EDPr

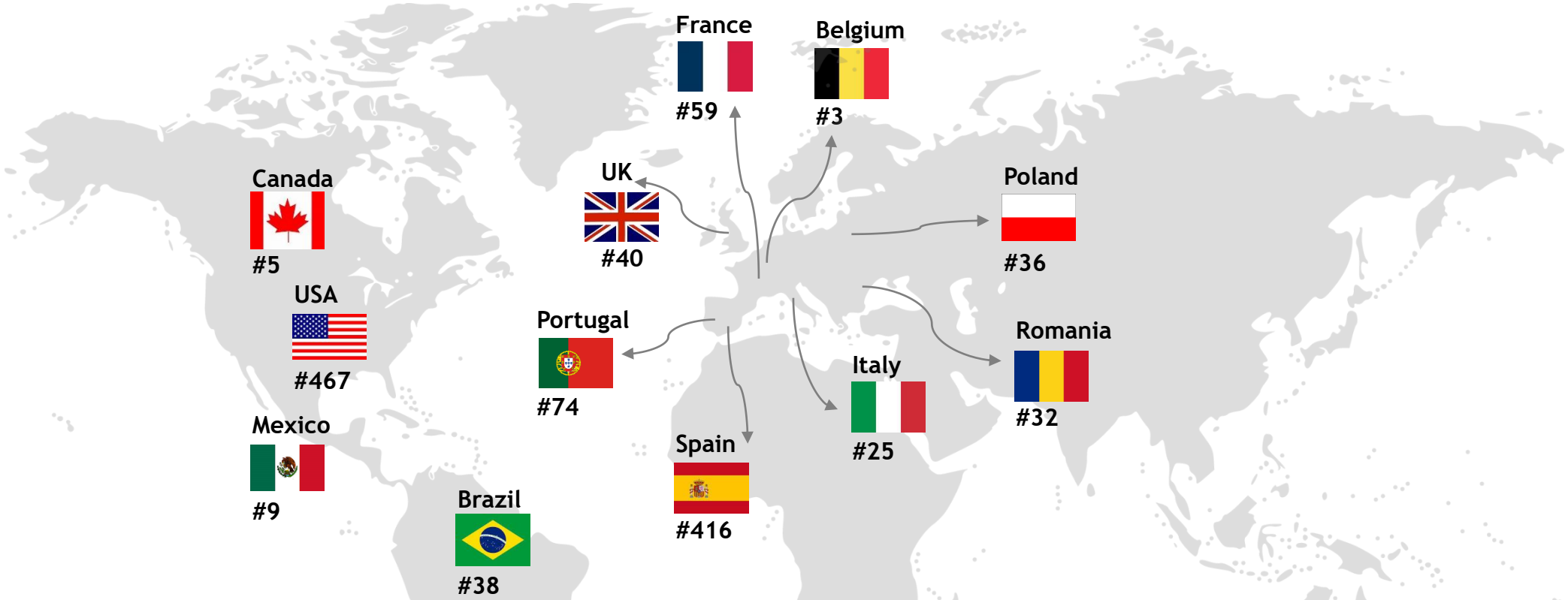
Developing Offshore Wind Energy

August 2018

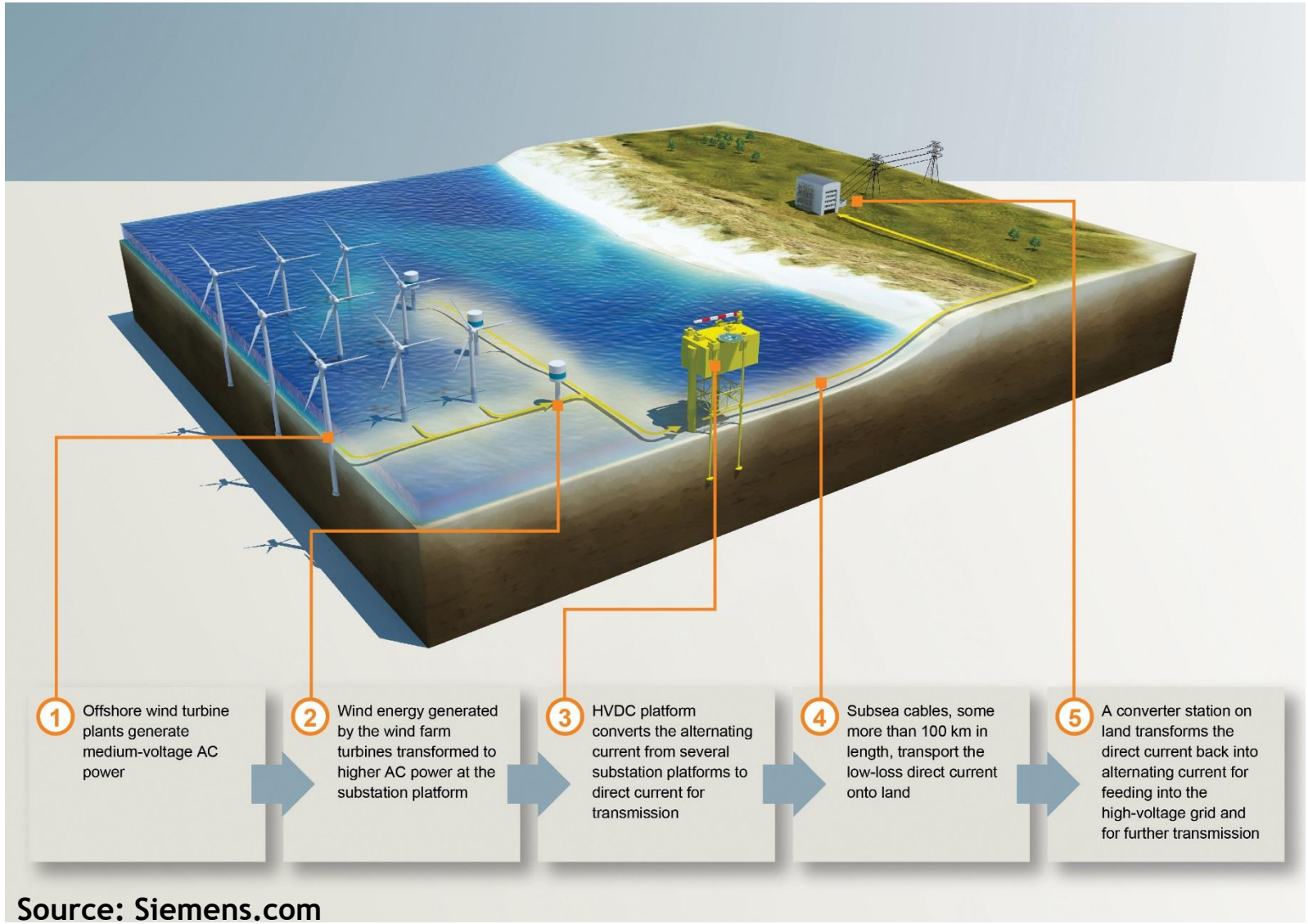
EDPR: Worldwide

Q2 2018

1206 employees from 34 different nationalities



Offshore Wind - Potentially more infrastructure and cost.



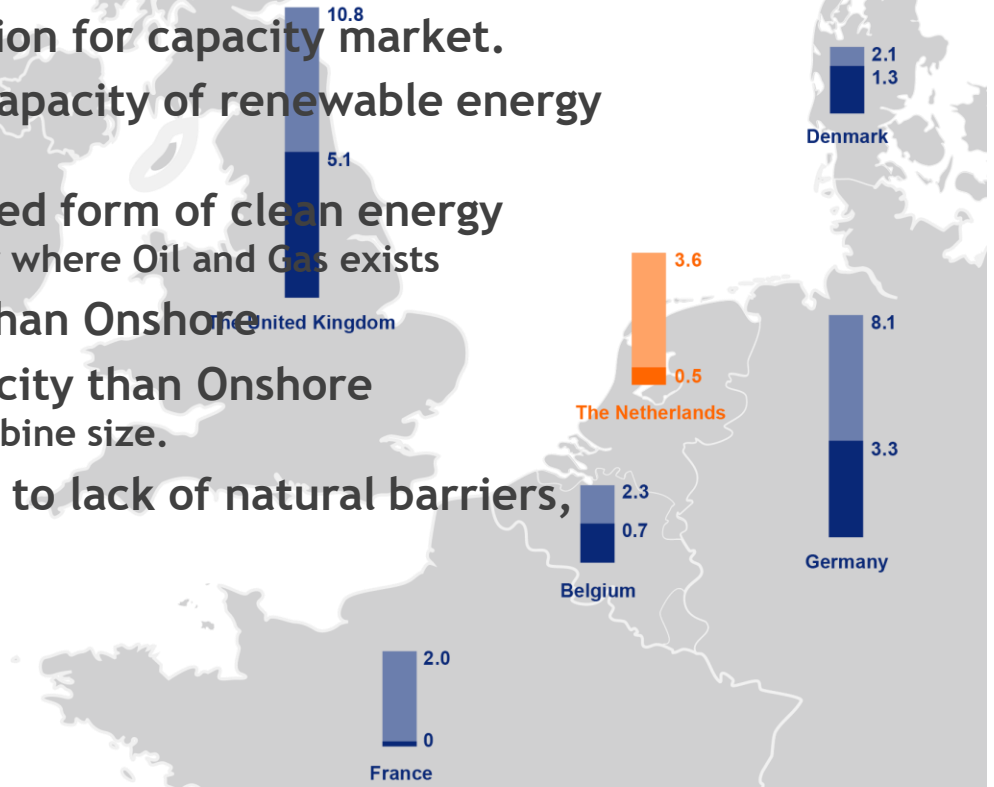
Source: Siemens.com

Source: E.ON

Why Offshore Wind?

Offshore Wind Energy

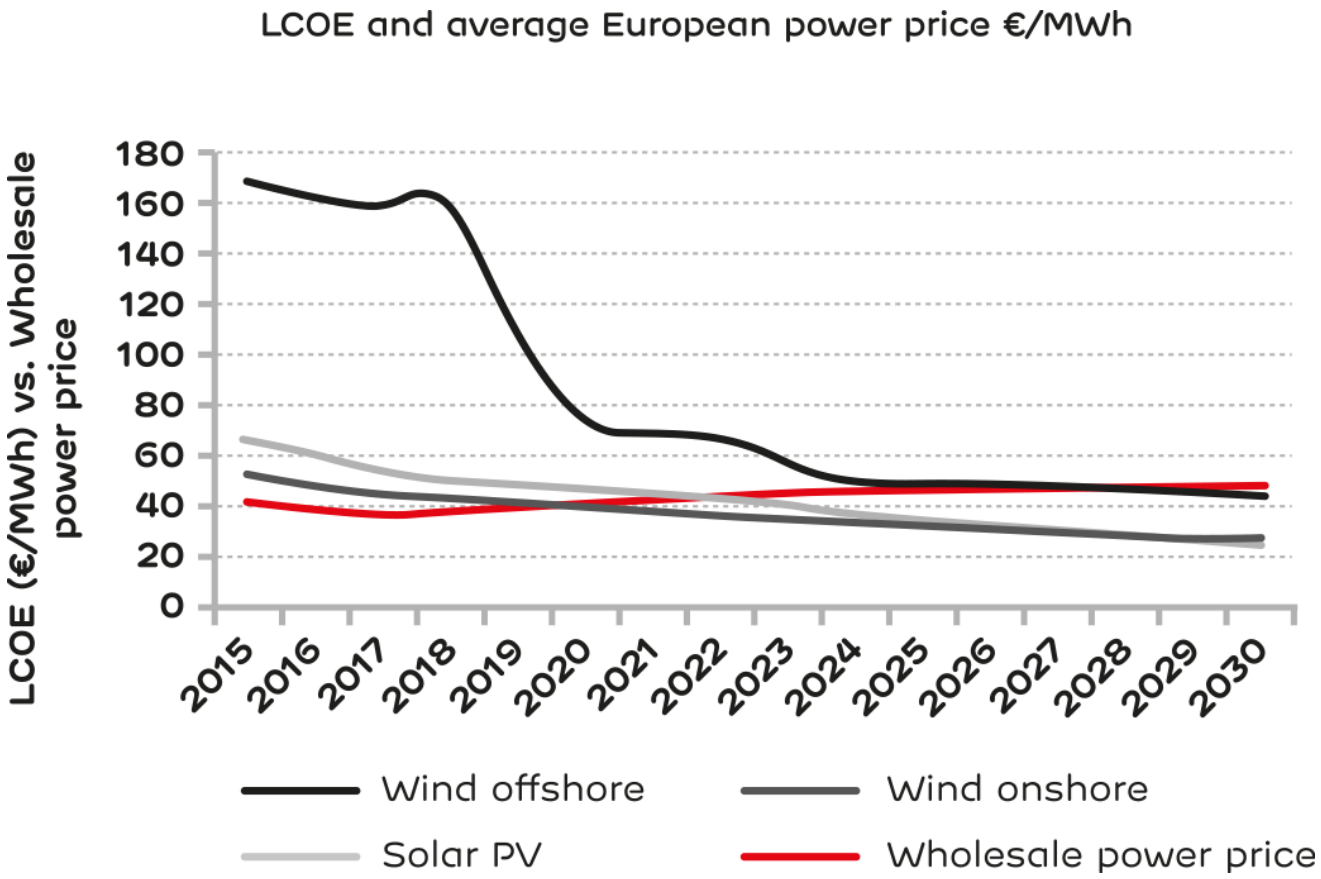
- Continuous growth in energy demand, in some regions.
  - Curtailment or removal of nuclear, coal etc.
- Coastal proximity to major cities - Often poor / costly grid.
- Reliable sea to land wind direction for capacity market.
- Need to increase the installed capacity of renewable energy
  - Climate change / carbon targets
- Wind energy is a highly developed form of clean energy
  - Develop supply chain particularly where Oil and Gas exists
- More wind and less objections than Onshore
- Possibility to install higher capacity than Onshore
  - Transportation restrictions on turbine size.
- Often higher wind resource due to lack of natural barriers, Reduced turbulence.



Relation between installed offshore wind capacity 2015 vs expected 2022 (Source: Roland Berger)

Offshore vs Onshore OR complementary.

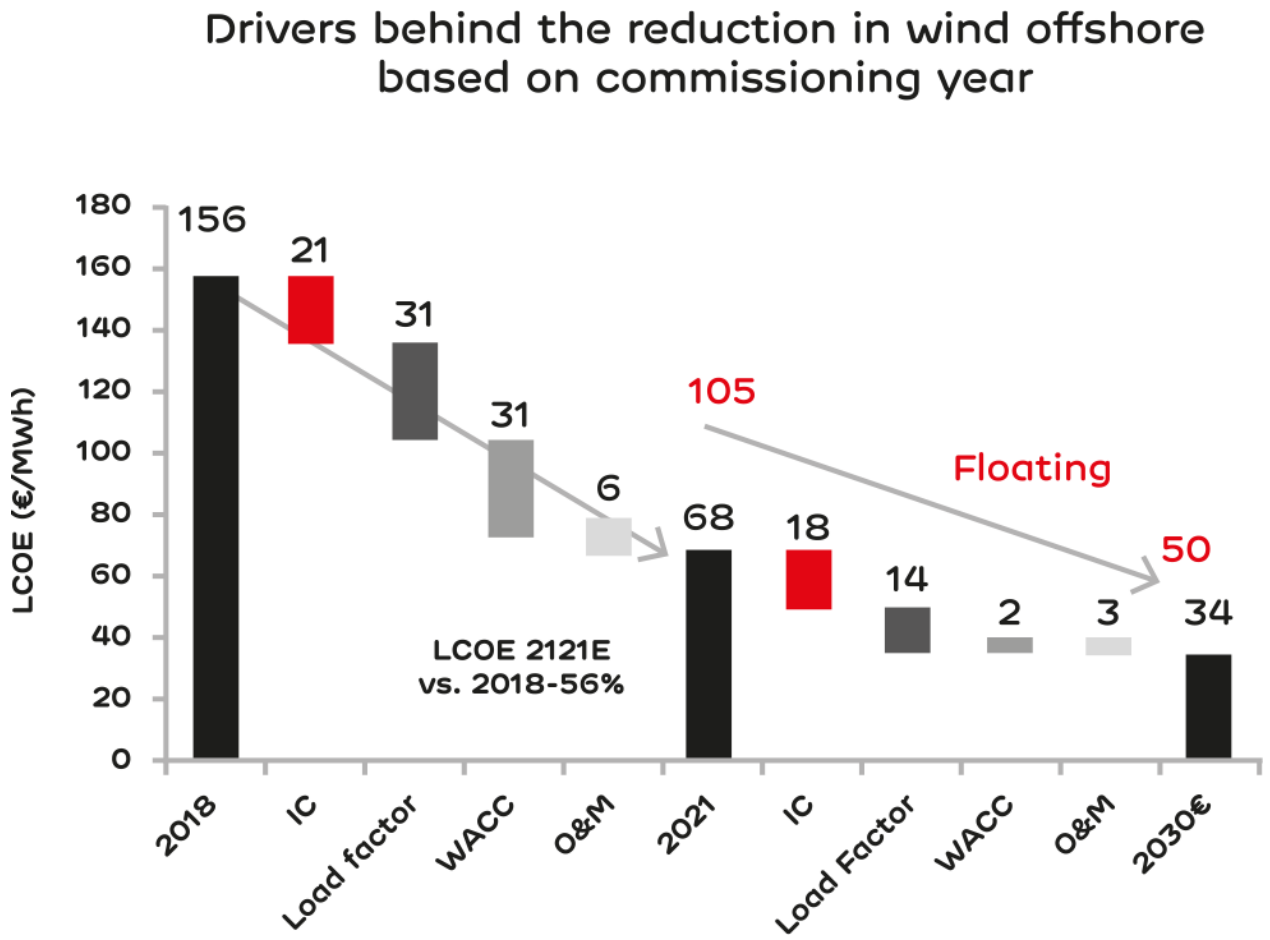
- Offshore will always be more expensive



- *Source:* Bloomberg

Cost reduction will continue!

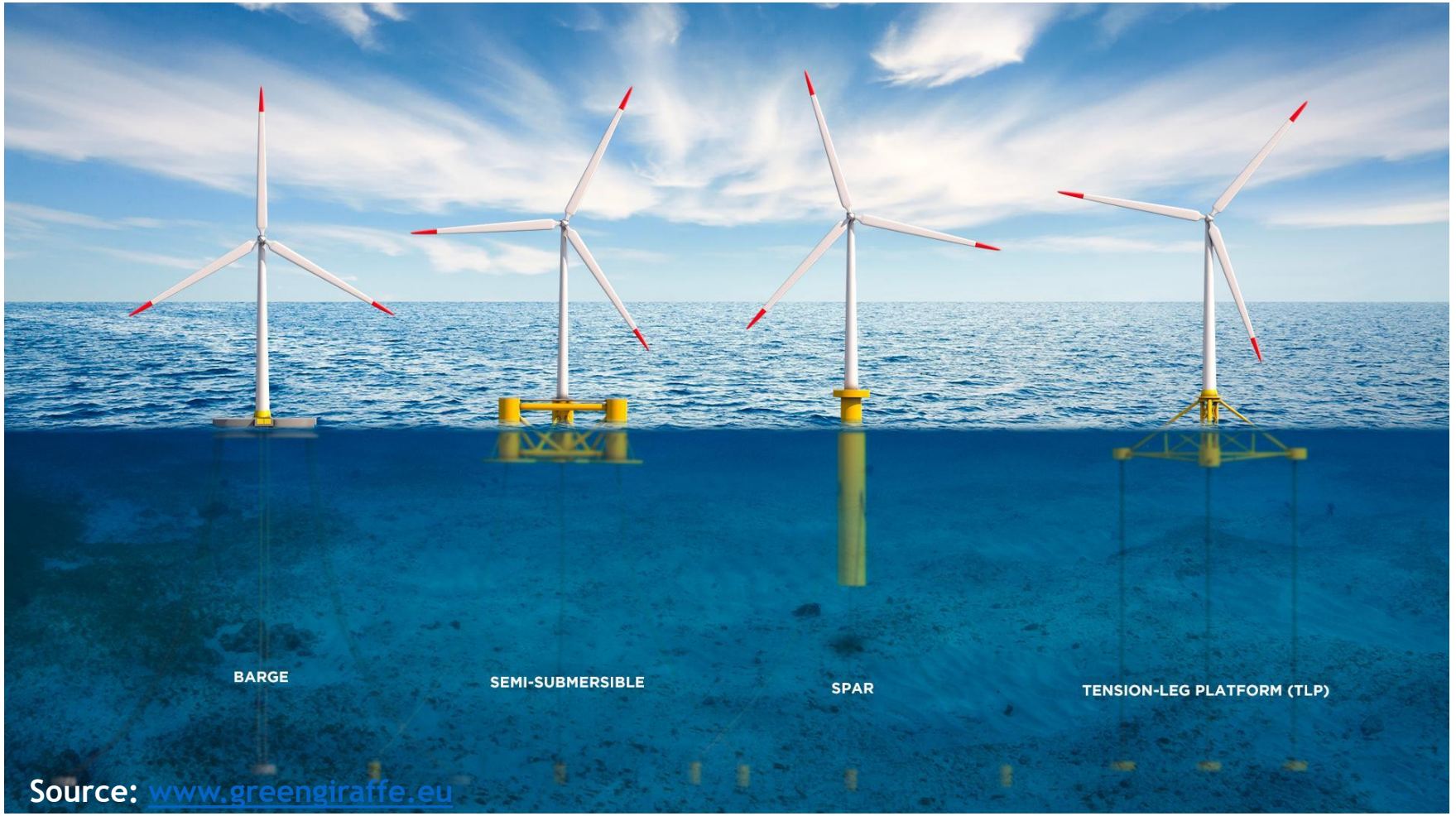
- LCOE likely to reduce by a further 50%



- *Source:* DNV, Goldman Sachs

Offshore Substructures- Floating

Offshore Wind Energy




Thank you!
edp
renewables