A meshed offshore wind grid in the Baltic Sea: Opportunities and obstacles in the policy, legal and regulatory framework

9:00 - 16:00 | 16 March 2018
Table of content

I. Baltic InteGrid - Context

II. Baltic InteGrid - Activities
   1. Baltic Offshore Grid Forum
   2. Baltic Grid Concept
   3. Case Studies

III. Agenda for today
- Funded by Interreg BSR
- Subfield: Renewable energy
- EUSBSR Flagship project; running until 2019
Offshore wind in the Baltic Sea region

- OWE capacity of 15,8 GW in Europe
- Vast majority of EU OWE capacity is in the North Sea
- Good conditions in the BSR for OWE
- OWE market in BSR smaller & earlier stage

Knowledge transfer potential from North Sea
Meshed offshore grid

- High initial investment
- Highly complex regulatory, legal, market, policy & tech obstacles to navigate

+ Annual savings compensate
+ Resilience for operators
+ RES & market integration
+ Coordination has already begun
Radial approach

Meshed approach
### BSR: Offshore wind (MW)

<table>
<thead>
<tr>
<th>Country</th>
<th>Installed</th>
<th>Construction</th>
<th>Planned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>338,8</td>
<td>350</td>
<td>5391</td>
</tr>
<tr>
<td>Denmark</td>
<td>885</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sweden</td>
<td>171</td>
<td></td>
<td>10,009</td>
</tr>
<tr>
<td>Finland</td>
<td>44,5</td>
<td>42</td>
<td>3687</td>
</tr>
<tr>
<td>Estonia</td>
<td></td>
<td></td>
<td>4816</td>
</tr>
<tr>
<td>Latvia</td>
<td></td>
<td></td>
<td>1375</td>
</tr>
<tr>
<td>Lithuania</td>
<td></td>
<td></td>
<td>1559</td>
</tr>
<tr>
<td>Poland</td>
<td></td>
<td></td>
<td>12,807</td>
</tr>
</tbody>
</table>
Current OWE capacity in the BSR (MW)
Current vs. planned capacity

- **Planned capacity**
- **Current capacity**

*Countries: DE (Germany), DK (Denmark), SE (Sweden), FI (Finland), EE (Estonia), LV (Latvia), LT (Lithuania), PL (Poland)*
Electricity market integration in the Baltic Sea region

- Need for enhanced coordination of grid planning
- Regional electricity exchange to increase to 2030 min.
- Need for more interconnectors

*BASREC Study “Electricity Grid Expansion in the Context of Renewables Integration in the Baltic Sea“
Baltic InteGrid

Regional ambition
OWF development

Regional need for electricity market integration

Meshed grid
Policy and Strategic Alignment

- EU Energy Union
- EU Energy and Climate Policy
  20-20-20 Targets
  - Regulation No 347/2013 on trans-European energy infrastructure
  - Directive 2014/89/EU: framework for maritime spatial planning
  - EU BSR Strategy: subobjective Reliable Energy Markets
  - BEMIP (Baltic Energy Market Interconnection Plan)
Core pillars of the Baltic InteGrid

Baltic Offshore Grid Forum
Network & conference platform

Baltic Offshore Grid Concept
Interdisciplinary research

Pre-feasibility studies
In-depth perspective on 2 cases
Core pillars of the Baltic InteGrid

Baltic Offshore Grid Forum
Baltic Offshore Grid Concept
Pre-feasibility studies

- Network & conference platform
- Interdisciplinary research
- In-depth perspective on 2 cases
The Baltic Offshore Grid Forum

Thematic Working Groups

1. Policy & regulation (2)
2. Market & supply (2)
3. Technology & grid (2)
4. Environment & society (2)
5. Spatial planning (2)
6. Cost-benefit analysis (2)

- Disciplinary in scope
- Focus: Region-wide

Country workshop

- Latvia
- Poland (2)
- Germany
- Finland
- Lithuania

- Interdisciplinary in scope
- Focus: national

Key events

- Kick-off conference
- First results conference
- PL-SE case study
- Final conference

- Interdisciplinary
- Focus: Region-wide
Core pillars of the Baltic InteGrid

Baltic Offshore Grid Forum
- Network & conference platform

Baltic Offshore Grid Concept
- Interdisciplinary research

Pre-feasibility studies
- In-depth perspective on 2 cases
The Baltic Offshore Grid Concept: Research study

*Interdisciplinary research on meshed grid development from 6 angles:*

1. Policy & regulation: Inventory, obstacles, regional TSO
2. Market & supply: Trends and opportunities (SME)
3. Technology & grid: State-of-the-art, LCOE model
5. Spatial planning: Spatial integration OWE & grids
6. Cost-benefit analysis: Quantitative and qualitative
Core pillars of the Baltic InteGrid

Baltic Offshore Grid Forum
Baltic Offshore Grid Concept
Pre-feasibility studies

- Network & conference platform
- Interdisciplinary research
- In-depth perspective on 2 cases
Pre-feasibility Studies
2 case-studies on offshore wind farm interconnectors

1) Interconnector via OWFs between SE, PL and LT
2) Interconnector via OWFs between DE and SE
# Recommendations and outputs

- Legal, regulatory inventory, focus studies, recommendations
- Environmental impact study & mitigation strategy
- Cost-benefit analysis and quantitative benefits model
- Market & supply chain trends and business opportunities
- MSP maps and technology catalogue

**First reports spring 2018**

**Target groups**

- TSOs
- Policy-makers
- OWE industry
- Investors
- Research
- Academia
- Civil society
- (Maritime) spatial planners
- Environmental organisations
The partners

14 partners from the 8 EU Member States

1. IKEM | Germany
2. Foundation for Sustainable Energy | Poland
3. Rostock Business and Technology Development
4. Technical University of Denmark | Denmark
5. Energy Agency for Southeast Sweden | Sweden
6. Deutsche WindGuard | Germany
7. Maritime Institute in Gdansk | Poland
8. Stiftung OFFSHORE-WINDENERGIE | Germany
9. Latvian Association of Local and Regional Governments | Latvia
10. Aalto University | Finland
11. University of Tartu | Estonia
12. Klaipeda University Coastal Research and Planning Institute | Lithuania
13. Lund University | Sweden
14. Aarhus University | Denmark
The AO’s

Germany
- Siemens AG
- BMUB (Ministry for the Environment, Nature Conservation, Building and Nuclear Safety of Germany)
- Ministry of Energy, Infrastructure and State Development of Mecklenburg-Vorpommern
- 50Hertz Transmission GmbH
- Ecologic Institute
- Kisters AG
- Becker Büttner Held
- Eclareon

Finland
- Finnish Wind Power Association

Estonia
- Elering-generating opportunities

Lithuania
- The Ministry of Energy
- Litgrid AB

Poland
- Inwestycje Infrastrukturalne Sp. Z O.O
- Maritime Office in Gdynia
- PGE Energia Odnawialna S.A.
- Polish Offshore Industry Association
- PSE S.A. Polskie Sieci Elektroenergetyczne
- Baltex Energia i Górnictwo Morskie SA SKA
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<thead>
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<th>Topic</th>
<th>Speaker</th>
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<tr>
<td>Legal, regulatory and policy questions: Perspectives on offshore grid integration in the Baltic Sea</td>
<td>Bénédicte Martin</td>
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<td>The next level: Meshed grids and a transnational TSO</td>
<td>Kanerva Sunila</td>
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<td>Offshore grid infrastructure as a Project of Common Interest: Advancing renewable energy and regional interconnections</td>
<td>Catharina Sikow-Magny</td>
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<td>European TSO cooperation and legal considerations</td>
<td>Elina Hautakangas</td>
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<td>Legal and regulatory challenges towards offshore wind development: Insights from Estonia</td>
<td>Tuuliki Kasonen</td>
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<td>Tapping into the full potential of offshore wind: A policy and regulatory wishlist</td>
<td>Diletta Zeni</td>
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<tr>
<td>Regional Operation Centers: Evolving electricity grids in the Energy Union</td>
<td>Jan Kostevc</td>
</tr>
<tr>
<td>Impulse talk for the panel discussion</td>
<td>Scaling up: Drivers and stakes towards an offshore grid and transnational TSO</td>
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Discussion panel (all speakers and participants)