

# OffshoreDC

## Project objectives and structure

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Workshop on offshore HVDC grids

Statnett, Oslo, Norway

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 **DTU** | Risø DTU  
National Laboratory for Sustainable Energy

 **DTU Electrical Engineering**  
Department of Electrical Engineering

 **SINTEF**

**CHALMERS**

 **VIT**

  
**AALBORG UNIVERSITY**

**Vestas**

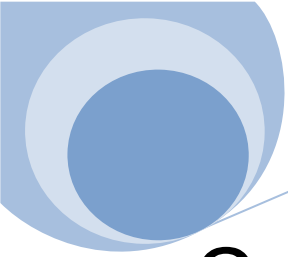
**ABB**

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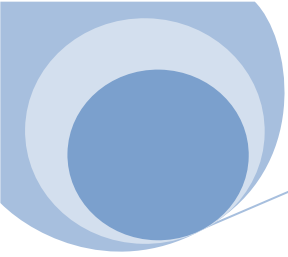
**ENERGINET/DK**

**Statnett**



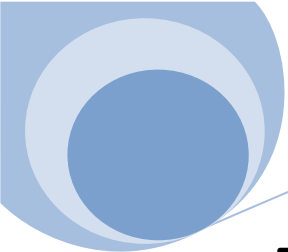
# Overall objective of OffshoreDC project

- to support the development of the VSC based HVDC technology for future large scale offshore grids
- to support a standardised and commercial development of the technology
- to improve the opportunities for the technology to support power system integration of large scale offshore wind power



## Nordic perspective

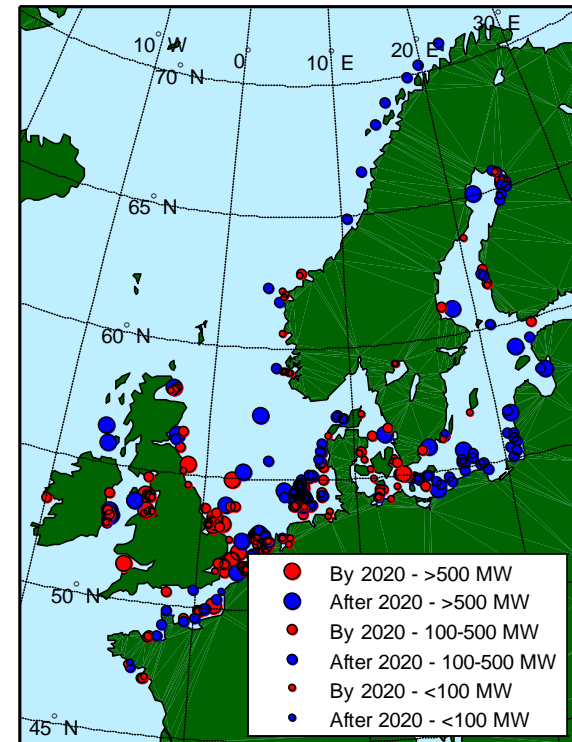
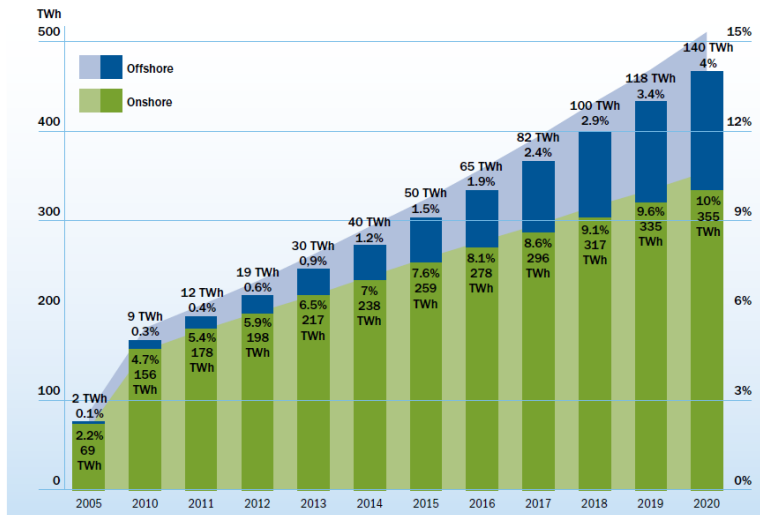
- The present project will support a leading role of the Nordic countries in the development of large scale HVDC grids accommodating large scale offshore wind power
- First mover opportunity for the Nordic stake holders in the development and utilisation of the technology
- It is the purpose to develop consistent solutions by bringing together key industry stakeholders in the project

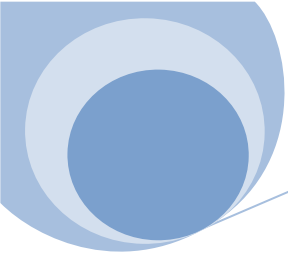


# Background – Offshore wind power

- EWEA May 2011 based on National Renewable Energy Action Plans (NREAP):

- TWENTIES scenarios for 2020 and 2030



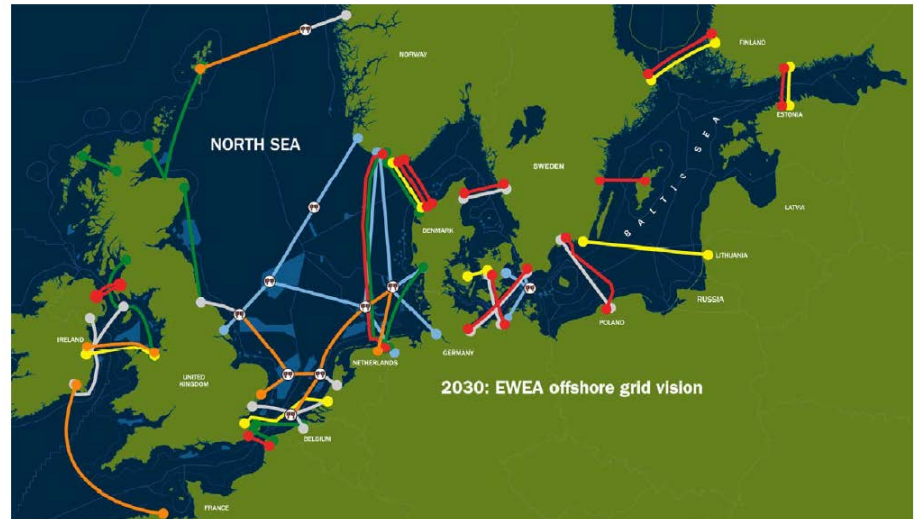


## Background – Offshore grids

- Tradewind case with separate interconnectors and offshore wind plant connections

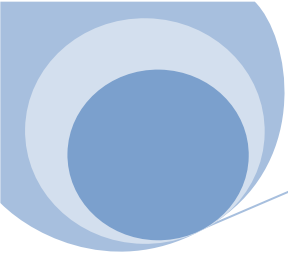


- EWEA 2030 offshore grid vision (Jacopo Moccia Nov 2010)



**Currently operating cable**  
**Under construction or planned**  
**Under study by TSO**  
**Under study by TSO/EWEA recommendation**

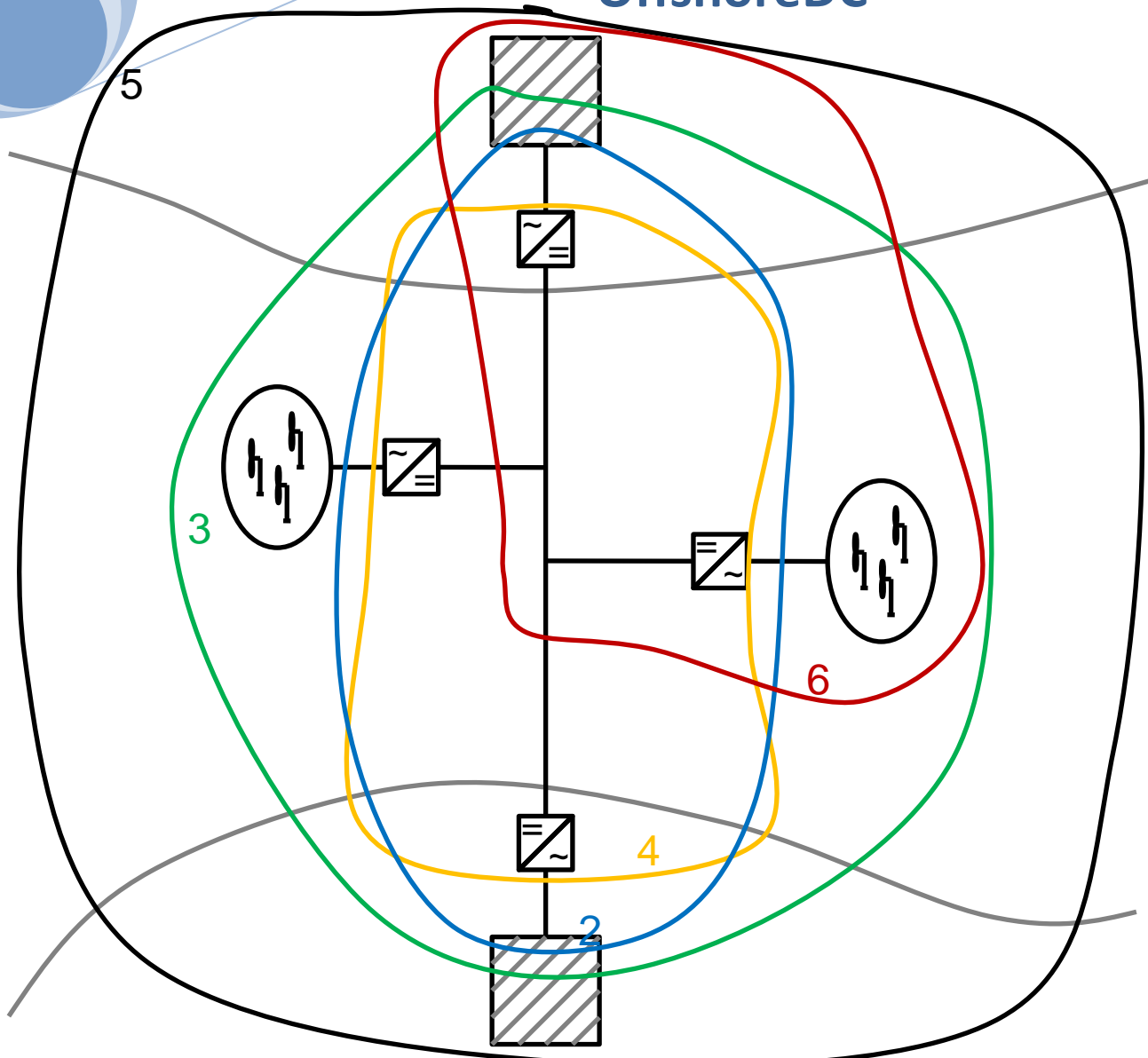
**Proposed by EWEA by 2020**  
**Proposed by EWEA by 2030**



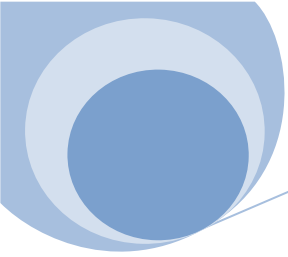
# Work packages

1. Project management
2. Control and fault handling of multi terminal HVDC offshore grids
3. Communication and control in clusters of wind power plants connected to HVDC offshore grids
4. Transient conditions and component protection in HVDC offshore grids
5. Offshore grid design and power system impact
6. Case studies of offshore grids in the Nordic region
7. Dissemination

# OffshoreDC



- 2 Chalmers/ABB
- 3 Risø/Vestas
- 4 Elektro
- 5 SINTEF
- 6 VTT



## Main project data

- Period: 2011 – 2015
- Budget: 18.5 mio NOK
  - 11 mio NOK from NER
  - 7.5 mio NOK from own funding (mainly industry)
- Education:
  - 3 PhDs
  - 1 Post Doc
- Annual workshops