Offshore Wind Auctions in Europe - Consequences and Conclusions

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Cost reduction path for offshore wind

- **Ørsted**: Borssele 1 & 2 (700 MW) 72,7 EUR/MWh
- **Vattenfall**: Kriegers Flak (600 MW) 49,9 EUR/MWh
- **Eneco/Mitsubishi/Shell/Van Oord**: Borssele 3 & 4 (700 MW) 54,5 EUR/MWh
- **Ørsted/EnBW**: OWP West (240 MW), Borkum Riffgrund West 2 (240 MW), He Dreih (900 MW) 0 EUR/MWh (Ø: 4,4 EUR/MWh)
- **Ørsted/EDP/Engie/innogy**: Hornsea Project 2 (1,4 GW), Moray East (950 MW) 57,5 GBP/MWh, Triton Knoll (860 MW) 74,75 GBP/MWh
- **Vattenfall**: Hollandse Kust Zuid (700 MW) 0 EUR/MWh (first zero-subsidy tender)
- **Ørsted**: Borkum Riffgrund West 1 (420 MW) 0 EUR/MWh (Ø: 46,6 EUR/MWh)
Changing views on offshore wind - 2014

- “rather dubious”

- “staggeringly expensive”

- Prof Dieter Helm, economist at Oxford University: “among the most expensive ways of marginally reducing carbon emissions known to man”
Changing views on offshore wind - 2017

- “stunning drop in the cost of offshore wind”
- “adolescent industry”
- “only a few years ago, economists derided offshore wind as a ludicrously expensive way of cutting carbon emissions”
What does this mean for offshore wind?

**Final breakthrough** for offshore wind has fostered two global trends:

1. **Global expansion**
2. **Floating offshore wind**

Source: The Carbon Trust
Global expansion

Wind Power to Spare
The Enormous Energy Potential of Atlantic Offshore Wind

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Floating offshore wind

Floating Offshore Wind
Vision Statement
June 2017

KEY MESSAGES

1. FLOATING OFFSHORE WIND IS COMING OF AGE
Floating offshore wind is no longer confined to R&D. It has now reached a high technology readiness level. It is also using the latest technology available in the rest of the offshore wind supply chain.

2. COSTS WILL FALL
Floating offshore wind has a very positive cost-reduction outlook. Prices will decrease as rapidly as they have in onshore and bottom-fixed offshore wind, and potentially at an even greater speed.

3. WE ARE A UNITED INDUSTRY
Europe has long been the global leader in offshore wind. Floating offshore wind will take advantage of cost reduction techniques developed in bottom-fixed offshore wind thanks to the significant area of overlap between these two marine renewable energy solutions.

4. FLOATING MEANS MORE OFFSHORE WIND
As increase in offshore wind installations is needed in order to meet renewable electricity generation targets set by the European Commission. Improving conditions for floating offshore wind will enhance the deployment of onshore wind capacity and subsequently support the EU in reaching the 2050 targets.

5. EUROPEAN LEADERSHIP NEEDS EARLY ACTION
If Europe is to keep its global technological leadership in offshore wind, it needs to move fast to deploy floating offshore wind and exploit its enormous potential.
Future of offshore wind in post-subsidy world

How to address the electricity price risk?

Corporate PPAs

Google

IKEA

amazon

Diversification

DE

TW

US

Hedging

Storage

Packaging

FiT

CfD

0
Conclusion

• The **killer cost argument** against offshore wind has **disappeared**

• Cost reductions pave the way for **global expansion** and **floating technology**

• Industry must **develop new approaches** to adapt to **post-subsidy world**
Thank you!

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