



Project concept for the INTERREG Baltic Sea Region Programme call for proposals

## **“Integrated Baltic offshore wind electricity grid development” (Baltic InteGrid)**

### **Project summary**

The main objective of the project is to develop the concept of the Baltic offshore electricity grid integrated with planned offshore wind farms which will increase connectivity of Baltic energy markets and improve offshore wind farm deployment.

This objective will be achieved through a series of actions including: establishment of six expert working groups in different thematic fields, performing a high-level analysis leading up to the development of the optimal Baltic grid layout in the Baltic Sea, development of in-depth analysis of

several fragments of the Baltic grid. All actions will be done in cooperation with key stakeholders including transmission system operators, investors, maritime administration, academic institutions etc.

One of the key outputs of the project will be recommendations to the future Ten Year Network Development Plans and maritime spatial plans.

The project consortium will include wide variety of partners from all BSR countries.

### **Project background and justification**

The project focuses on two interlocking issues namely: offshore wind energy (OWE) development and cross-border power grid integration within the Baltic Sea region (BSR). Below the key drivers for project implementation are listed:

- Renewable energy sources (RES) are an important issue on the EU agenda with the goal of 20% share of renewable energy in final energy consumption until 2020. There is still uncertainty regarding the post-2020 goals, however current propositions suggest 27% EU goal for the share of RES in energy consumption (non-country specific) and 40% for CO2 emission reduction by 2030. Although

member states are responsible for their own energy mix. **It is certain that EU policy will push forward with increasing the importance of renewable energy via new goals for RES and the Emission Trading Scheme.**

- Offshore wind energy is the most dynamically developing energy sector in Europe. According to the European Wind Energy Association's (EWEA) statistics<sup>1</sup> a total of 2,080 wind turbines were operating in 69 OWFs in 11 countries across Europe at the end of 2014. Their total capacity amounts to 6562 MW. **The EWEA expects the total installed capacity in OWE to reach 40 GW by 2020 and 150 GW by 2030.**
- Based on an analysis of investor plans and scenarios of transmission system operators (TSO) the potential for OWE in the BSR is between 4.9 GW and 12.2 GW until 2030. Following the maturing of rising markets such as Poland, Estonia, Lithuania and initial filling of the North Sea and Irish Sea markets **Baltic Sea may become the next offshore development region.**
- **Cost reduction is one of the key challenges for OWE.** The North Sea experience shows that a meshed-grids concept (highly interconnected grid integrated with OWF) can contribute to lowering the costs. Additionally, the OWFs connected to a transnational grid will increase the availability and predictability of electricity and decrease the necessity of operating reserve.
- On a regional level **there are strong differences between BSR countries in the attitude towards OWE.** In Germany and Denmark specific solutions have been implemented, such as a support scheme with provisions dedicated specifically for this technology. Other BSR countries still lack dedicated solutions for offshore wind development.
- The challenge which lies before the BSR is how to connect planned offshore wind farms in an economically feasible, environmentally friendly and socially acceptable way and **to use the development of OWE to increase the interconnectivity and thus support the common energy market creation.** Most definitely a coordinated approach is needed.
- The development of an offshore electricity transmission grid is strongly supported by the EU policy and is in line with the main EU priorities in Energy 2020 policy, namely the:
  - sustainability – through increased deployment of RES;
  - competitiveness – through well interconnected common energy market and lower energy prices;
  - security of energy supply – through energy generation based inexhaustible wind resources.
- EU also recognizes the need to further develop Europe's electricity grid to reach the **goal agreed on at the Presidency summit in Barcelona in March 2002 for interconnectivity equivalent to 10% or beyond of Member State electricity generation capacity.** This means that export-import capabilities of Member States should be at least 10% of their power generation. Additional transnational overseas connections will improve power exchange capabilities.

<sup>1</sup> EWEA January 2014. "The European offshore wind industry - key trends and statistics 2013".



- **Better interconnectivity in the Baltic region may potentially enable the balancing of offshore wind power generation.**
- **Maritime spatial plans are a very high priority on the EU political agenda** and will play a significant role in defining the future location of OWF and transmission infrastructure. EU has already prepared a draft Directive establishing a framework for maritime spatial planning and integrated coastal management (COM(2013) 133 final).
- Most projects dedicated to integrated grid development focus on North Sea. There is no similar project dedicated to Baltic Sea.

### Main objective of the Baltic InteGrid

**The main objective of the project is to develop the concept of the Baltic offshore electricity grid integrated with planned offshore wind farms thus increasing connectivity of Baltic markets and improving offshore wind farm deployment.**

### Specific objectives:

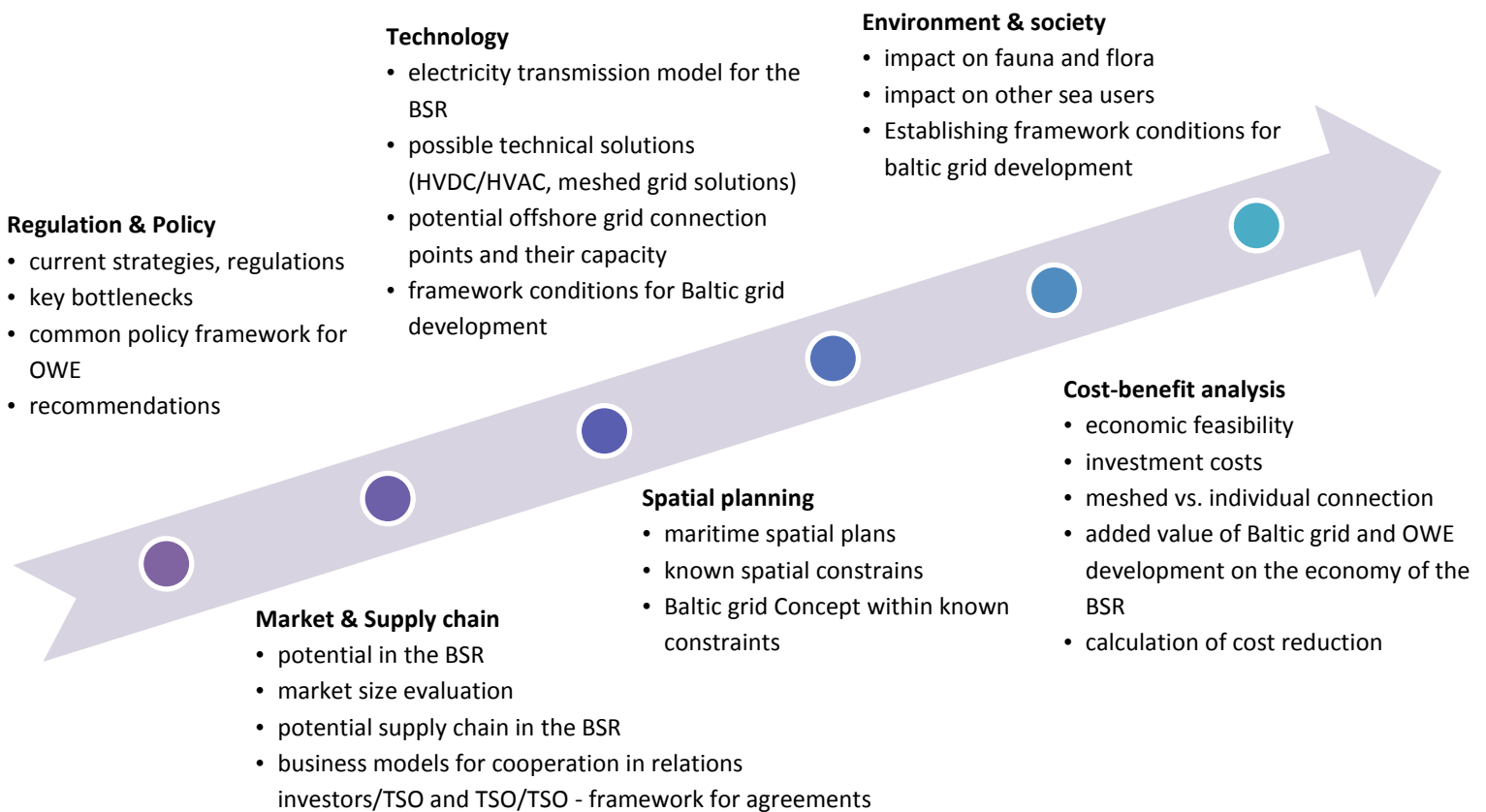
- Perform a **high-level study on the Baltic grid development** including: regulatory barriers, spatial and environmental constraints, technological solutions, cost-benefit analysis.
- Carry out **in-depth feasibility studies** for several offshore grid connections in the Baltic Sea Region, integrated with viable offshore wind farm (OWF).
- Establish a **durable platform for transnational communication and coordination** in the field of Baltic grid development integrated with OWE (Baltic Offshore Grid Forum).
- Provide **input to maritime spatial plans** to be developed under the proposal for a Directive establishing a framework for maritime spatial planning and integrated coastal management (COM(2013) 133 final) and future **Ten Year Network Development Plans (TYNDP)** of ENTSO-E.

### Planned actions:

- Develop the concept of the Baltic grid through cooperation of the six working groups performing analysis in the fields:
  - regulation & policy,
  - market & supply chain,
  - technology,
  - environment & society,
  - spatial planning,
  - cost-benefit analysis



- The analysis will be performed in cooperation and consultations with key stakeholders: ENTSO-E and individual TSOs, OWF developers, producers, central and regional authorities, spatial planners and environmental authorities which will guarantee uptake of the final results.
- Create a Baltic Offshore Grid Forum (BOGF) - a communication forum for key stakeholders. It will include a dedicated internet platform but also organization of seminars, meetings and conferences related to offshore grid development in the BSR. The events will be coordinated with VASAB, BASREC and other relevant BSR agendas. BOGF will include main actors such as transmission grid operators (TSOs), academic institutions, investors etc. and also consortia of similar initiatives in the North Sea: The North Seas Countries' Offshore Grid Initiative (NSCOGI), NorthSeaGrid, E-highway, Kriegers Flak, BaltSeaPlan, Twenties project, EERA-DTOC etc.
- Carry out feasibility studies for 2-3 offshore grid connections in the Baltic Sea Region, integrated with viable OWF projects as first steps to creating the Baltic grid. Interconnectors have to contribute to: balancing of wind energy and increasing export-import capacity in the region.
- Develop recommendations and propositions for: the future Ten Year Network Development, maritime spatial plan.



### Tasks performed up to date

The Baltic InteGrid is being developed under the seed fund of EUSBSR Seed Money Facility. Until now the following activities have been performed:

- A thorough analysis of state of play of offshore wind energy and offshore grid was performed.
- The project concept has been consulted with the INTERREG Baltic Sea Region Programme
- Joint Technical Secretariat on the December 4<sup>th</sup> during the lead applicant seminar in Riga. It has been well received and was said to be in line with the Programme priorities.
- The project concept has been consulted with: VASAB, 50hertz and Energinet.dk which have expressed their interest in the goals of the project.

### Interreg BSR Programme Call

**Estimated project budget:** 3-5 m EUR (up to 75-85% funding rate)

#### Projected time frame:

2 December 2014:	Submission of concept note
May-mid July 2015:	Submission of full application
End of 2015:	Decision on applications
2016-2018:	Project implementation

### Project consortium

The project consortium includes different organisations such as: NGOs, academic institutions, networking organisations, private entities. Organisations which do not wish to be included as partners but can provide valuable input and benefit from the project will be invited as associated organisations.

#### Project partners:

- German Offshore Wind Energy Foundation (Germany) - **Project leader**
- Foundation for Sustainable Energy (Poland)
- Rostock Business and Technology Development (Germany)
- Technical University of Denmark (Denmark)
- Energy Agency for Southeast Sweden (Sweden)
- Deutsche WindGuard (Germany)
- Maritime Institute in Gdańsk (Poland)
- Institute for Climate Protection, Energy and Mobility (Germany)
- Latvian Association of Local and Regional Governments (Latvia)
- University of Helsinki (Finland)
- University of Tartu (Estonia)
- Klaipeda University Coastal Research and Planning Institute (Lithuania)
- Offshoreenergy.dk (Denmark)
- Lund University (Sweden)

