Auctions for offshore energy projects

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Ørsted – a world running entirely on green energy

- Global #1 in offshore wind power
- Biomass - No coal from 2023
- Smart Grid & Flexibility
Offshore wind power shows rapidly declining costs for society

Levelised costs for society of electricity, incl. transmission costs
EUR/MWh\(^3\), 2016-prices, bid announcement year.

<table>
<thead>
<tr>
<th>Project</th>
<th>Year</th>
<th>Cost (EUR/MWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walney Extension</td>
<td>2014</td>
<td>1.56</td>
</tr>
<tr>
<td>Race Bank</td>
<td>2015</td>
<td>1.45</td>
</tr>
<tr>
<td>East Anglia</td>
<td>2015</td>
<td>1.24</td>
</tr>
<tr>
<td>Borkum Riffgrund 2</td>
<td>2015</td>
<td>1.22</td>
</tr>
<tr>
<td>Horns Rev III</td>
<td>2015</td>
<td>1.02</td>
</tr>
<tr>
<td>Borssele I &amp; II</td>
<td>2016</td>
<td>0.73</td>
</tr>
<tr>
<td>Kriegers Flak</td>
<td>2016</td>
<td>0.68</td>
</tr>
<tr>
<td>Borssele III &amp; IV</td>
<td>2016</td>
<td>0.68</td>
</tr>
<tr>
<td>Hornsea 2</td>
<td>2017</td>
<td>0.65</td>
</tr>
<tr>
<td>Cluster 1</td>
<td>2017</td>
<td>0.62</td>
</tr>
</tbody>
</table>

Sources: DECC; Danish Energy Agency; Energinet.dk; NEV

1. Levelised revenue (price) of electricity over the lifetime of the project used as proxy for the levelised costs to society. It consists of a subsidy element for the first years and a market income for the whole lifetime. Discount rate of 3.5% used to reflect society’s discount rate. Market income based on country specific public wholesale market price projections at the time of contracting where available else an average of 5 analytics is used. For comparability across projects a generic scope adjustment (incl. transmission and extra project development costs) have been applied. Due to the specific transmission set up in Germany cost estimates from the Offshore Netzentwicklungsplan 2017 have been applied.
Developers can reduce costs of transmission

Reduced costs by 10 to 50%

- 29€/MWh
- 13€/MWh
- 8€/MWh
- 7€/MWh

TSO transmission connections

Developer transmission connections

Public available data, internal Ørsted cost assumptions and own calculations
- Total levelised cost of energy delivered (LCOE) of transmission assets including CAPEX and OPEX, onshore and offshore project elements included
- Detailed cost assessments based on 12 German, Danish and Dutch transmission projects commissioning from 2015–25
- Project size from 400–900 MW
- Total project cable length 60–260 km. Both HVAC and HVDC projects
- Projects include: DogWin1–3 and 6, BorWin3 and 5, SykWin2, Borseele 1 and 2, Ostwind1, HR3, KF
Offshore wind power is not a scarce resource in the North Seas

Offshore wind energy today in the North seas: 50 TWh
North seas potential* for offshore wind energy: 2600 TWh
EU electricity consumption (2030): 3200 TWh

*LCOE OF LESS THAN 65 €/MWh IN 2030, INCLUDING TRANSMISSION. SOURCE: "BASELINE" SCENARIO OF BVG ASSOCIATES REPORT FOR WIND EUROPE: "UNLEASHING THE POTENTIAL OF EUROPE'S OFFSHORE WIND POTENTIAL"
**ESTIMATED ELECTRICITY CONSUMPTION IN SCENARIO 1 OF ROADMAP 2050 IS 3225 TWH FOR 2030.
An offshore turbine a day turns subsidies away

Thanks for your attention