



NORTHSEAGRID

Offshore Electricity Grid
Implementation in the North Sea

The role of support schemes for renewables in creating a meshed offshore grid

NorthSeaGrid Webinar

4/8/2014

Leif Rehfeldt, DWG





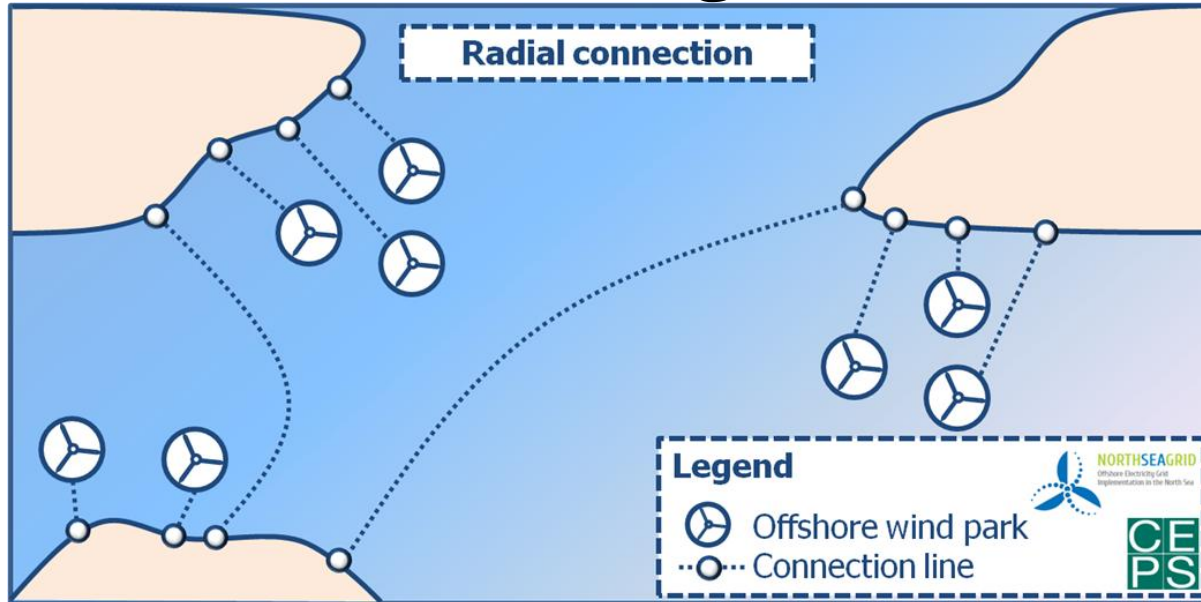
Content

1. Basics of grid connection design – radial vs. meshed
2. Existing RES support schemes in North Sea countries
3. Conclusion
4. Outlook



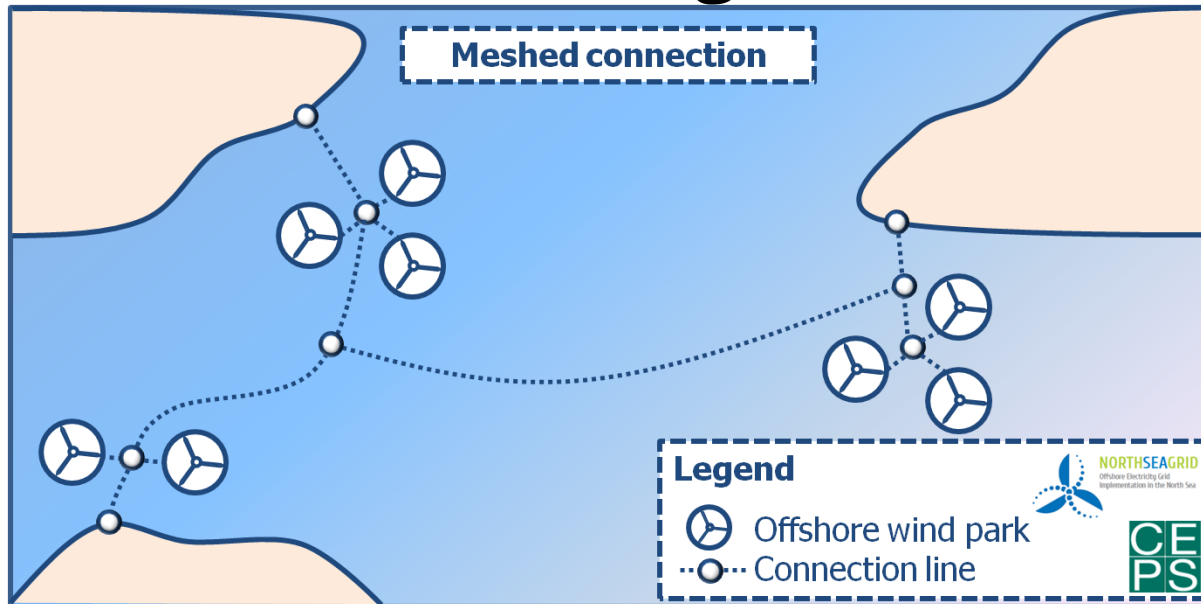
1. Basics of grid connection design – radial vs. meshed

1. Grid connection design – radial



- Individual connection to shore for each offshore wind park
 - Generated electricity is transmitted to the connected shore first
 - Interconnectors between two countries can be used for electricity exchange
- => Typical design at the moment

1. Grid connection design – meshed



- Combination of physical connection to shore and interconnection between different countries
 - Requires a coordinated grid design approach
 - Supports the completion of the Internal Electricity Market
- ⇒ Generated electricity from OWP will be directly fed into the electricity system of different countries

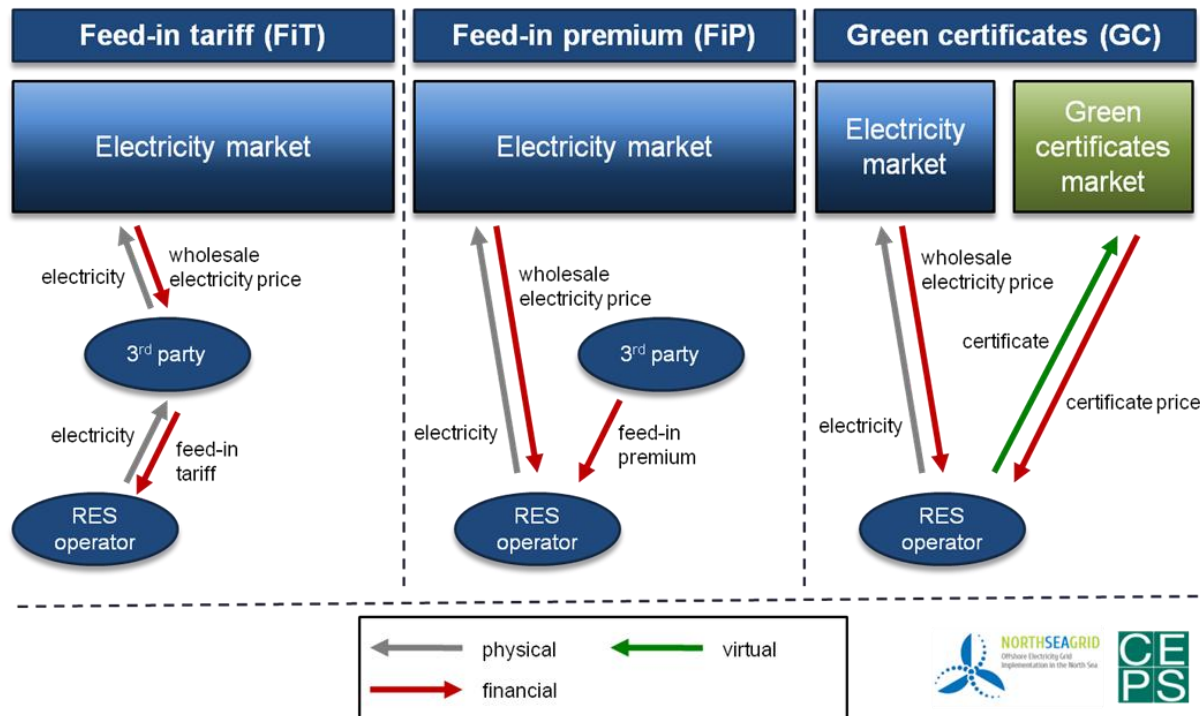


2. Existing RES support schemes in North Sea countries



2. Existing RES support schemes in North Sea countries

- Support scheme category
 - Feed-in tariff (FiT)
 - Feed-in premium (FiP)
 - Green certificates (GC)





2. Existing RES support schemes in North Sea countries

- RES generators' income, tariffs/ premiums are set
 - Administratively
 - Tendering process
 - Based on market value of the sold electricity/ certificates
- Balancing obligation
 - Who is financially responsible for balancing forecast errors?
- Grid access responsibility
 - Who is in charge of connecting the OWP to shore?
- Amount of remuneration
 - Payments in €/ MWh
 - Partially depending on the design of the support scheme

2. Existing RES support schemes in North Sea countries – Situation in BE, DK, DE, NL, NO & UK

	BE	DK	DE	NL	NO	UK
Support scheme category	GC	FiP	FiT or FiP	FiP	GC	GC, FiP
Determination of RES generators' income	Administrative setting and market-based	Tendering and market-based	Administrative setting and market-based	Tendering and market-based	Market-based	Administrative setting and market-based
3rd party purchase obligation	Yes, TSO	No	Yes, TSO (FiT only)	No	No	No
Balancing obligation	Yes	Yes	Optional (FiP only)	Yes	Yes	Yes
Grid access responsibility	Project developer	TSO / project developer	TSO	Project developer	Project developer	OFTO
Level of support (in €/MWh)	90 or 107	69-140	150 or 190, then 35	140 - 160	23	50 (GC) or 184 (FiP)



3. Conclusion

3. Conclusion

- Recent support schemes have been designed from a purely national perspective
 - ↔ Every member state has to reach its own national RES target in 2020
- Cooperation to reach individual 2020 target between countries is possible (e.g. joint projects)
 - ↔ Joint projects may be a driver for the creation of a meshed offshore grid
- 1st step: Define common responsibilities for RES generators
 - ↔ Compatible responsibilities for grid access and balancing would facilitate the integration of OWP in the planning process of new interconnectors
- National supports schemes disregard the evolution of market coupling in North-Western Europe



4. Outlook

4. Outlook

- Convergence of support schemes, market rules and grid codes will be conducive to the creation of a meshed offshore grid
- Incompatibilities may be resolved by prescribing common European framework guidelines for national RES support schemes (e.g. through state aid guidelines)
 - ↔ Driver for the creation of a meshed offshore grid
- 2030 Climate and Energy framework can be seen as a chance to encourage intra-European cooperation (Only an EU-level target)
 - > EC has proposed institutional procedure for coherent implementation of climate and energy measures



NORTHSEAGRID

Offshore Electricity Grid
Implementation in the North Sea

THANK YOU FOR YOUR ATTENTION

The Policy Brief can be [downloaded](#) on the NorthSeaGrid [website](#).



4/8/2014