regional solutions - national benefits. A good start for a sustainable cooperation

Lithuania vs Sweden

- Area:
  - 65.2 km² Lithuania
  - 450.3 km² Sweden
- Population:
  - 2.9 mln. in Lithuania
  - 9.7 mln. in Sweden
- GDP:
  - growth in 2014:
    - by 3.0%
    - 2.3% in Sweden;
  - growth in 2015:
    - 1.6% in Lithuania,
    - 4.1% in Sweden
  - GDP per capita in 2015, chain linked volume (2010), EUR:
    - Lithuania 11500,
    - Sweden 41600

WHO WE ARE:
Brief history of Lithuanian Energy Institute

- Founded **in 1956** as Institute of Energy and Power Engineering.
- **1992** Lithuanian Energy Institute.

TODAYS MAIN MISSIONS:

- Fundamental and applied energy-related research;
- Conceptual and methodological basis for energy sector planning;
- Delivery of competent experts for energy related research

LEI Research directions

- Thermal physics, gas and liquid dynamics and metrology research
- Materials, processes and technologies for renewable energy, hydrogen energy, energy efficiency and reduction of environmental pollution
- Safety and reliability research of nuclear and thermal nuclear power engineering and other industrial objects
- Nuclear waste management
- Simulation and management of power systems, energy economy

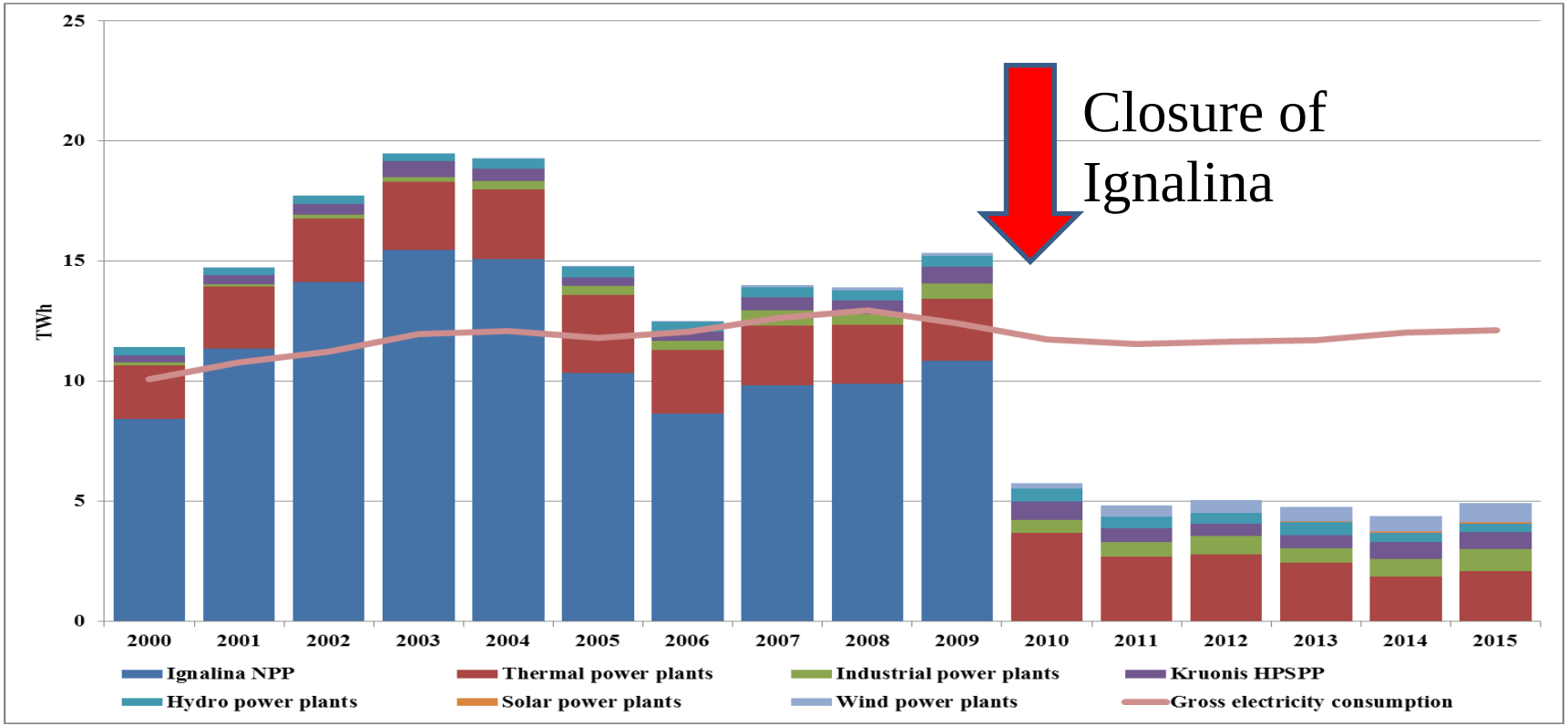
Current status of Lithuania energy sector

- *Global economic recession and decommissioning of Ignalina NPP* caused :
  a) dramatic changes in the country's primary energy balance
  b) negative impact on the Lithuanian economy and social status

- After closure of Ignalina NPP new *options to meet electricity demand:* electricity price is significantly lower than was foreseen few years ago. ***A direct effect of oil/gas prices fall!***

- ***It is not AT ALL EASY to prognose economy of energy sector! Economy and politics in this sector are very dependent on each other!***

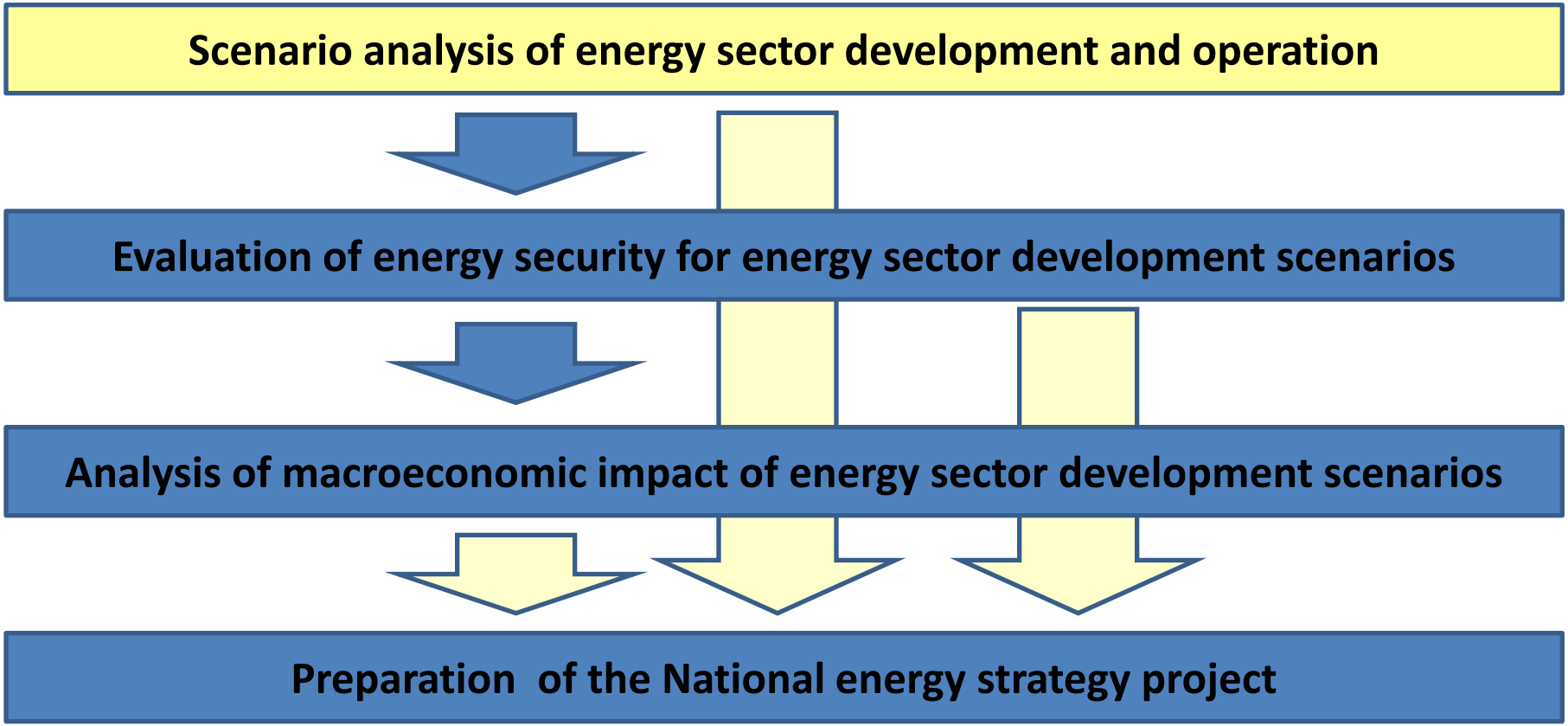
Electricity production and consumption in Lithuania



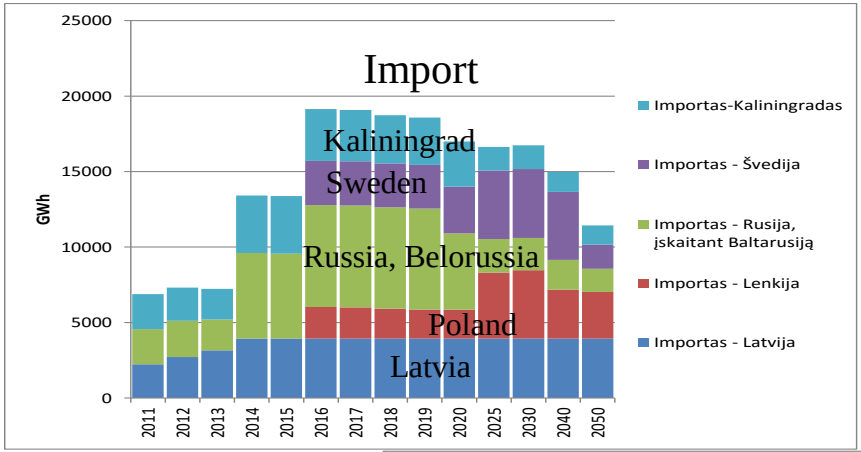
Energy consumption per capita in 2014 Lithuania vs Sweden [Eurostat, 2016]

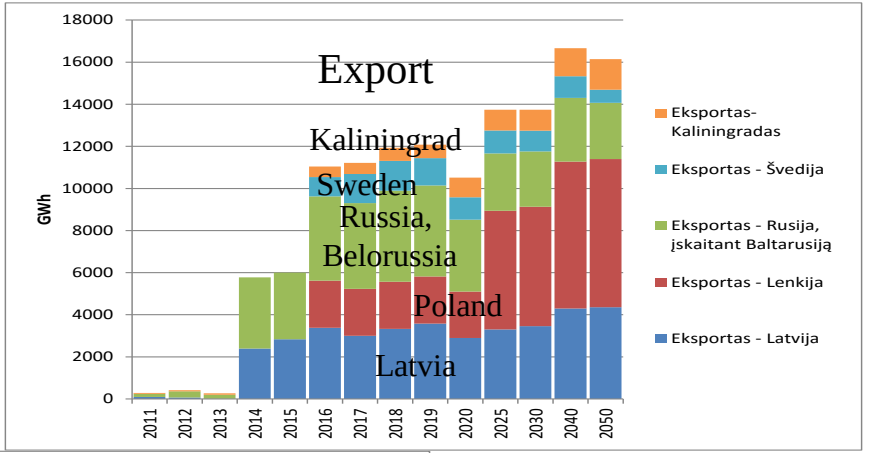
Indicator	Lithuania	Sweden	EU-28
Primary energy, toe	2.3	5.0	3.2
Final energy, toe	1.7	3.2	2.1
Final electricity consumption, kWh/a.capita	3162	12536	5323

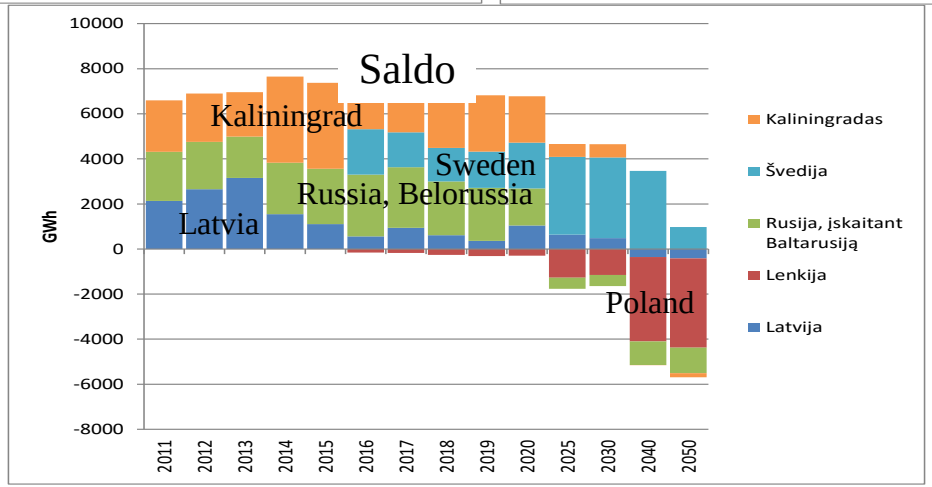
Stages in preparation of the National energy strategy



Electricity exchange with neighboring countries







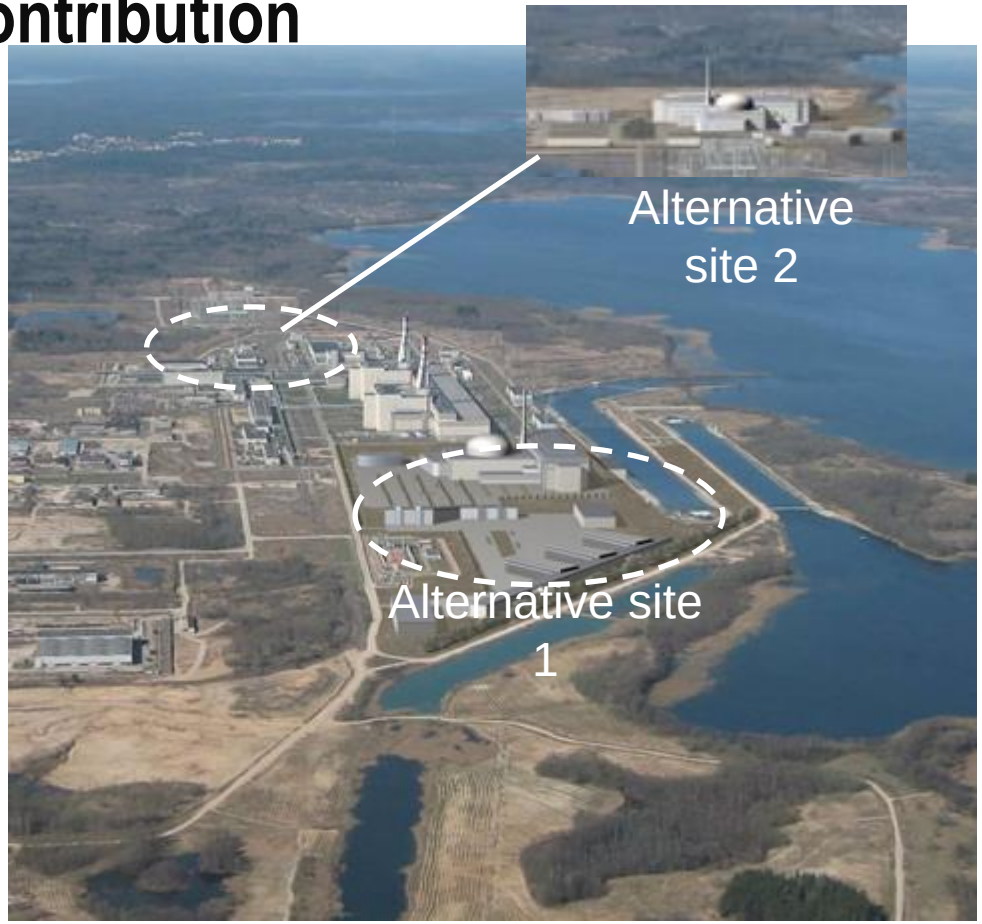
One of scenarios for illustration

Political landscape of Nuclear Power in Lithuania

- In 2006 three Baltic states (Lithuania, Latvia, Estonia) expressed willingness to cooperate in construction of a new NPP in Lithuania.
- In 2011 Hitachi-GE is selected as the Strategic Investor for the Visaginas NPP Project. Hitachi-GE offered as part of its Proposal to provide an ABWR.
- The new NPP (**Visaginas NPP**) is planned to be constructed next to the current Ignalina NPP and to the border with Latvia and Belarus.
- Two possible sites were considered for the new nuclear power plant.

New NPP project in Lithuania: LEI contribution

- LEI performed **Assessment of Potential Visaginas NPP Construction Sites** in Respect of External Events
- LEI took participation in preparation of **Environmental Impact Assessment Report**



Nuclear energy in Lithuania

- Two referendums regarding NPP in Lithuania:

Year	Question for referendum	Participation, %	YES, %	NO, %	Result
2008	Ignalina NPP operation extension	**48,4**	88,6 (**1 156 738**)	8,3	Not accepted
2012	Construction of new NPP	52,6	**34,1**	62,7 (**853 163**)	Not accepted

- Both questions in nuclear related referendums were not accepted.
- Does Lithuanians support nuclear or not?
- Why nuclear power development meets barriers?
- Are there regional solutions to overcome these barriers?

Lithuania seeking EUROPEAN/BALTIC SOLUTIONS: REGIONAL COOPERATION – NATIONAL BENEFITS

Baltic Region Initiative for Long Lasting Innovative Nuclear Technologies

Countries involved:

- Estonia,
- Latvia,
- Lithuania,
- Poland,
- Sweden.





Goal: To find optimal regional solution to create cooperation platform for modern electrical power solutions.

BRILLIANT project

BRILLIANT
BALTIC REGION INITIATIVE FOR LONG LASTING INNOVATIVE NUCLEAR TECHNOLOGIES

- Objectives:
  - Identify the real **barriers** for nuclear power development in Baltic countries region and prepare the ground for overcoming them
  - Support the **exchange of scientific knowledge** and competences between Baltic region countries
  - Development of better synergies with on-going and future Euratom **projects** in particular those offering access to research infrastructures in conjunction with education and training
- Motivation
  - Create **cooperation platform** for modern nuclear technologies and electrical power solutions in Baltic see countries
  - Establish and develop **links with decision makers** (governmental structures) and industrial partners in Baltic see countries and demonstrate advantages of regional cooperation in energy sector development

Background for BRILLIANT

- ***BRILLIANT project helps to achieve the objectives of the Energy Union Strategy in the EU*** (EC initiative announced in February 2015) in terms of:
  - Fighting against climate change
    - Reduction of greenhouse gases emissions in the EU
  - Increasing security of energy supply
    - Diversification of energy sources
    - Reducing of EU countries dependency on energy imports

Concept of EUROBaltic Centers of Nuclear Research and Technology

Baltic Center of Nuclear Fuel Studies – Oskarshamn

Baltic Center of Nuclear E-education - Tartu

Baltic Center of Advanced Nuclear Coolant Technology Development - Riga

Baltic Center of Nuclear Safety and Energy Security – Kaunas/Vilnius

Baltic Institute of Nuclear Reactor Research – Swierk

MESSAGE 2:

Cooperation with Sweden started in the frame of the Brilliant project will/may lead to climate and environmental friendly solutions for Baltic Energy Systems:

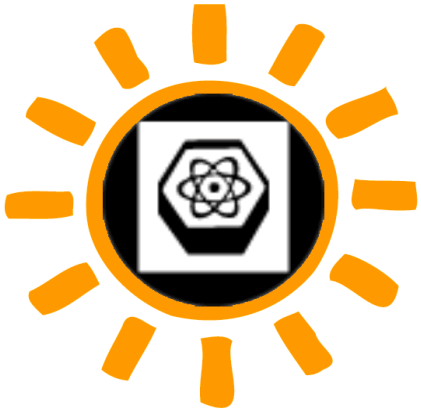
We shall all benefit FROM THAT: Baltic region may become a perfect example of environmental friendly regional solutions where regoínal environmental friendly solutions lead to national benefits!

Summary

- Regional cooperation is key issue in planning of ambitious energy projects in Baltic countries.
- Individual barriers difficult for each country separately could be easier overcome by cooperation on regional level.
- Energy development strategies in neighboring countries (especially in Nordic countries) are very important in planning of Lithuanian National Energy Strategy.
- BRILLIANT project will help to solve national problems by regional cooperation:
  - Establishment of cooperation platform of Energy Research and Technology,
  - Development of best practices in nuclear technology in Baltic Region
  - Learning from best experiences in neighboring countries
  - Making Baltic Region energy independent, energy secure and environmental friendly

BRILLI NT

Thanks you for your attention!



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