



equinor

Equinor and Hywind

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Global Wind Day, Seoul, 22nd June 2018



We are Equinor

Turning natural resources into
energy for people and progress for society



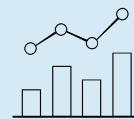
Competitive at
all times

Transforming the oil and
gas industry

Providing energy for
a low carbon future



Key figures



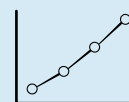
2.08 million

Barrels of oil equivalent per day in 2017



19 billion

Barrels of oil equivalent in resources

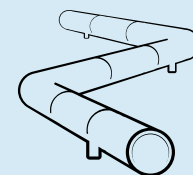


12.6 bn USD

Adjusted earnings as of Q4 2017

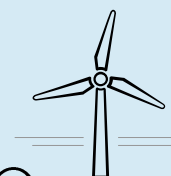


more than 35%
of oil and gas equity production took
place outside Norway in 2017



2nd

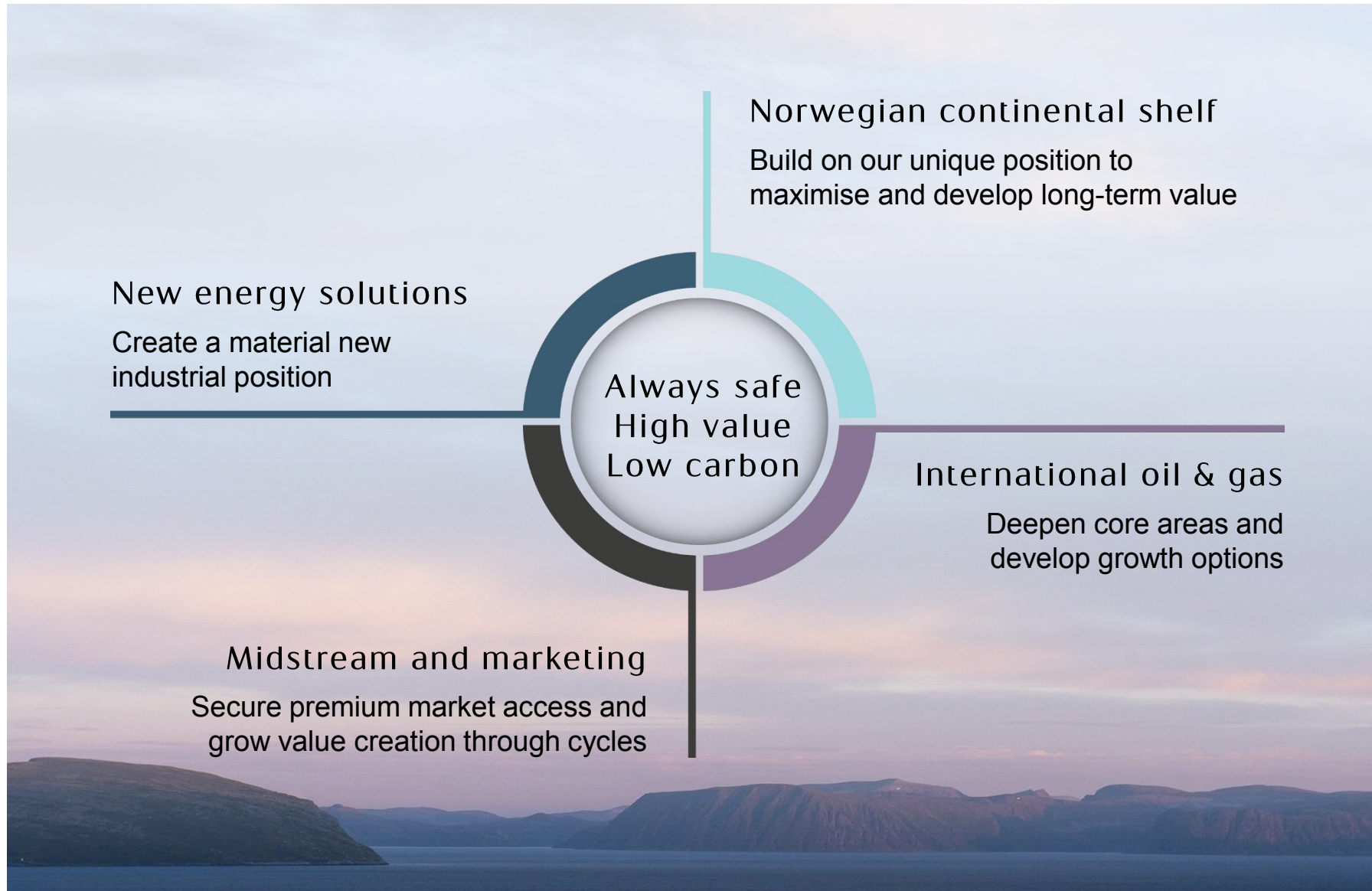
Second biggest
gas supplier
to Europe



Growing offshore wind
business supplying
more than

650 000

UK homes

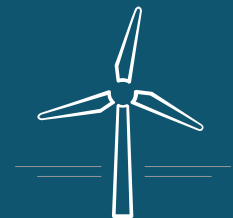


New Energy Solutions

Part of Equinor's broader portfolio

Two objectives:
Build a profitable renewable business

Develop new lower carbon opportunities for Equinor's core products



Building a profitable offshore wind portfolio

<p>Hywind demo In production</p> <p>2.3 MW</p>	<p>Hywind Scotland In production</p> <p>30 MW</p>	<p>Batwind In development</p> <p>1 MW</p>
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Floating



Bottom fixed

<p>Sheringham Shoal In production</p> <p>316 MW</p>	<p>Dudgeon In production</p> <p>402 MW</p>	<p>Arkona In development</p> <p>385 MW</p>
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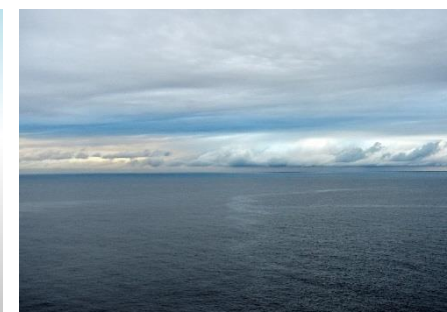
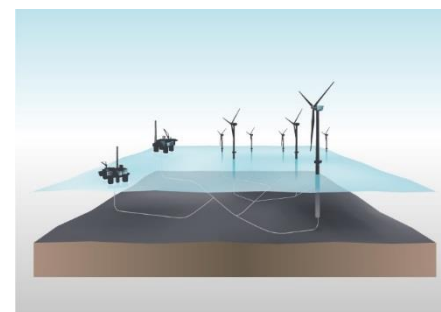
Expanding within offshore wind¹

Floating wind to oil and gas installations
Norway

100 MW

Expanding global position

UK/Ireland, France,
US West Coast, Japan



Floating

Bottom fixed

Doggerbank
UK

3.6 GW

Empire Wind
USA

1-2 GW

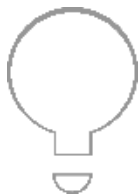
Baltyk II & III
Poland

1.2 GW

What is Hywind?

A standard offshore wind turbine placed on a ballasted substructure and anchored to the seabed

- Conventional technology used in a new way
- Simple substructure construction that enables mass production
- Inshore assembly reduces time and risk of offshore operations
- Beneficial motion characteristics and blade pitch control to dampen out motions



2001
The idea



2009
The demo



2017
The world's first
floating wind park



Hywind Scotland: the **world's first** floating offshore wind park



- Investing around **NOK 2 billion**
- **60-70% cost reduction** from the Hywind Demo project in Norway
- **Powering ~20,000 UK homes**
- **Batwind – Storage solution**

- **Installed capacity:** 30 MW
- **Water depth:** 95-120 m
- **Avg. wind speed:** 10.1 m/s
- **Area:** ~4 km²

- **Average wave height:** 1.8 m
- **Export cable length:** Ca. 30 km
- **Operational base:** Peterhead
- **Start power production:** Q4 2017

Video



Offshore Floating Wind- building on our oil and gas competence



Safety is our
first priority



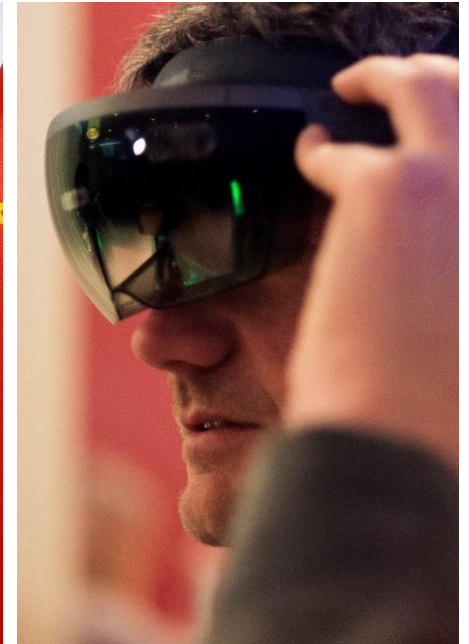
Large complex
projects



Marine operations
& maintenance

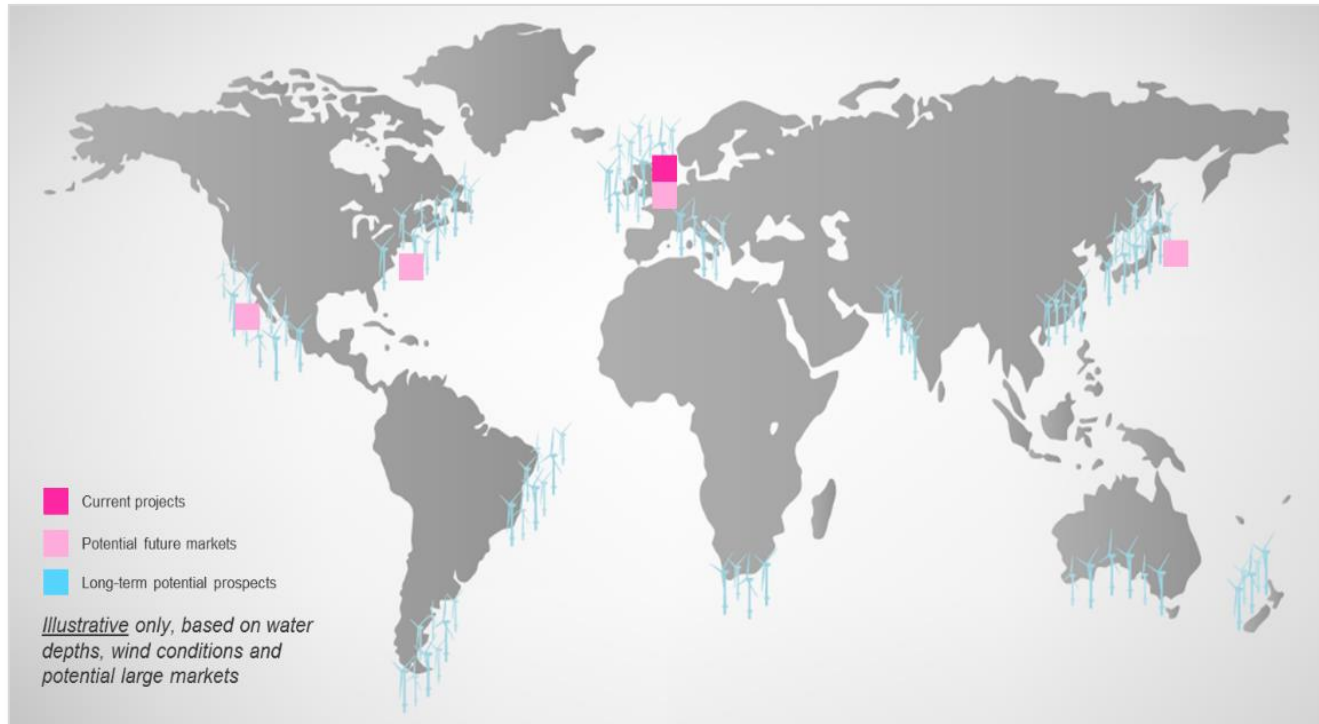


Leverage local
presence & corporate
capabilities



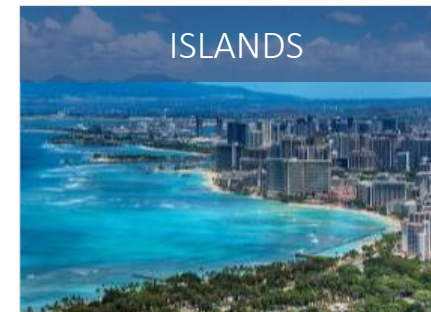
Technology &
innovation

Vast potential for floating offshore wind



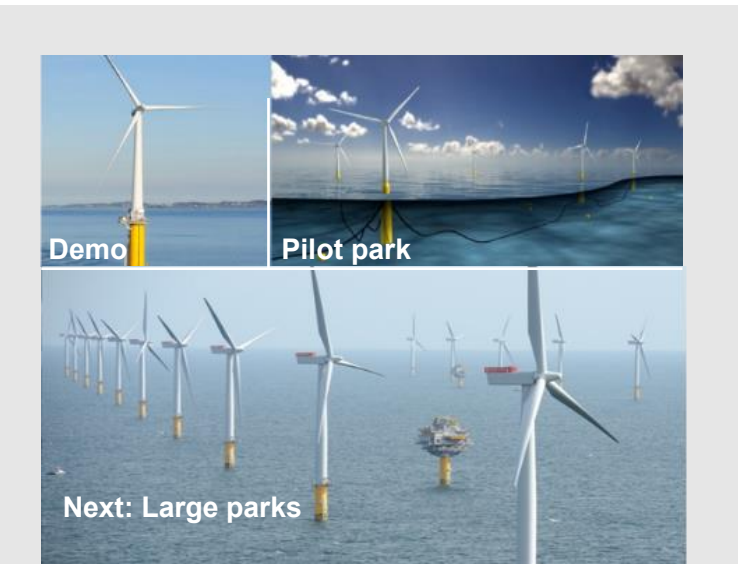
Advantages

- Unlimited resources
- Standardised foundations
- Site flexibility
- Environmental benefits



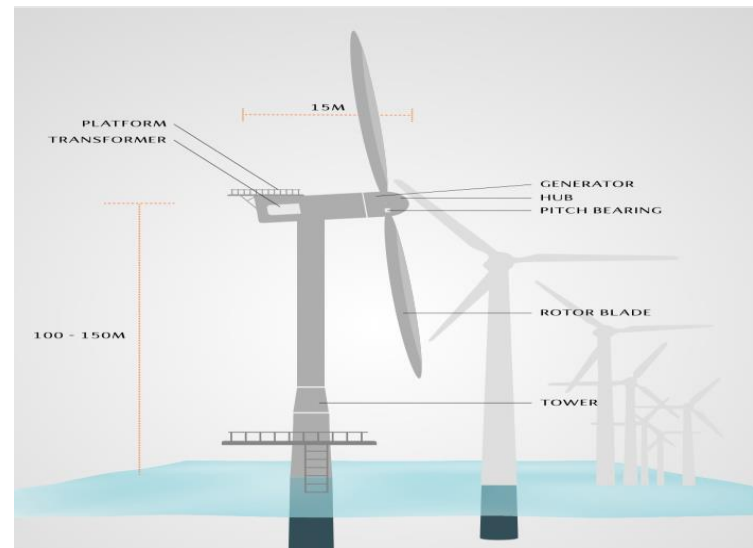
Hywind - lead floating wind to industrial scale

Deployment



Scalability critical for market success
Predictable frame conditions and project pipelines

Innovation



Technology innovation on

- Site selection and park layout
- Design for scale and weight
- Installation and maintenance

Supply chain



**Build on
bottom fixed
industry**

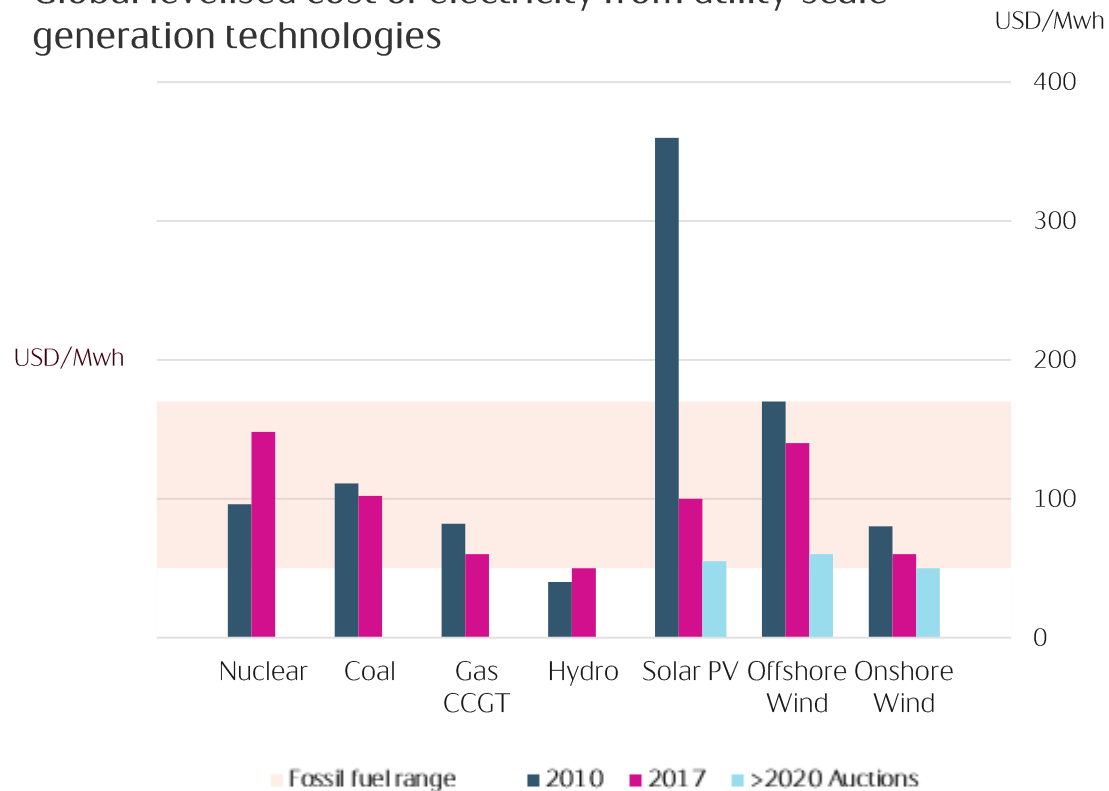
**Establish
industry
standards for
floating**

**Streamline
fabrication
lines**

Industrialisation needed!
Mobilise through cooperation with regulators,
developers and suppliers

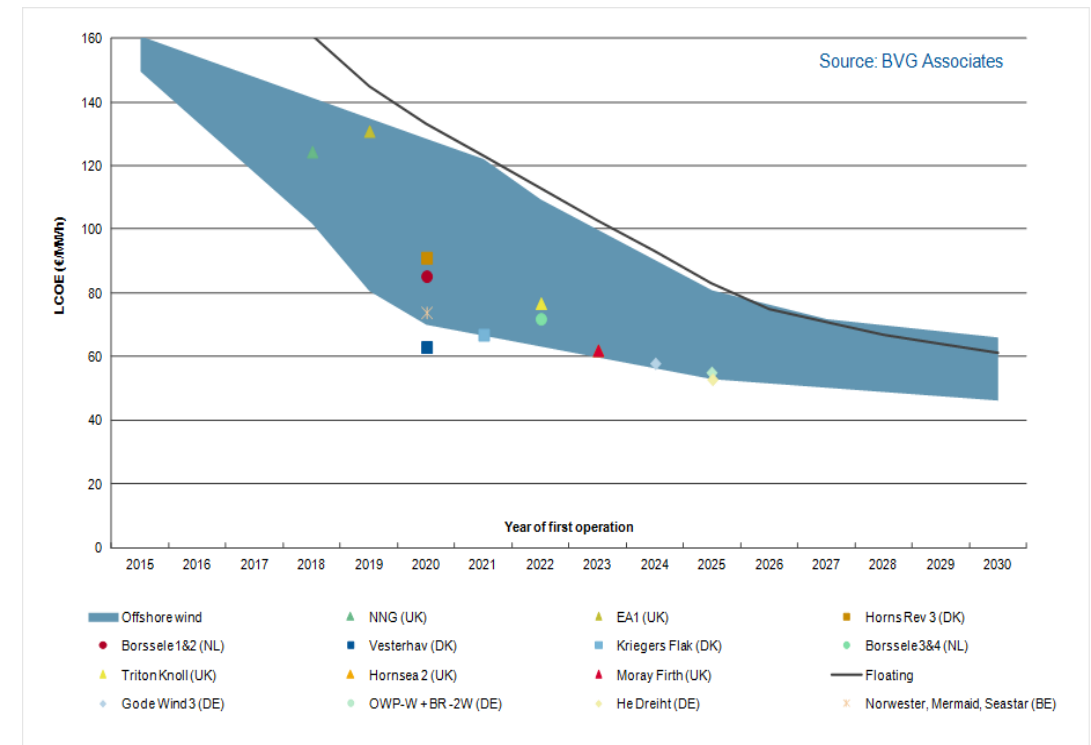
Equinor targets a Hywind levelised cost of energy of €40-60/MWh by 2030

Global levelised cost of electricity from utility-scale generation technologies



Source: IRENA, Lazard

Levelised cost of energy for offshore wind to 2030



Source: BVG Associates