Offshore Wind

SEB morning meeting
Oslo, November 11, 2019
Astrid Skarheim Onsum, Head of Offshore Wind
Fast and Interconnected Change

Energy transition & Lower Emission

Sustainable Ocean Economy

Digitalization
175 Years of Change

Hydropower turbines that gave Norway electricity

Subsea

Maritime

Ground-breaking offshore constructions
Aker Solutions will lead the industrialization of floating wind

- Floater
- Dynamic array cables
- Floating and Subsea Substation
- Export cable and landfall
- The floating wind system
Principle Power Inc

- Principle Power’s WindFloat is a leading and proven floating offshore wind concept
- 2011 – 2016: WindFloat Pilot
  - 2 MW Portugal
- Aker Solutions ownership: 23%
Falling Cost of Offshore Wind Projects

Cost falls with industrial scale

Strike price (fixed bottom farms) in UK, Netherlands, Denmark, Germany
Economy of Scale is Increasing the Turbine Size

Sources: Various; Bloomberg New Energy Finance
Drivers for Deepwater Wind Power

- 80% of offshore wind resources found in water depths of >60 meters
- Deepwater Technology now available
- Not In My Back Yard (NIMBY)
- More Wind Energy Further From Shore

Capacity factor by wind concept:

Onshore Wind ~30%

Offshore Bottom-Fixed ~40%

Offshore Floating ~50%

Sources: EIC Global Offshore Wind report 2019; Norwep, Equinor, internal analysis
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A Global Market

Americas  Europe  Asia
This is Happening Now!

Kincardine, Scotland, 50 MW

Windfloat Atlantic, Portugal, 24 MW

Redwood Coast Offshore Wind Project, US (Calif.), ~ 150 MW

Consortium to develop wind farm, South Korea, ~ 500 MW
Collaboration is Key to Success

California: REDWOOD COAST OFFSHORE WIND PROJECT

Local Community – Fisheries – Port – Unions
Aker Solutions, EDP Renewables and WindPower Korea have formed a consortium with the ambition to develop an initial 500 megawatt (MW) floating wind farm off the coast of Ulsan Metropolitan City in South Korea.

The South Korean Government has called for 13 gigawatt (GW) of offshore wind to be installed by 2030 and set a target of at least 30 percent renewable energy by 2040.
New Era of **Ocean Economy** Opportunities

- Floating and Subsea Power Stations
- Floating Wind Power
- Offshore Aqua Culture
- Critical Infrastructure
- Landfall and power storage/balancing
- Subsea Data Centers
- Power Hubs
- Data and Software
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