Offshore Wind Energy and Electricity Grids: Plans and Synergies in Estonia

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Baltic Sea Offshore Wind Forum (BaSOF)

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PREVIEW

1. Estonia’s energy policy & maritime spatial planning

2. Estonia’s first offshore wind power projects

3. Possible synergies

POLICY - ENERGY

- Regulation of offshore developments adopted in February 2010:
  - Water Act (building permission & permit for the special use of water required);
  - Electricity Market Act (annual fee for using a public water body).

- Development Plan of the Estonian Electricity Sector until 2018 states 900MW wind energy:
  - 400MW onshore
  - 500MW offshore

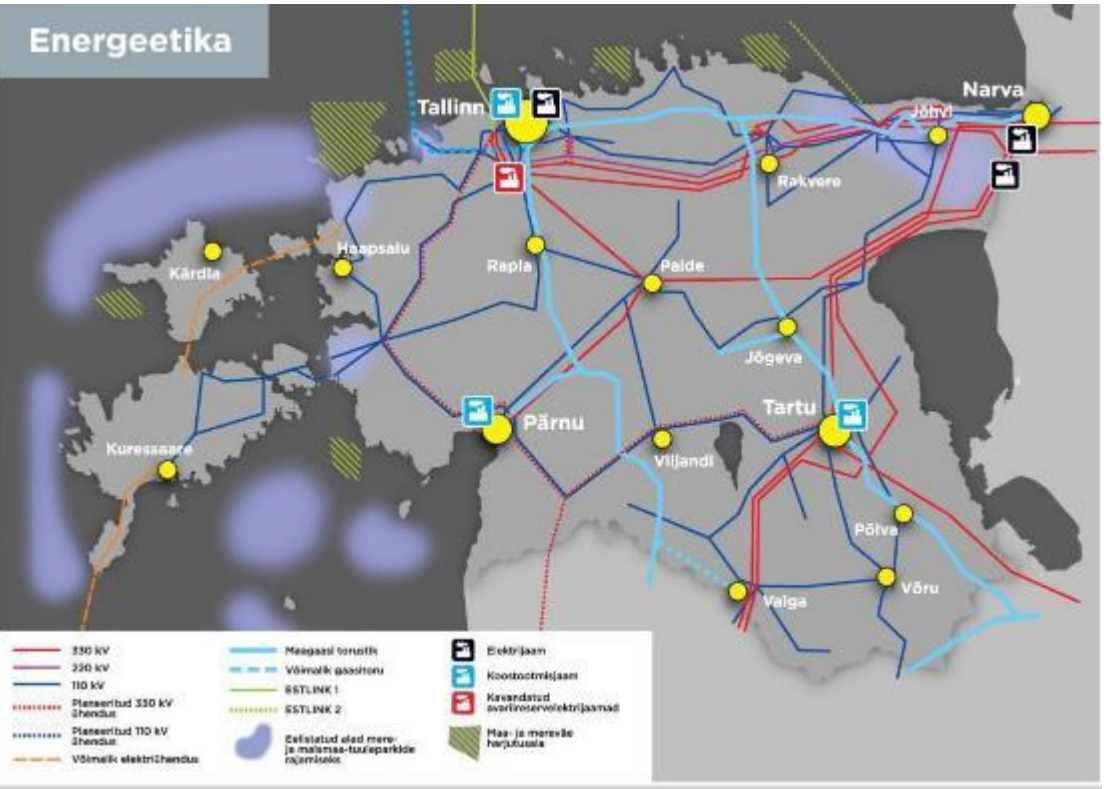
- National Renewable Action Plan sees by 2020:
  - 400MW onshore
  - 250MW offshore

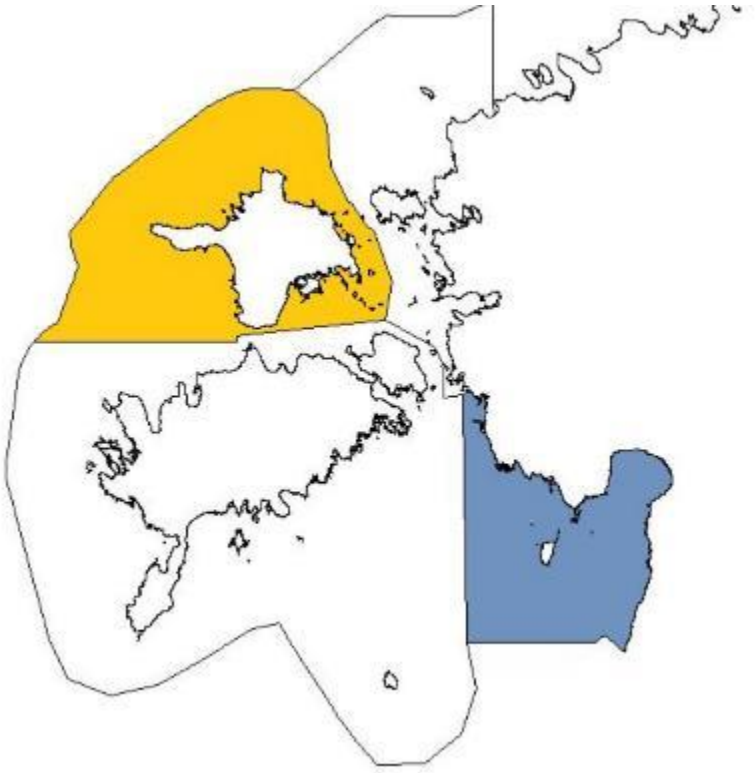
POLICY - ENERGY

- Energy Market Development Plan 2030+, approved by the Government in 2016:
  - 50% of Renewable Energy in local electricity consumption by 2030
  - „Given Estonia's good wind conditions, the availability of biomass and the number of the projects in the pipeline the local renewable energy developers have very good opportunities for flexible co-operation between other countries to develop renewable energy generation units."
- Estonia negotiating the use of co-operation mechanisms with other countries:
  - Statistical transfer;
  - Joint projects;
  - Joint support schemes.

POLICY - PLANNING

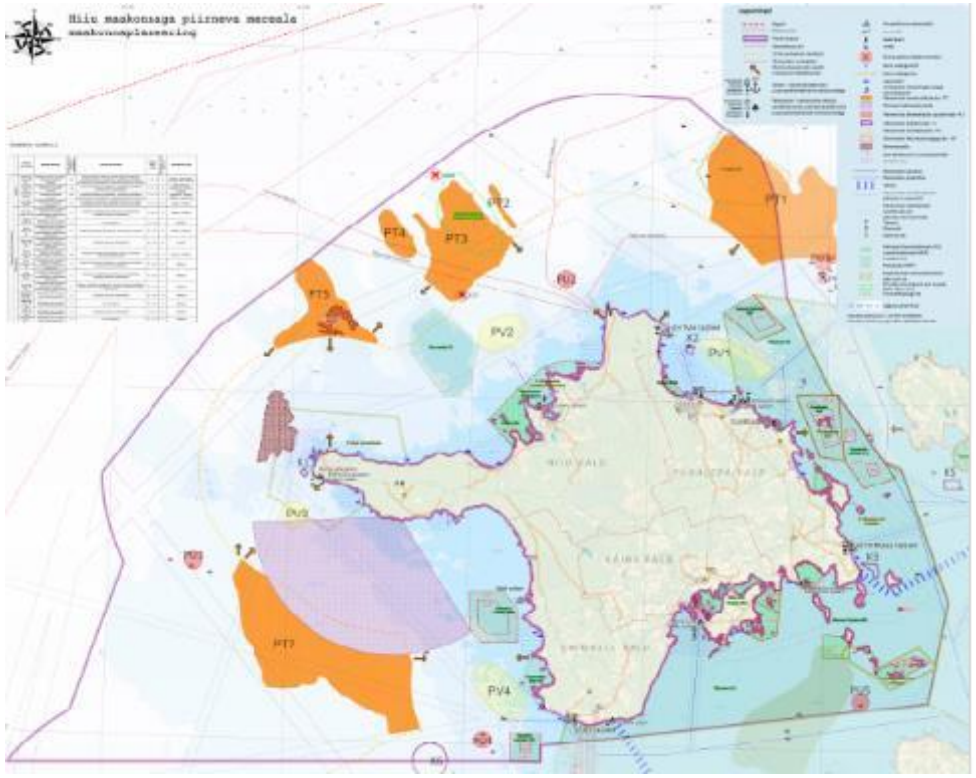
- National Spatial Plan „Estonia 2030+“
- Maritime Spatial Planning (MSP) in two areas
- Goverment expected to launch MSP in other sea areas



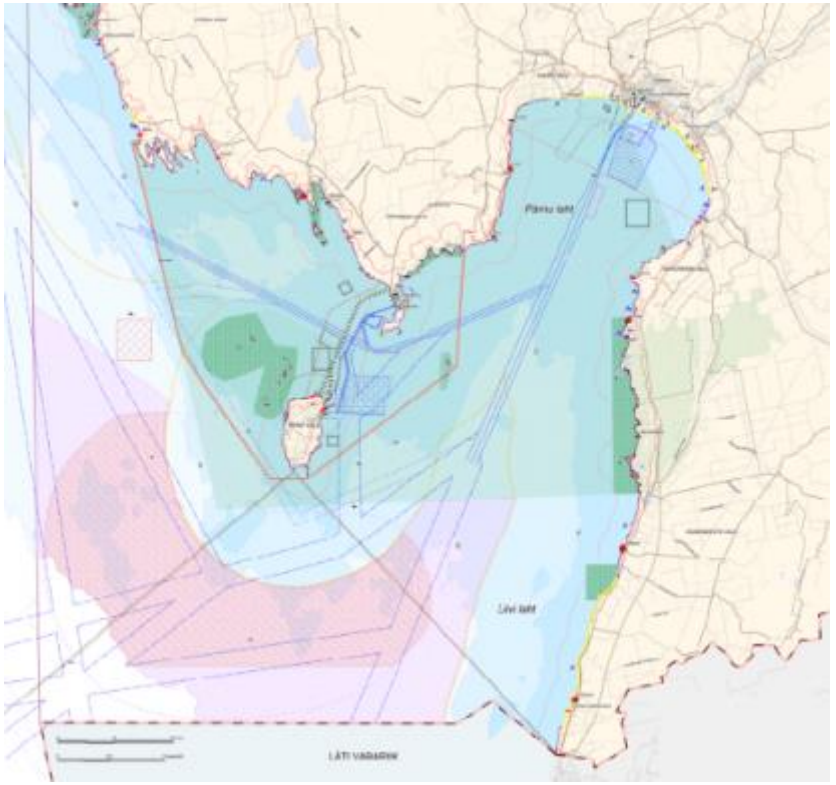


Maritime Spatial Planning (MSP) in Estonia

Estonia's first MSP established by the Governer of Hiiumaa (June 2016)

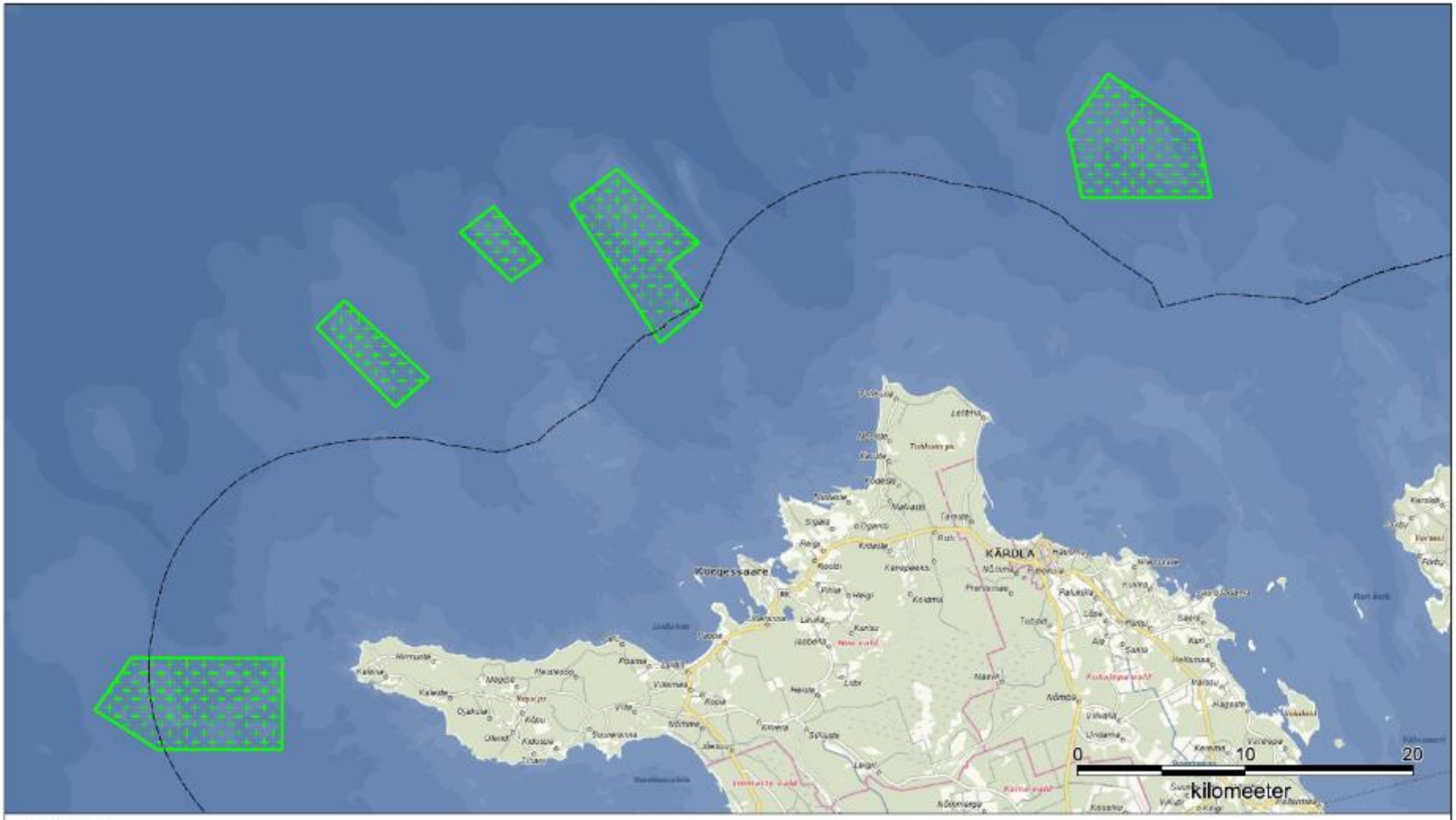


MPS in Pärnu & Liivi Bay established by the Governer of Pärnu (April 2017)



Hiiumaa Offshore Wind Farm, developed by Nelja Energia

- Planned in the shoals in the North-west and North of the Hiiumaa island coast with planned capacity 700 - 1100 MW.
- Wind measurements done, extensive studies made.
- Distance from shoreline min 12 km.
- Depth max 30m, sandy seabed. Gravity-based foundation
- LOI signed with the local government in the island of Hiiumaa



LEGEND

- Kõrgepinge alajaam
- Merekaabel
- Maismaakaabel
- Planeeritav looduskaitseala
- Tuulepargi asukoht 2006. a
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- Tuulepargi asukoht 2013. a
- Tuulepargi asukoht 2016. a
- Mereala teemaplaneering - planeeritud võimalik tuuleenergia tootmise ala - PT

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HIIUMAA AVAMERE TUULEPARK
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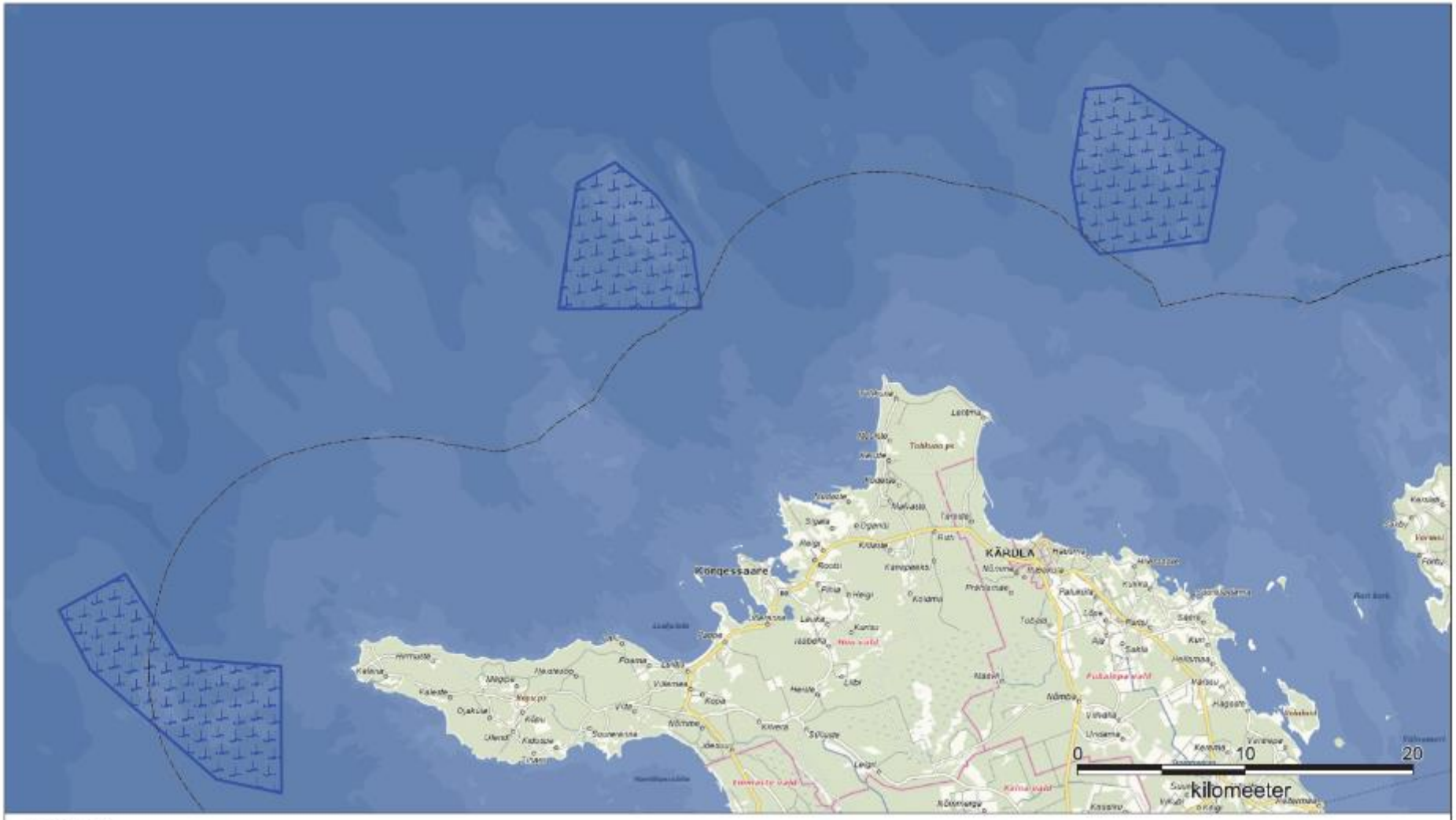

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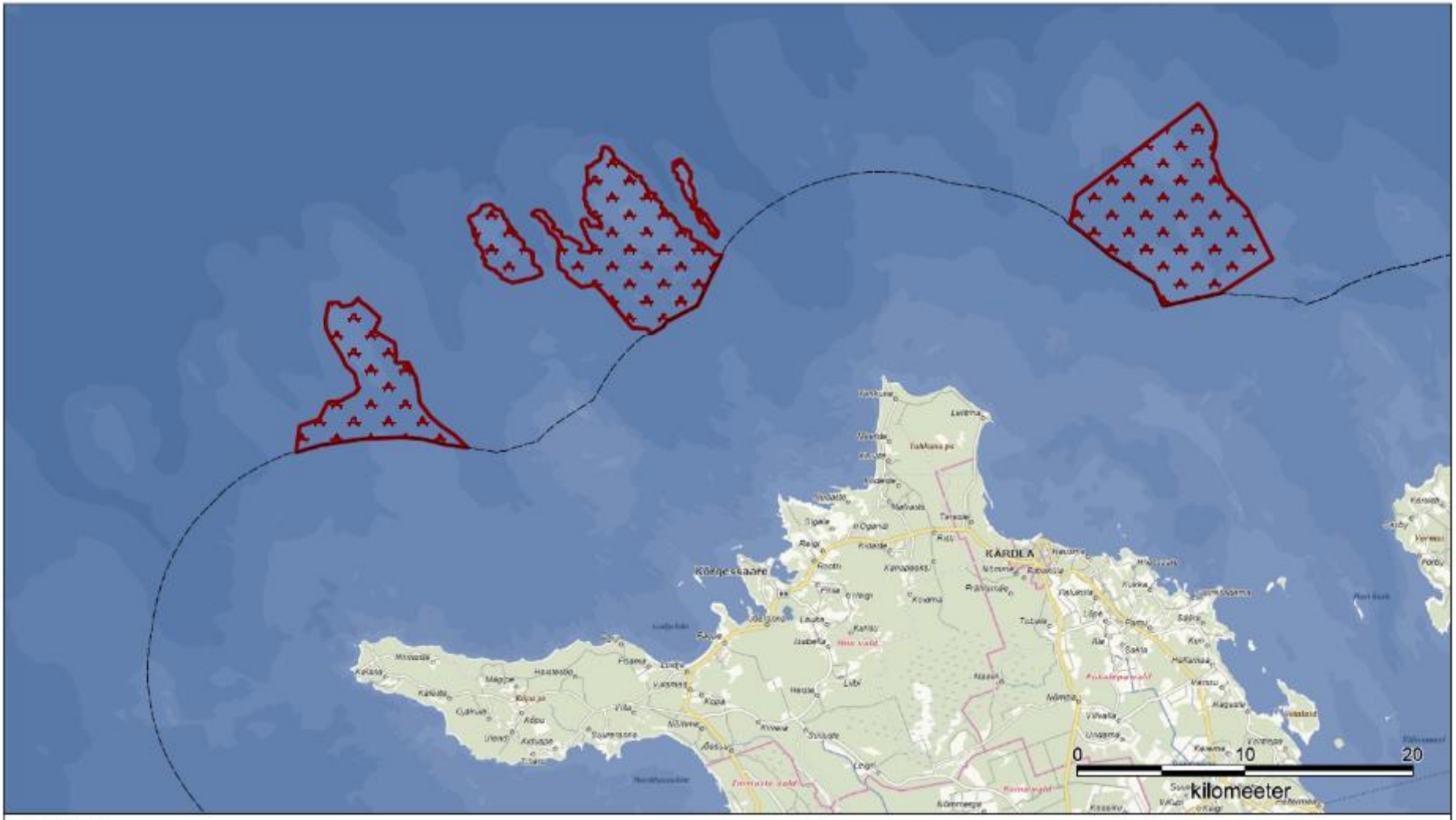

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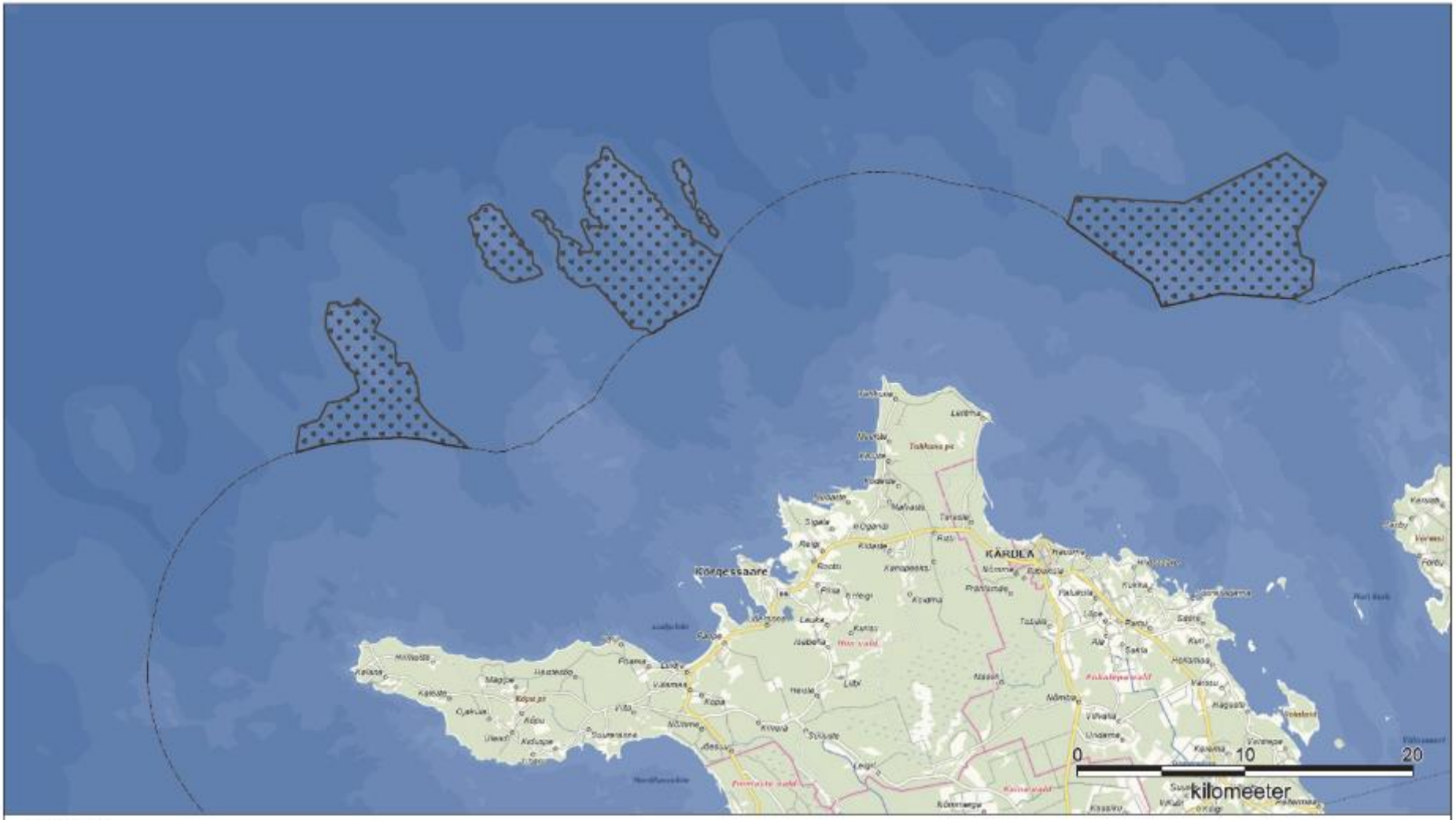

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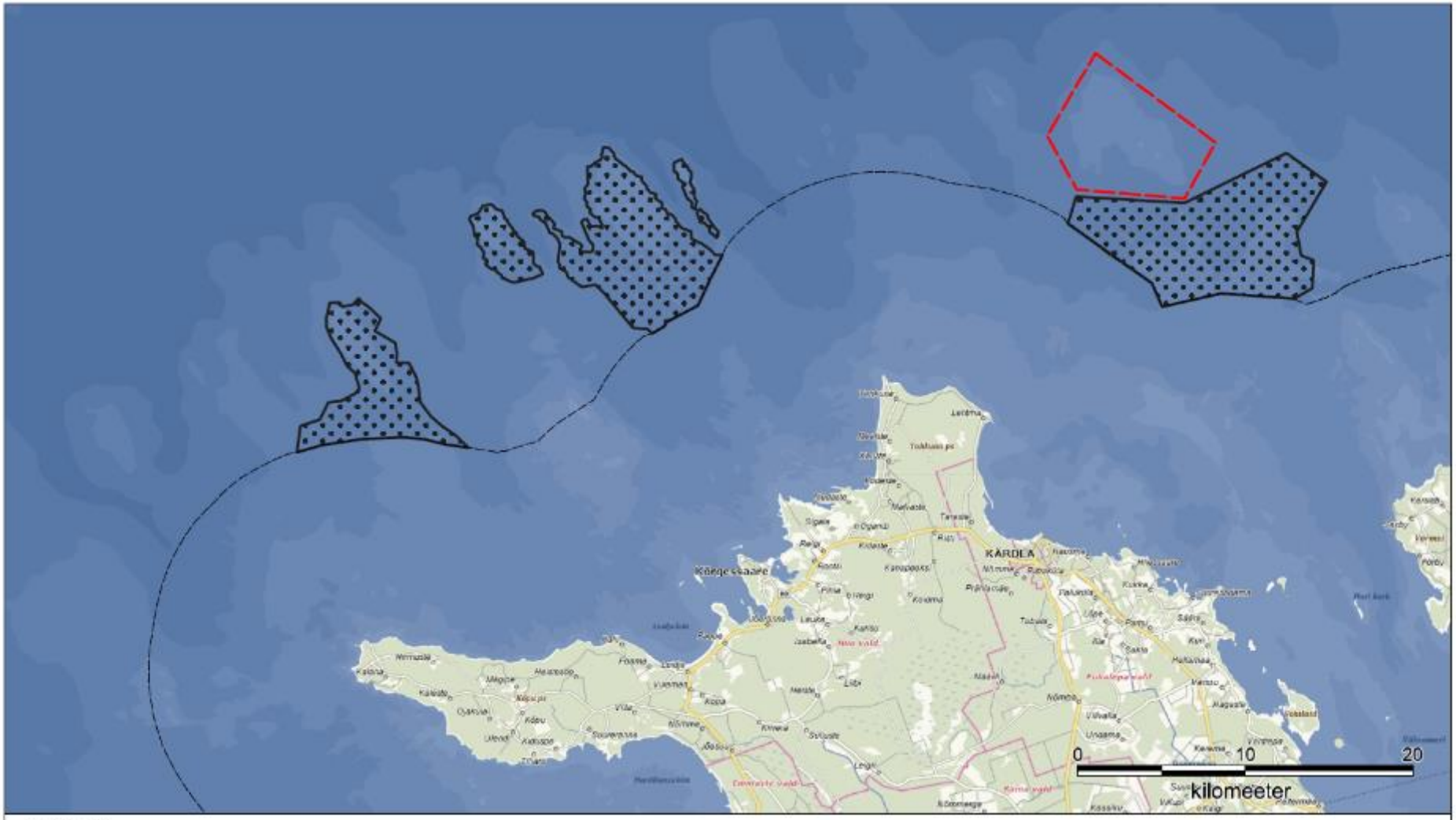

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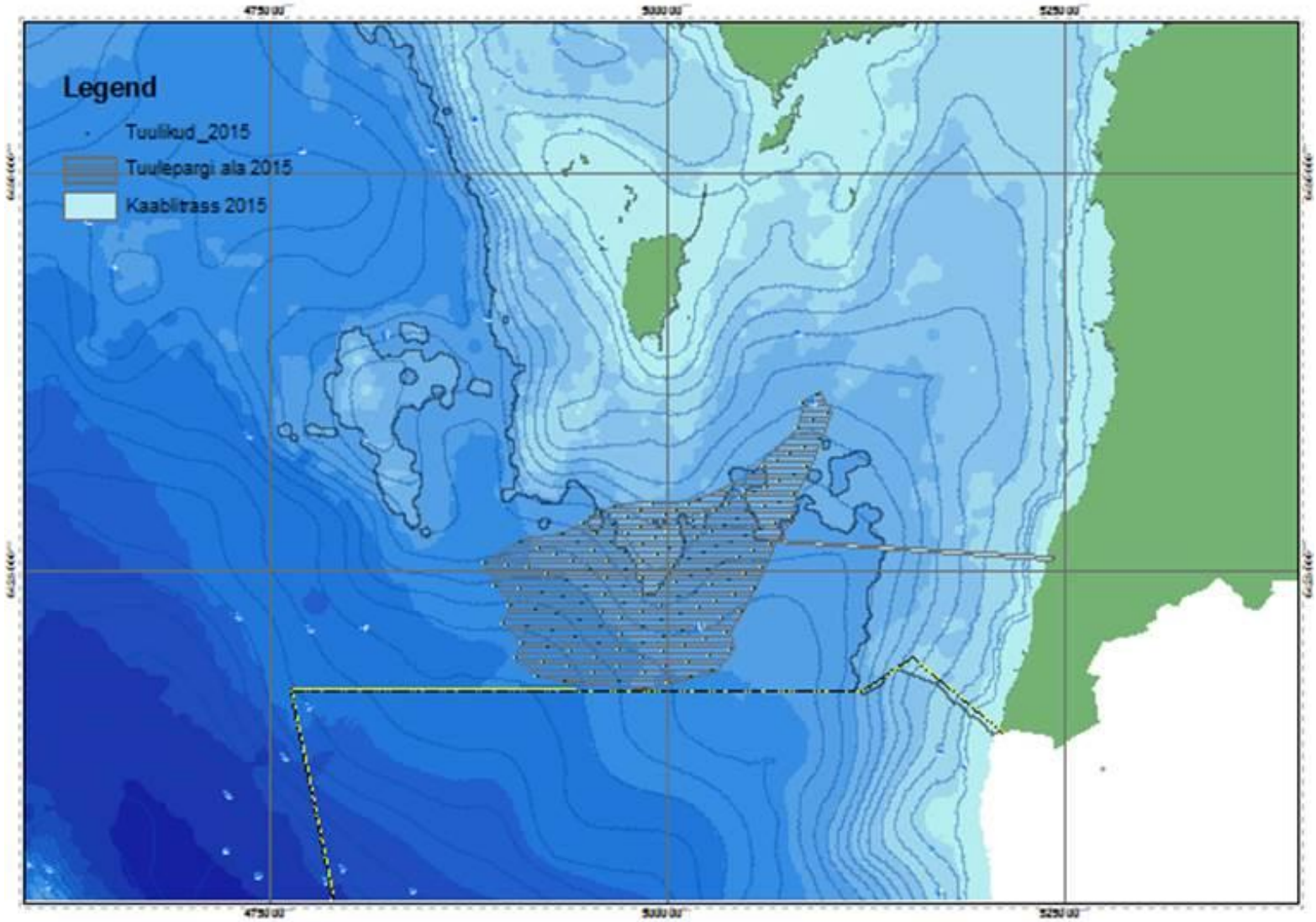
Gulf of Riga (Liivi laht) Offshore Wind Farm, developed by Eesti Energia

- Planned in the area South of Kihnu island in the Gulf of Riga.
- Feasibility studies show that the wind generators could be built with a total output of ca 960MW.
- Average depth 20m.
- Carried out environment impact assessment studies:
  - State of the art bird survey with 3D radar and impact assessment by University of Tartu;
  - Wind measurements at sea and on Kihnu island;
  - Ice measurements with acoustic measurement instrument
- Environmental impact assessment starts in 2017.

Gulf of Riga Offshore Wind Farm, developed by Eesti Energia

Eesti Energia



POSSIBLE SYNERGIES

- Major trends:
  - price of offshore wind power falling
  - energy production moving to the sea and in Estonia from east to west

- Possible synergy with the Baltic synchronization to the continental power grid
  - Estonian-Finnish AC link via Paldiski for synchronizing Baltic-Nordic power systems

ESTonia is a country that extends beyond its borders. Here bright ideas meet a can-do attitude.

High wind, low waves – b**EST** place for offshore wind power.