



Subsea Innovation Day Digitalisation Offshore Wind

> David S. Ottesen 28. April 2020



## Norwegian Energy Partners

is an independent non-profit foundation established to strengthen the long-term basis for value creation and employment in the Norwegian energy industry through facilitation of the industry's international business activities.

We have 280 partners/company members from the Norwegian offshore, energy and maritime industries!

#### Founders

### Organisations

- Energy Norway
- Federation of Norwegian Industries
- Norwegian Oil and Gas Association
- Norwegian Shipowners' Association
- The Norwegian Confederation of Trade Unions

### **Norwegian Government**

- Ministry of Petroleum and Energy
- Ministry of Trade and Industry
- Ministry of Foreign Affairs

## Industry

- Equinor
- Statkraft



combining Norwegian competence with international energy needs









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## Offshore wind to become a \$1 trillion industry

25 October 2019

Across the next two decades





Kilde: International Renewable Energy Agency

# The scope at hand on- and in- the water and seabed





- Site evaluation
- Wind Farm installation
- Export and Array cable installation and monitoring
- IMR
  - seabed, cable as well as foundation (cathodic protection)and anchorage
- Devex 4,5 MRD NOK annually
- Capex 4,5 MRD NOK annually
- Opex 10,5 MRD NOK annually
  - Averaged over the next three decades



- Developers with back ground in the O&G industry
- Electrical Infrastructure and Finance background with little offshore and sub sea experience

Opportunities for early engagement and knowledge sharing thus impacting wind farm development early in projects and share innovative approaches and solutions

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# Food for thought

## Ørsted Picks Pulse Monitoring Equipment for Greater Changhua

Pulse Structural Monitoring has won a contract to provide digital structural monitoring and insight services and equipment for Ørsted's Greater Changhua offshore wind project in Taiwan.



- Drive for cost efficiency
- Autonomous systems
  - Zero personnel in field
- Real time data transfer
- Digital Twins
- Accurate navigation amongst 120 turbines covering a area of 500 km2 (Doggerbank)
- Commercial solutions allowing assets to be used between wind farm owners



## How we present you:

- Norwegian Sub Sea technology and competence is world leading
- Vast experience from Oil and Gas exploration, development and operation
- World leaders in exploiting the Digital transformation
  - Real time remote operation and data centers already in the mid '90s
- Demonstrated significant innovation capacity driving down cost and improving safety (autonomous solutions)
- Globally adaptable







"By 2050, wind and solar technology provide almost **50% of total electricity globally** – with hydropower, nuclear and other renewables taking total zero-carbon electricity up to 71%."

Bloomberg NEF – NEO 2018

https://www.youtube.com/embed/WZyRbnpGyzQ?controls=0 &start=525&end=579&rel=0



The opportunities in SubSea are staggering, only limited by our imagination to exploit them

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