EXPERIENCE OF AND LESSONS FROM THE REGIONAL INTEGRATION OF THE BALTIC STATES

A PRESENTATION TO EURONEST

19 September 2012

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AGENDA

1. Pöyry briefly
2. Background to Baltic market integration
3. Progress so far
4. Challenges in Nordic and Baltic market integration

GLOBAL EXPERTS IN CONSULTING AND ENGINEERING

- Pöyry is a global consulting and engineering company dedicated to balanced sustainability and responsible business

- About 7 000 experts in about 50 countries
- Project experience in over 100 countries
- 15 000 projects annually

- Net sales in 2011 EUR 796 million
- Listed on the NASDAQ OMX Helsinki

PÖYRY MANAGEMENT CONSULTING – ENERGY

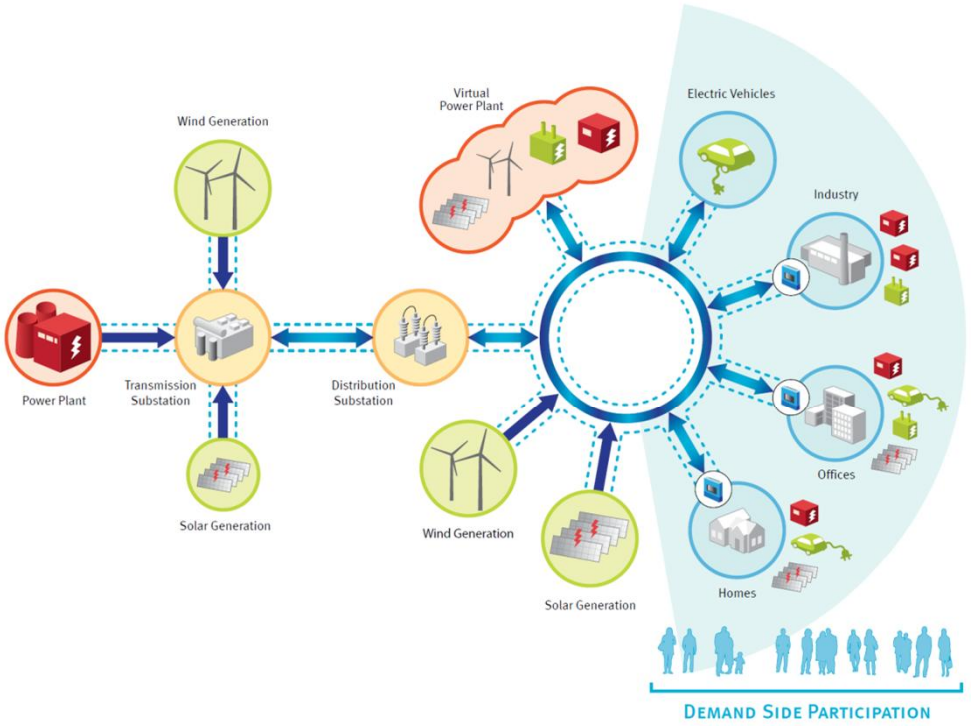
- Europe's leading specialist energy management consultancy.
- Offering expert advice from strategy to implementation on policy, regulation, business operations, financing and valuation and sustainability.
- Providing in-depth market analysis and strategic insight across Europe.
- Over 250 energy market experts in 14 offices across Europe:

- Düsseldorf
- Helsinki
- London
- Madrid
- Milan
- Moscow
- Oslo
- Oxford
- Stockholm
- Stavanger
- Paris
- Vienna
- Villach
- Zurich

MARKET DESIGN IS A CORE PÖYRY STRENGTH

We draw on our unparalleled understanding of national energy markets across Europe to provide impartial advice to both public and private sector parties on energy policy and market design issues

- Cutting-edge understanding of practical implications of low carbon futures
- Highly respected and influential in both Governmental (EU and national) and private sector circles
- Successful implementation of our market design concepts
  - Irish electricity market
  - South Eastern Europe regional market
  - Ukraine market operator and balancing market
  - Irish gas market opening
- Quantitative and detailed modelling to back our thinking on market design
- Approach electricity, gas and carbon markets as a unified system
- Understand commercial perspective of investors and participants



Source: EURELECTRIC

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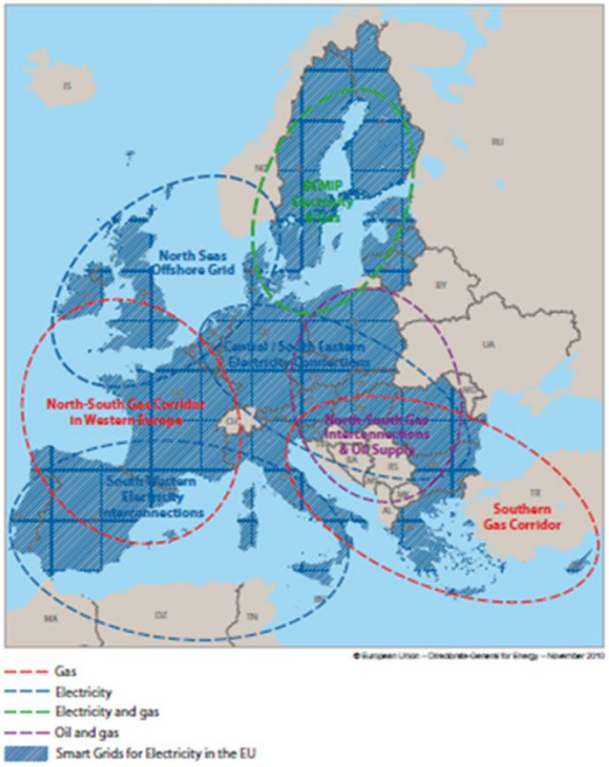
POLICY BACKGROUND

Integration of Baltic energy markets is an EU priority

- EC second strategy review in 2008
  - Connecting energy islands
- BEMIP is one of 6 energy infrastructure priorities
- Baltic sea regional group formed action plan (2012-2022)
- Long standing goal to further liberalise EU electricity markets under 3rd energy package
- Integration of Nordic markets and Europe increase North South flows and hence help to integrate RES within and around the region
  - Nordic surplus
  - New route from Nordics to central EU markets

EU infrastructure priorities



OBJECTIVES OF THE BEMIP

There are two main overarching objectives for the BEMIP

	Objective	Key deliverables to meet objective
1	**Integrate Baltic and Nordic markets**	– Common market with one price exchange – Increase interconnection (Finland Estonia, Sweden Lithuania and Lithuania Poland)
2	**Define trading rules with 3rd party countries**	• Market interface between EU and third countries (dialogue with Russia) • Network interface

THERE ARE FOUR MAIN STAGES TO BEMIP IMPLEMENTATION

Baltic energy market integration plan (electricity)

2009	2010	2011 - 2013	2013 - 2015
Agreement on BEMIP	**Fufilment of market opening requirement**	**Market functioning fine tuning**	**Full functioning market integration with Nordic market**
• Decision to start Baltic market integration	• Removal of regulated tariffs • No cross border rest • Subsidised RES in market • Unbundling of TSO • Basic transparancy rules • Congestion management • Markets open for trade • Common position towards Russia	• Common day ahead market • Introduce intra day market • Market based congestion mgt • Transparency ERGEG • Common reserves and balancing power • Harmonised imbalance settlement and pricing • Common market monitoring	• Fully functioning integration with Nordics • Fully open retail market • Common xchange • OTC market • Network tarrif harmonisation

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PROGRESS WITH THE BEMIP SO FAR

Good progress has been made so far but there remains plenty to do

Step 1	Estonia	Latvia	Lithuania
Baltic market integration		Q2/2009	
Decision to start Baltic market integration			

Step 2	Estonia	Latvia	Lithuania
Fulfilment of market opening requirement		Q1/2010	
Regulated tariffs removed for eligible customers (≥35% of volume)			
No cross border restrictions			
Subsidized RES can enter the market without losing subsidies			
Unbundling of TSO activities/roles			
Basic transparency rules (Nord Pool Spot rules)			
Congestion management method between Estonia-Latvia-Lithuania			
Markets are open for trade			

Step 3	Estonia	Latvia	Lithuania
Market functioning fine tuning		2011-2013	
Baltic common day ahead market			
Introduction of Intra-day market		2012	2012
Market based congestion management, implicit auction		2012	2012
Common position towards non EEA third party countries			
Transparency according to the ERGEG		After NPS introduction	
Common reserves and balancing power market	Harmonization process ongoing		
Harmonized imbalance settlement and imbalance pricing			
Common market monitoring and surveillance rules			
Development of financial market			

Step 4	Estonia	Latvia	Lithuania
Full functioning market integration with Nordic market		2013-2015	
Full opening of the retail market	2013	2015	2015
Common power exchange for physical trade in Nordic & Baltic	2015	2015	2015
Market place for financial products (OTC)			planned
Network tariff harmonization for generators			

Acheived
Somewhat achieved
Not yet achieved
To happen by future date (stated if agreed)

- There has been progress according to the BEMIP plan, although some steps are behind schedule
- Notably, progress of the BEMIP is at different stages in different markets
- Elbas (intra day) and Elspot (day ahead) have already been implemented in Estonia driven by e.g. ESTLINK cables to Estonia with a Latvia-Estonia price area introduced (to be separate from 2013)
- Lithuania is also an Elspot bidding area with new links to Sweden and Poland a driver
- Certification of independent SO needs to be completed in Latvia (according to NPS)
- Baltic TSOs shareholders of Nord Pool from August 2012 (Lithunaia and Estonia; Latvia delayed slightly)

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CHALLENGES REMAINING TO BALTIC MARKET INTEGRATION

We identified 3 main topics as challenges to Baltic market integration

1 Supply adequacy and security of supply

- New investment in thermal capacity is required to maintain security of supply
- New investment is also required in grid and interconnection
- Will the market deliver the right incentives?

2 Competition and liquidity in the Baltic markets

- Ensuring competition is an important step in opening markets to other private investors and must take place alongside market integration
- Steps need to be taken to promote use of financial markets in the Baltic states to increase investor confidence in market liquidity
- **Establishment of a reference price is key!**

3 Cross border issues with 3rd party (non EU) countries

- Trading arrangements with Russia needs to be organised systematically
- Lack of reciprocity in Baltic markets
- At present investors see cheap imports from 3rd party countries as posing a risk to investment in new generation capacity (potential to be undercut)

SUPPLY ADEQUACY AND SECURITY OF SUPPLY

- New (market based) investment will be required in Baltic electricity markets to maintain security of supply

- The network in the Baltic market is old and requires investment
  - Investment is required to integrate new generation capacity (thermal and RES)
  - The network is also highly integrated into the Russian system, which currently helps the Baltic states to maintain supply adequacy
  - Although a long term political goal is for the Baltics to desynchronise from the Russian network and synchronise to the EU network, the timing of desynchronisation from the Russian network is unlikely to take place before 2020
  - A detailed plan for this will be crucial

- Successful implementation of the BEMIP will improve the situation towards ensuring security of supply but will not necessarily guarantee new investment from private companies
  - Current plans for deployment of nuclear and renewables in the Nordic countries could mean that even with successful implementation of the BEMIP programme, additional measures are required to ensure investment in thermal plant (for example a capacity payment mechanism) to maintain security of supply
  - Current Lithuanian energy strategy states an objective of energy independence

CROSS BORDER ISSUES WITH 3RD PARTY COUNTRIES

- Current lack of a common market interface with 3rd party countries (Russia. Belarus)
- Lack of reciprocity between Baltic States and 3rd party countries
- Cheap imports (from Russia) are seen as a risk by investors
- In the short term there are also concerns over Kaliningrad and Russia currently supplies electricity to the exclave via Belarus, Estonia and Latvia
  - This situation has improved lately as a new gas-fired power plant has been built
  - According to Eesti Energia the only solution is that Kaliningrad follows the Baltics
- In the longer term, new nuclear capacity being built in the Kaliningrad region with the first unit scheduled to enter service in 2018
- This issue should be managed at the EU level, it is particularly relevant to the Baltic markets given the level of transfer capacity between the Baltics and Russian market
  - There are similar challenges in the SEE region (with Ukraine and Moldova joining the Energy Community)

COMPETITION AND LIQUIDITY

- In order to incentivise market based investment, competition will need to increase under BEMIP
- Local competition as well as market integration should be addressed in order make the Baltic power market function efficiently
  - We found from game theory that when Baltic countries are importing from the Nordic area and interconnectors are congested; the problems of market concentration are aggravated as the residual market in which only local producers operate is small in size
- It will also be important for private investors to have enough confidence in market liquidity and there are still some gaps regarding the financial markets ensuring liquidity in the Baltic region
  - A staged approach to a market opening, combined with certain incentives for producers to use the spot exchange and eligible consumers to source from the open market is therefore an important part of the further development in addition to increased regional capacity and interconnectors
- It is important that the interconnections with the EU markets are divided into three locations - this will give reciprocity

INCREASING THE ROLE OF FINANCIAL MARKETS

- Pre-requisites for fufilling financial markets in the Baltics match BEMIP development priorities
  - According to the BEMIP a common power exchange for physical trade in the Baltic and Nordic markets should be in place by 2015

- Baltic markets are highly concentrated
  - Desirable to increase interconnection
  - Boost liquidity from bilateral to spot market
  - Increase interconnection with Nordics
  - Introduce responsibility for balancing costs
  - Promote cross border balancing
  - Strengthen market surveillence

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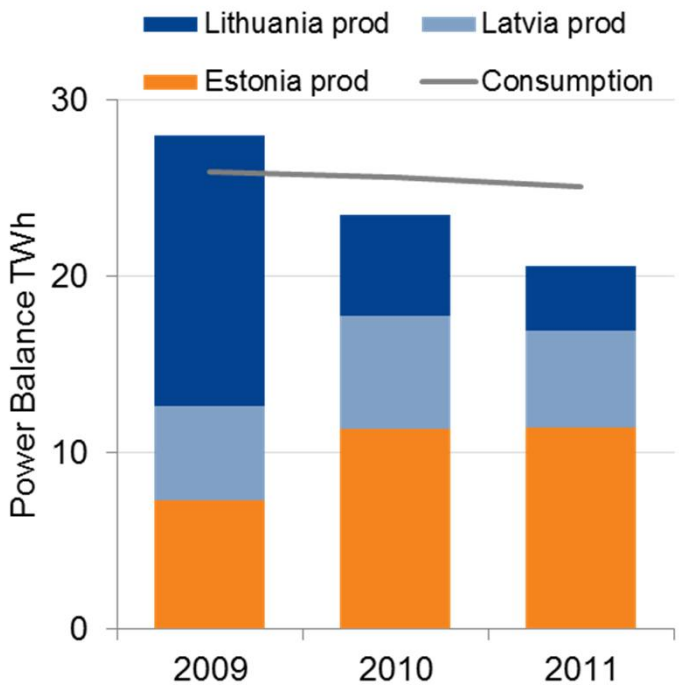
5. Additional material

BALTIC REGION POWER BALANCE SINCE IGNALINA CLOSURE

Since the Ignalina closure the Baltic markets collectively moved to a state of net import

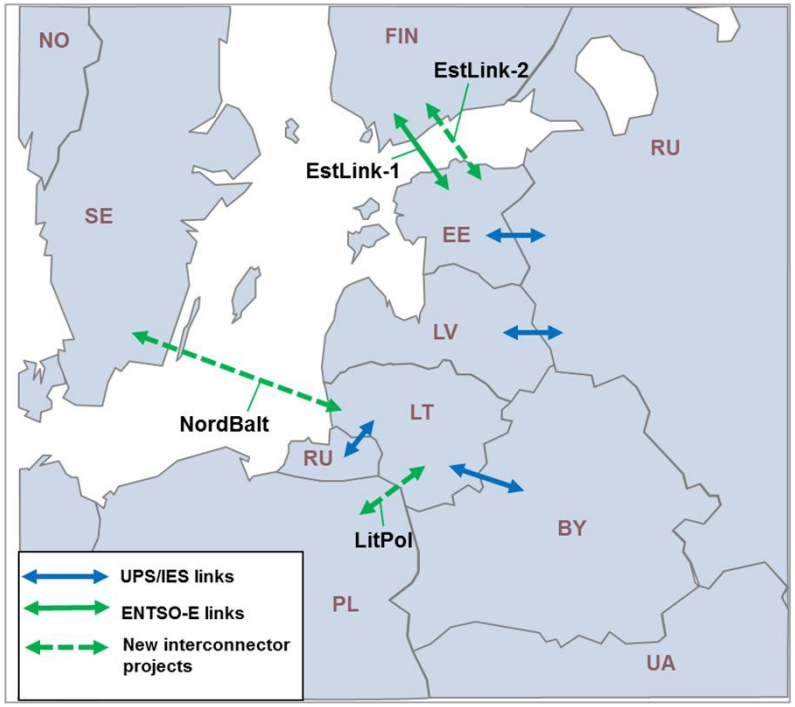
Power balance in the Baltic region (09-11)



- Baltic region has moved to a net import position after Ignalina closure
  - In 2009 the region had a 2TWh surplus while in 2010 this fell to 2TWh import and 4TWh import in 2011
  - Lithuanian generation fell sharply (-10TWh) partly counteracted by increasing generation from Estonia (+4TWh) and Latvia (+1TWh)
- According to market participants, there is more than enough installed capacity to meet demand (5.4GW v peak load of 4.4GW… but some of this will retire in the future)
- Comments from market participants (Eesti Energia, Fingrid) suggest that Russian imports are being priced at a level to undercut domestic generation which leads to incumbent plant being uncompetitive (as a result some plant are being mothballed) as InterRAO is the sole importer
- There is a total of 3GW import from Russia and Belarus into the Baltic markets and a further 700MW with the Kaliningrad enclave

ADDITIONAL INTERCONNECTION IS IMPORTANT TO STRENGTHEN MARKET INTEGRATION AND TRANSPARENCY

New interconnection



Three major interconnection projects:

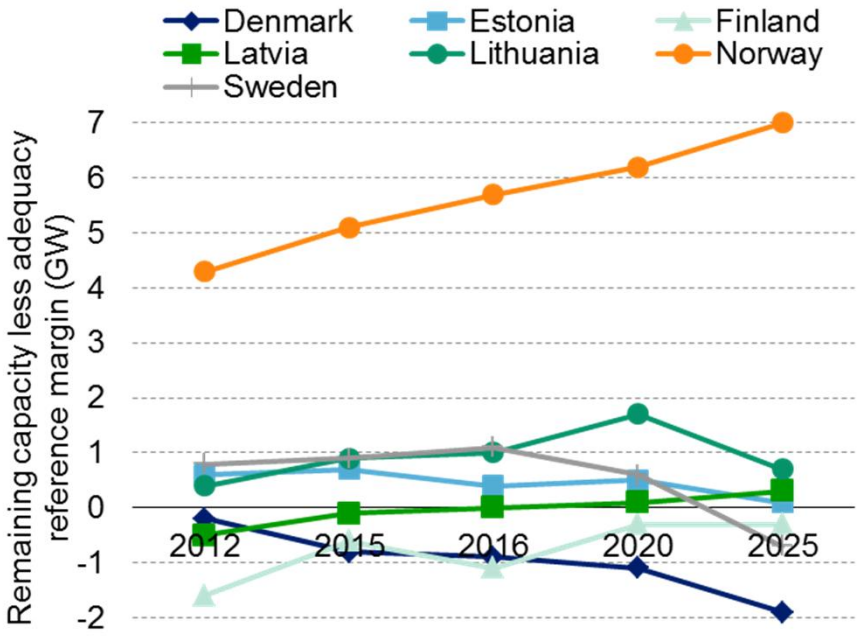
- ESTLINK 2 (Finland-Estonia) 2014; 650MW
- NordBalt (Sweden-Lithuania) 2015; 700MW
- LitPol (Lithuania-Poland) 2016-2020; 1000MW

- Currently 3GW of interconnection between Baltics and non-EU markets plus 700MW link with Kaliningrad
- The establishment of additional interconnector links to Nordic and Polish markets will play an important role in establishing reliable price formation and reducing market power
- Increasing interconnection will help to establish a reliable reference price by reducing the influence of 3rd party imports by increasing flows with large Nordic and Central European neighbours
- The additional cables will also provide a second corridor to transport a Nordic surplus to Central Europe and help to integrate renewables into the system

SUPPLY ADEQUACY

According to ENTSO, new capacity will need to be built to deliver supply adequacy in the Baltics; how will it be financed?

Capacity adequacy forecast



Source: ENTSO-E system adequacy forecast 2012 – best estimate scenario

NB A negative value indicates that the system is likely to rely on imports to cover peak demand

- The ENTSO forecast includes the following new build plant:
- Lithuania
  - 900MW of gas capacity; new NPP by 2020
- Latvia
  - 400MW gas steam unit; 400MW unit in Kurzeme region
- Estonia
  - Adequacy maintained to 2015 but IED impacts shale oil
  - New shale oil unit in 2019; new CHP
- Falling capacity adequacy in Denmark and Sweden due to increasing RES and retiral of thermal plant. In Sweden refurbished nuclear plant pushes load supply adequacy higher
- This is an ideal scenario
- **How will new capacity be financed and will it be competitive?**

THANK YOU!

PÖYRY

Engineering balanced sustainability™

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