



equinor

Equinors satsning på havvind

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Ledende forretningsutvikler Nye Energiløsninger, Equinor

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Fornybar energi – en næring i vekst

Opptil **70 prosent**
kostnadsreduksjoner for
offshore vind siden 2010

> 70 prosent av ny
installert global
kraftkapasitet i 2017
var fornybar

Fornybar energi dekker
mer enn **30 prosent** av
all elektrisitetsforbruk i EU

Fornybar energi trolig
> 60 prosent av
energimiksen i 2050



OUR VISION

Shaping the future of energy

- Competitive at all times
- Transforming the oil and gas industry
- Providing energy for a low carbon future



New Energy Solutions – Strategic Objectives



Build a profitable renewable business



Develop new lower-carbon business opportunities for **Equinor's** core products

Our renewable portfolio

Offshore wind – bottom fixed



- Sheringham shoal (UK): 316MW
- Dudgeon (UK): 402MW
- Arkona (Germany)*: 385MW

Offshore wind – floating



- Hywind Demo (Norway): 2,3MW
- Hywind Scotland: 30MW
- Hywind Tampen (Norway)*: 88MW

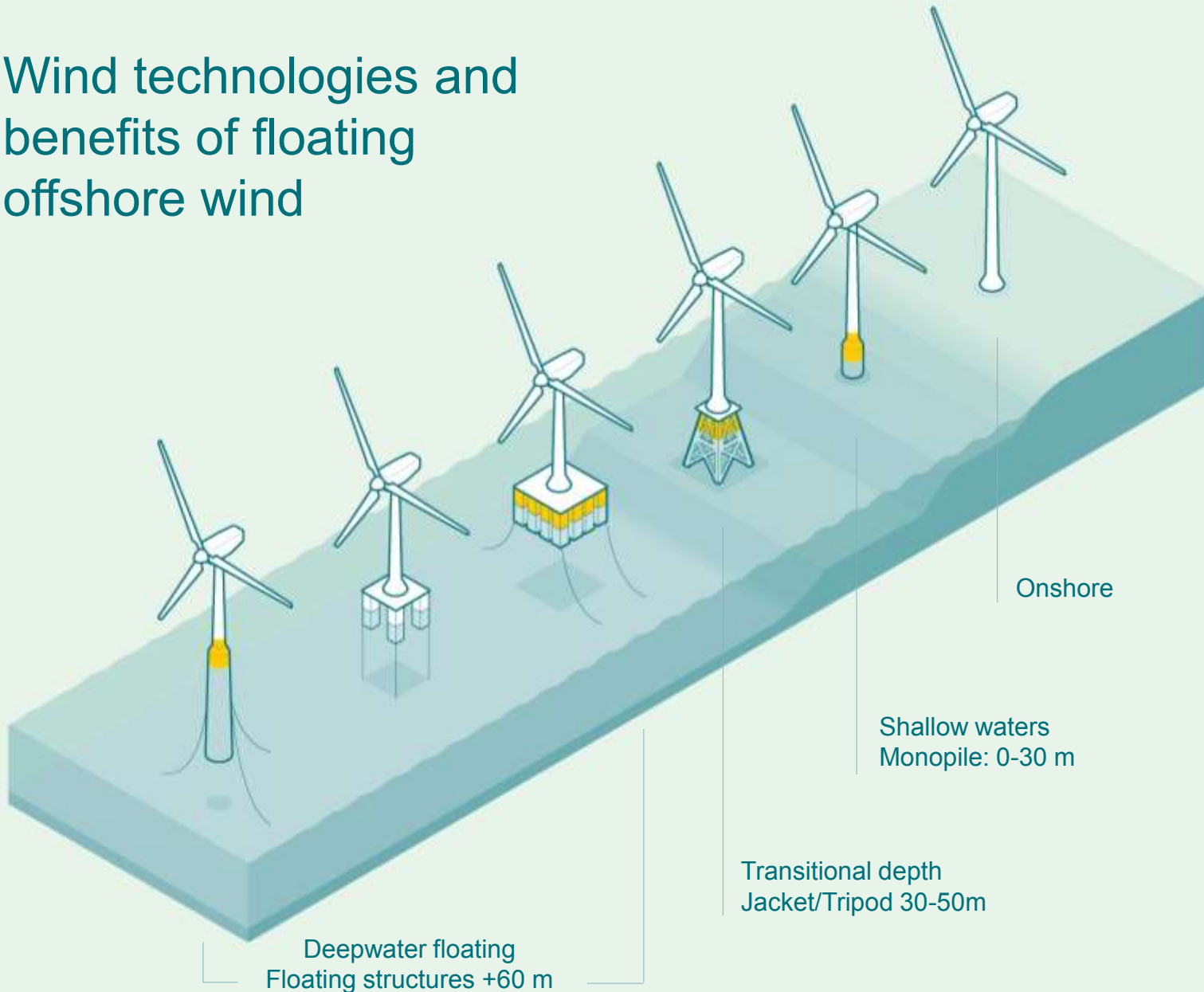
Solar



- Apodi (Brazil): 162MW
- Guanizul (Argentina)*: 117MW

* Under development

Wind technologies and benefits of floating offshore wind



Resources

Deeper, farther from shore
 Site flexibility
 Space availability

Jobs

Domestic and export industrial opportunities
 Regional developments
 Build on O&G

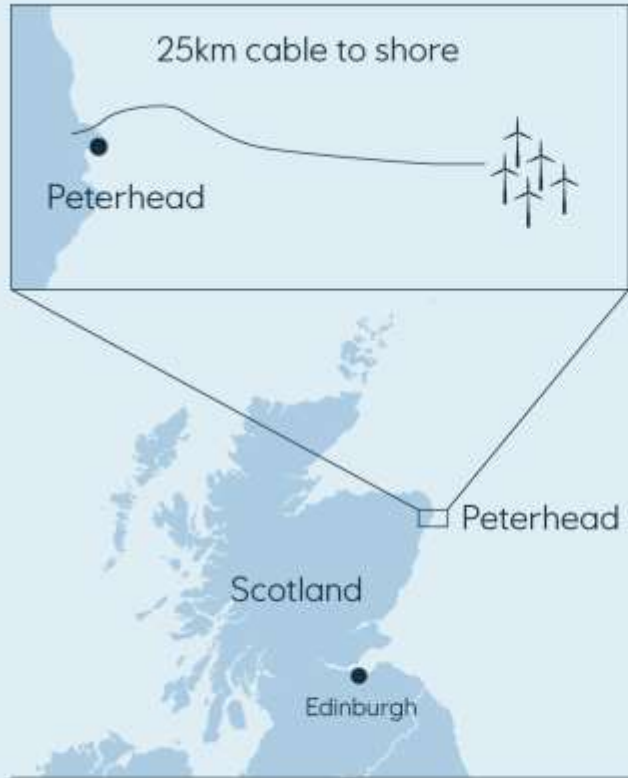
Economics

High capacity factor
 Higher scalability?
 Standardisation potential

New applications

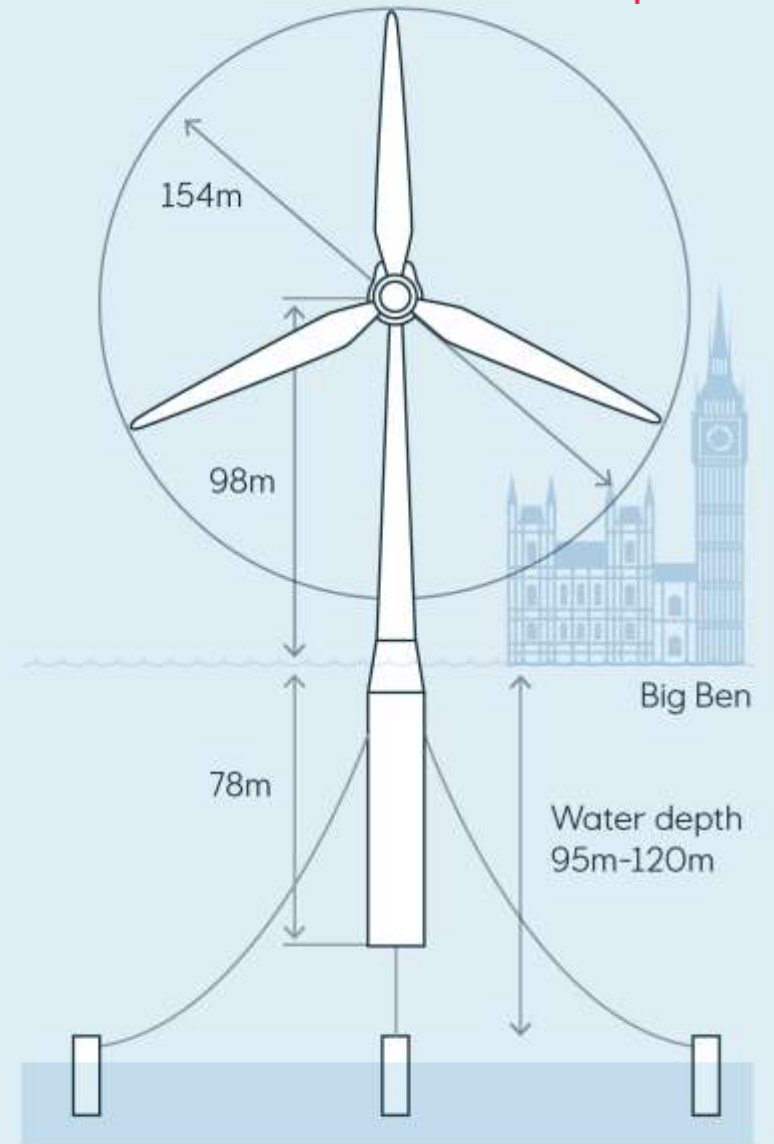
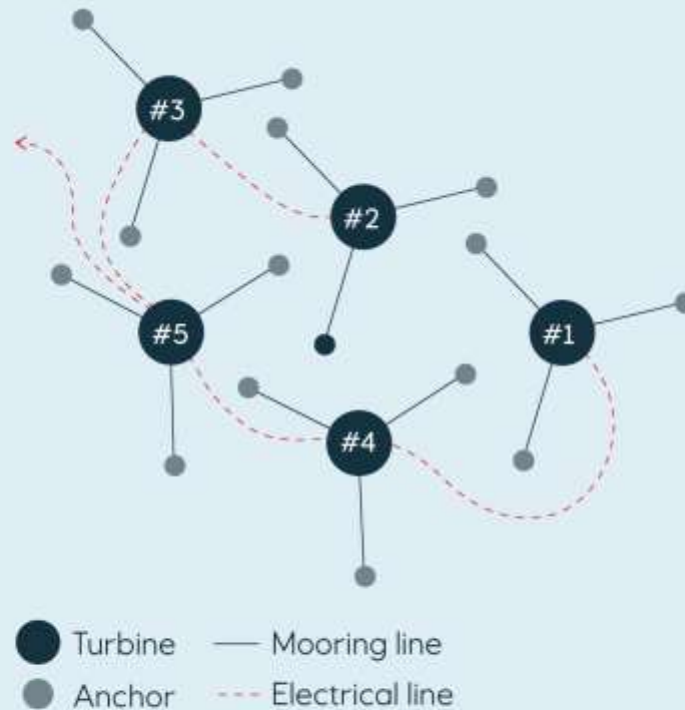
Electricity to population centers
 Power industry and O&G
 Recycle marine spaces

Hywind Scotland – The World first floating wind farm



Installed capacity of park
30MW

Which is enough to power
20 000 homes



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



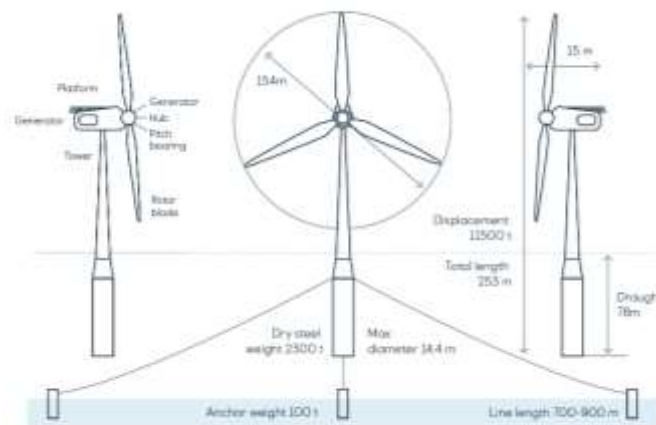
Technology & innovation

Hywind – Leading floating to industrial scale

Deployment



Innovation



Industrialisation



Build on bottom fixed industry

Establish industry standards for floating

Streamline fabrication lines

Policy

Partnership

Supply chain

Et hav av muligheter

Hywind Demo



- Teknologitviking siden 2001
- I demo-drift siden 2009
- Produsert mer enn 40GWh siden oppstart

Hywind Scotland



- Verdens første flytende vindpark
- I drift siden 2017
- Leverer strøm til 22 000 skotske husstander

Hywind Tampen



- Potensielt første havvindprosjekt på norsk sokkel
- Vil redusere CO2-utslipp tilsvarende 100 000 biler

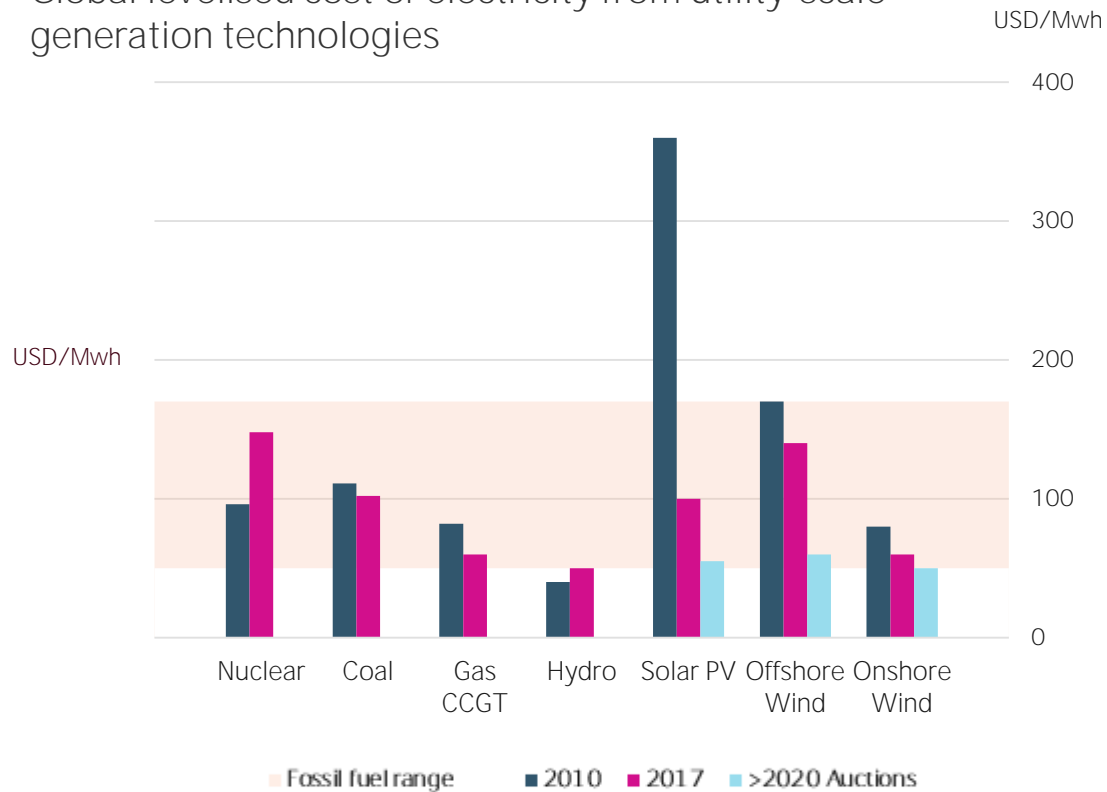
Globale muligheter



- Interessante markeder i bl.a. Japan, UK, Frankrike, USA og Norge
- Potensielt 12GW innen 2030
- Forventet LCOE på 40-60 €/MWh innen 2030

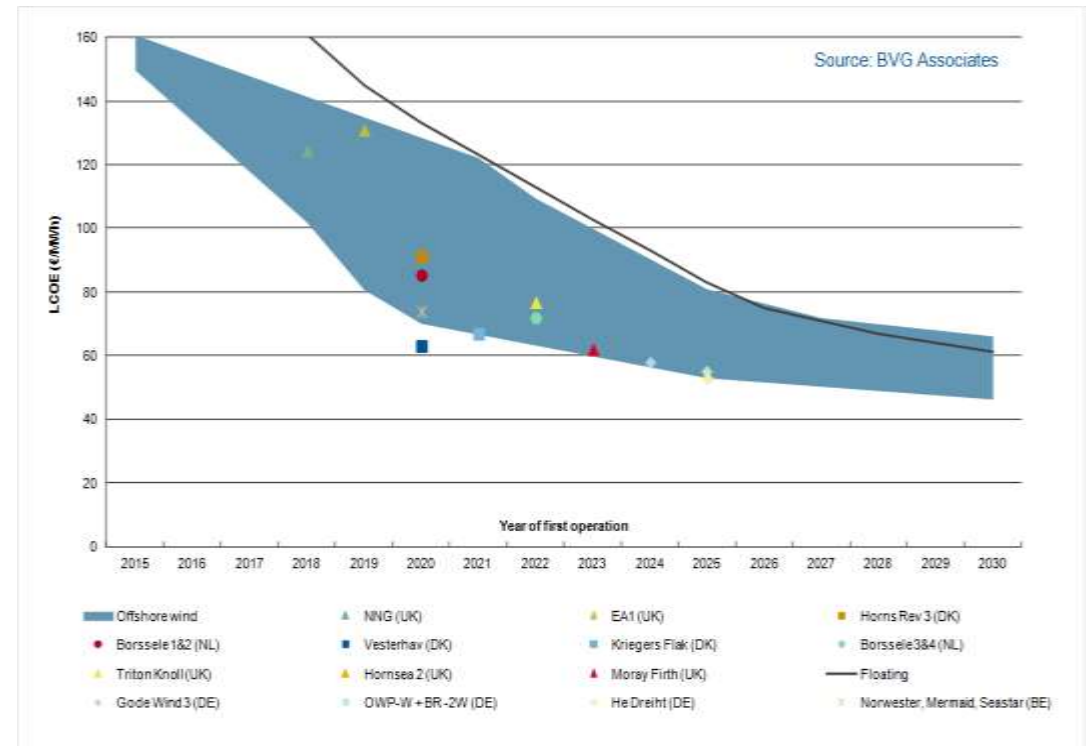
Equinor targets a levelised cost of energy of €40-60/MWh by 2030

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

Hywind Tampen – offshore wind farm in the North Sea



11 wind turbines between
Snorre and Gullfaks

Combined capacity of
88MW

Concrete substructures
and shared anchors

Considerable CO₂
emission reductions

More offshore wind in Norway – what does it take?



Close collaboration between authorities, developers, suppliers and R&D

Cost reductions through
scale

Competitive supplier
industry

Appropriate
framework conditions

Arne Eik

Leading business developer New Energy Solutions

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