Offshore expertise boosting offshore wind

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Norwegian Energy Partners

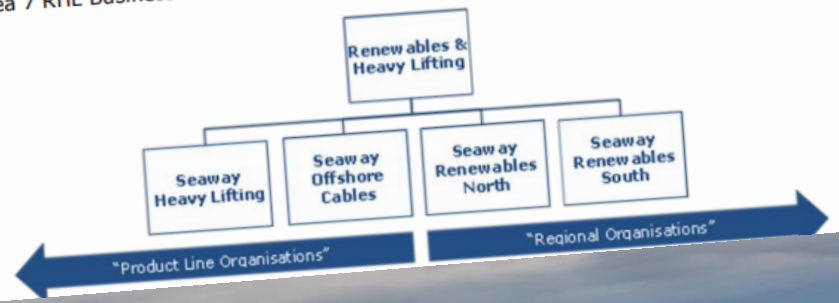
Organisational Changes
Subsea 7 Renewables & Heavy Lifting Business Unit

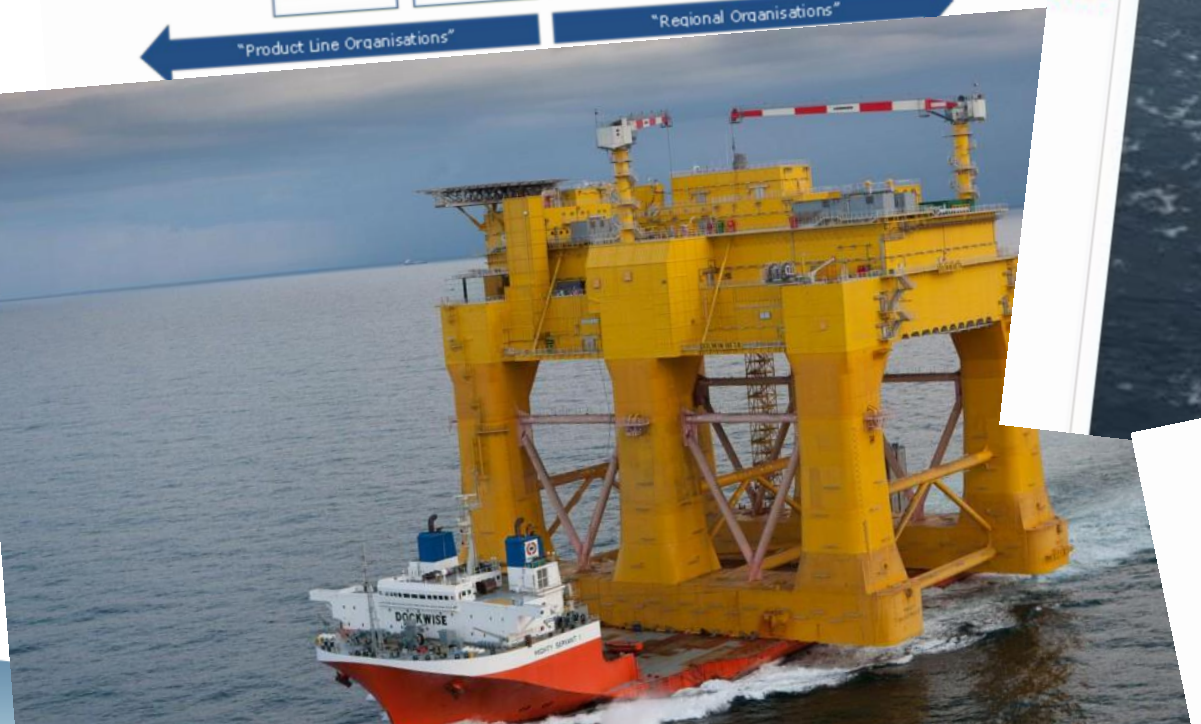
2nd August 2018

The Subsea 7 Renewables & Heavy Lifting (RHL) Business Unit has expanded its organisational structure to further improve its services to its Clients in the offshore energy sector.

The enhanced Subsea 7 RHL Business Unit provides EPCI, T&I and Integrated Services to the offshore energy sector. This includes project management, engineering, fabrication, heavy lifting, cable installation and decommissioning services.

The Subsea 7 RHL Business Unit is comprised of four organisations:





Is this the future? Dutch plan vast windfarm island in North Sea

Advanced plans by Dutch power grid aims to build power hub possibly at Dogger Bank whose scale would dwarf current offshore sites

COMMODITIES AUGUST 28, 2018 / 8:11 AM / A MONTH AGO

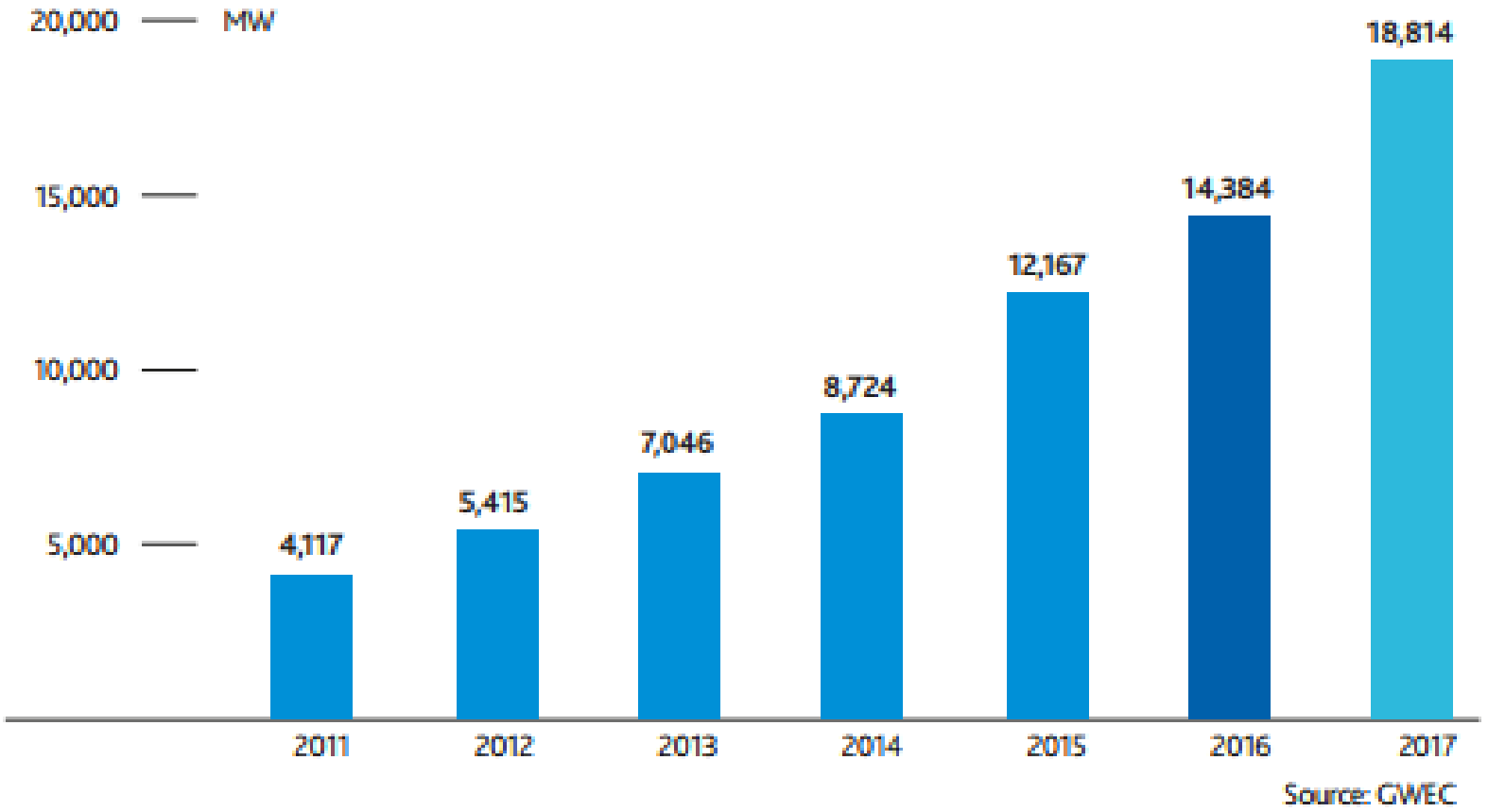
Equinor explores floating wind turbines to power North Sea oilfields

3 MIN READ

Nerijus Adomaitis

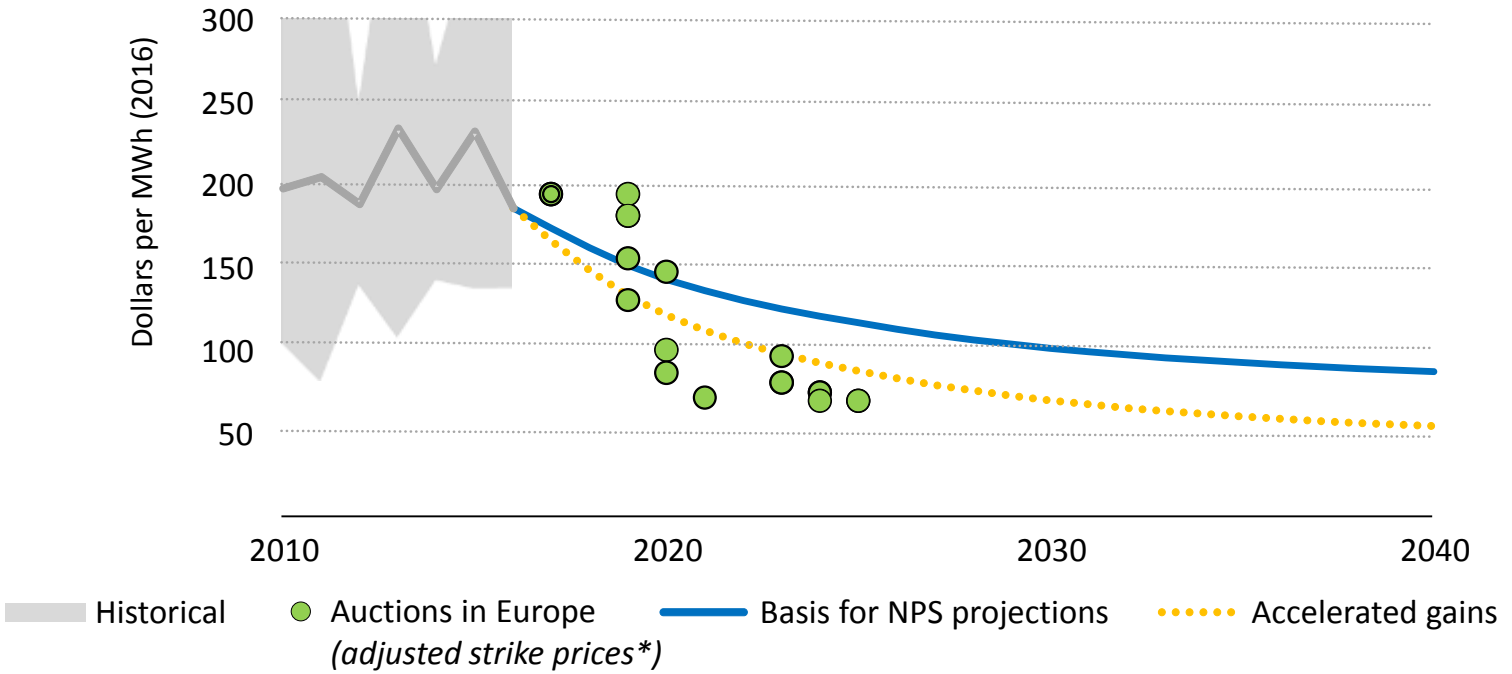
...NGER, Norway (Reuters) - Norway's Equinor said on Tuesday it is considering
...ering offshore wind farm with floating turbines to supply
...rt of a strategy to curb greenhouse gas

Offshore wind - a fast growing industry



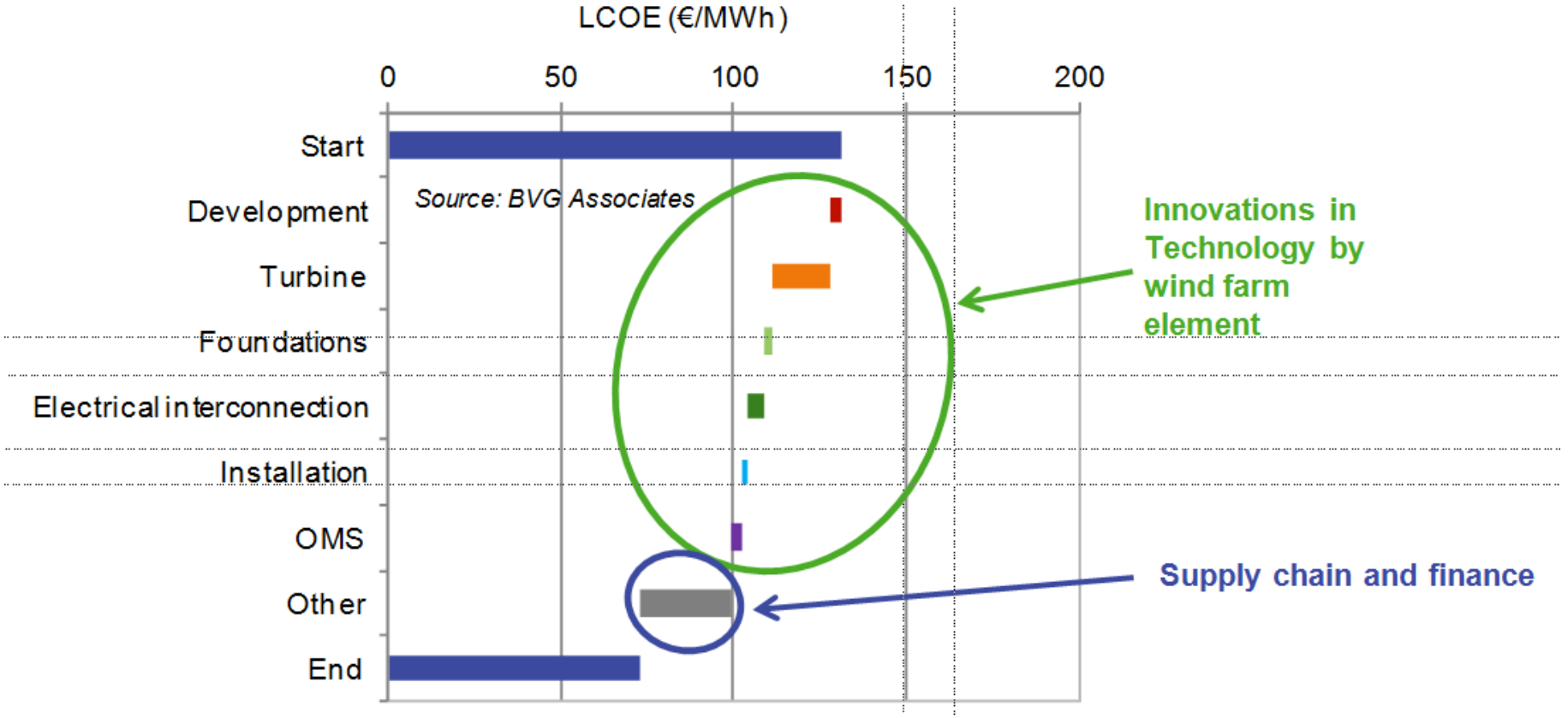
Source: GWEC

Immense cost reductions

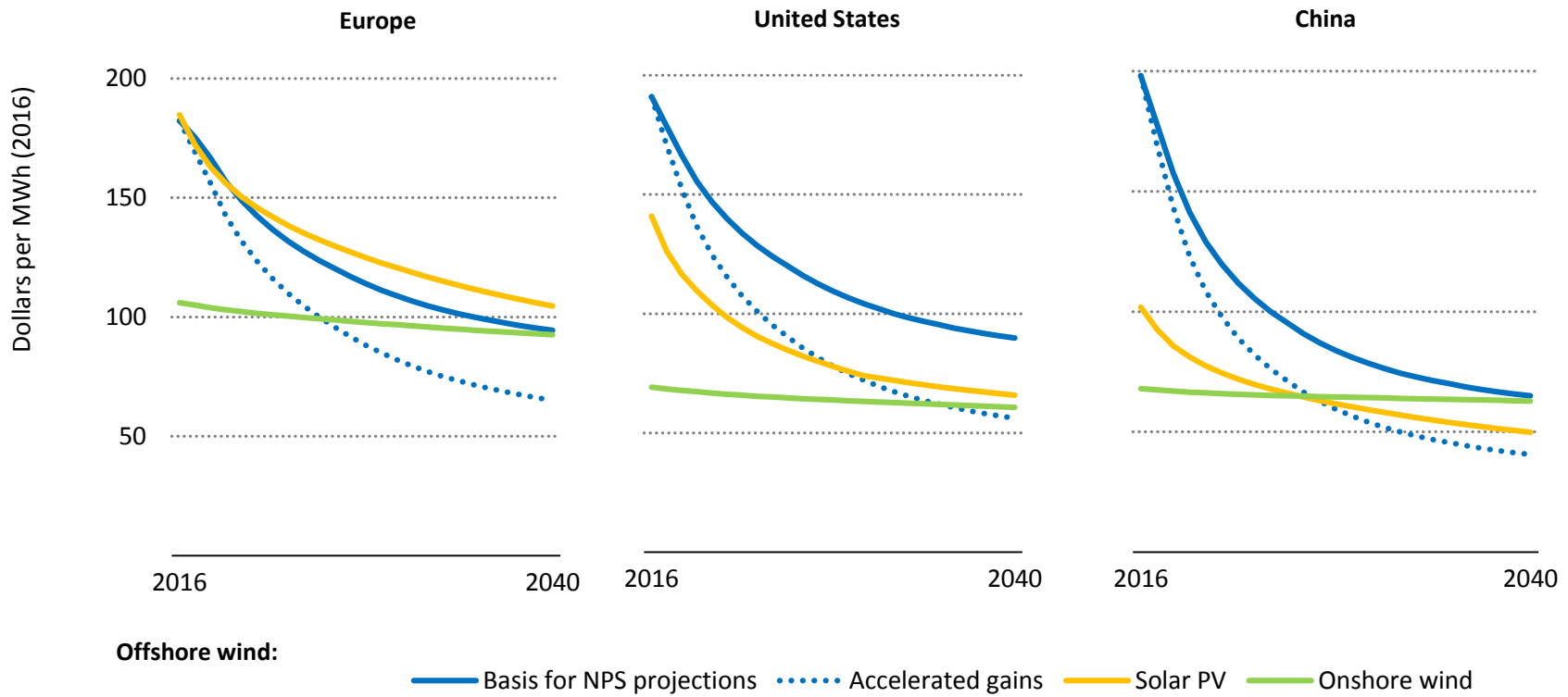


Source: IEA Offshore Energy Outlook 2018

Cost reduction – how?

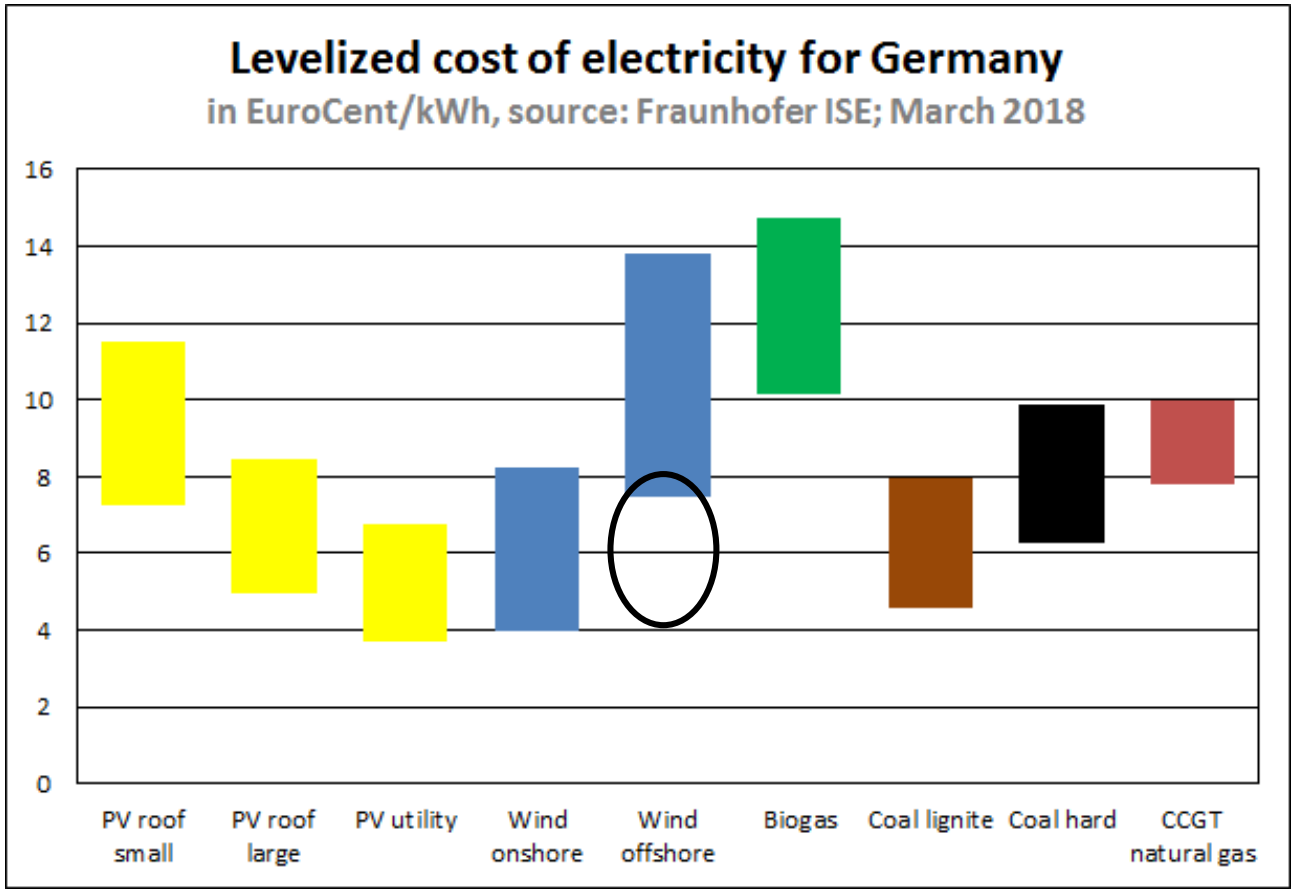


Offshore wind closing in on other renewables

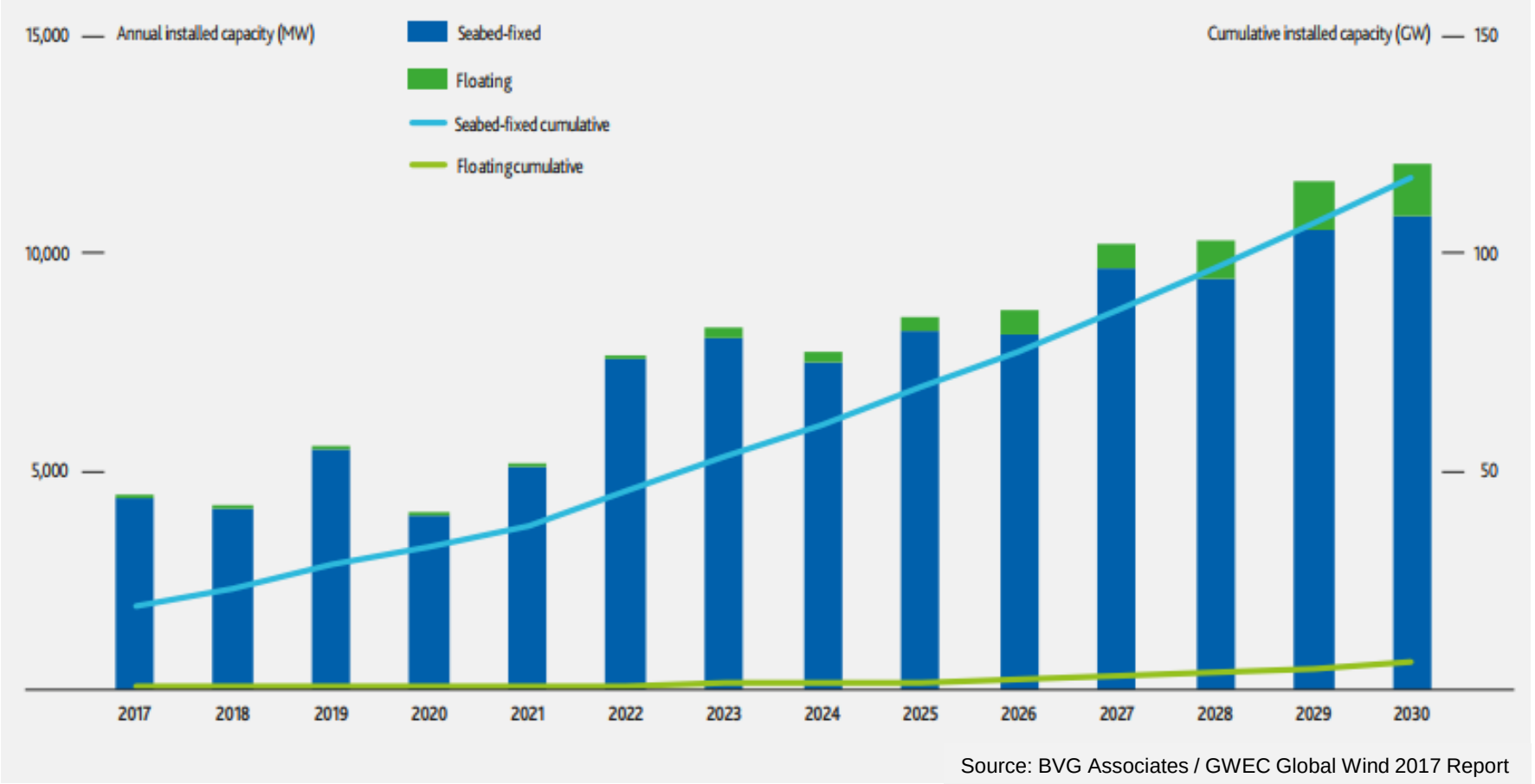


Source: IEA Offshore Energy Outlook 2018

Future offshore wind will be cost competitive



..outlook to 2030

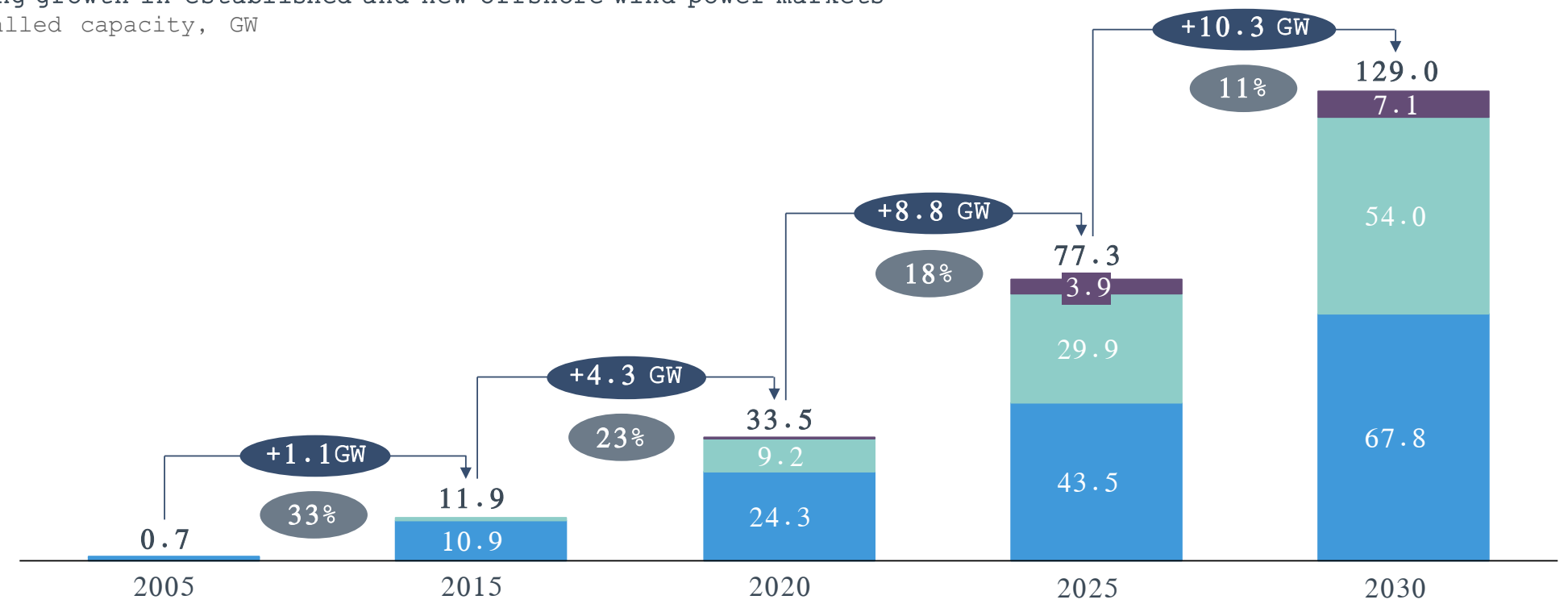


Source: BVG Associates / GWEC Global Wind 2017 Report

By 2030 the market will be truly global

Strong growth in established and new offshore wind power markets

Installed capacity, GW

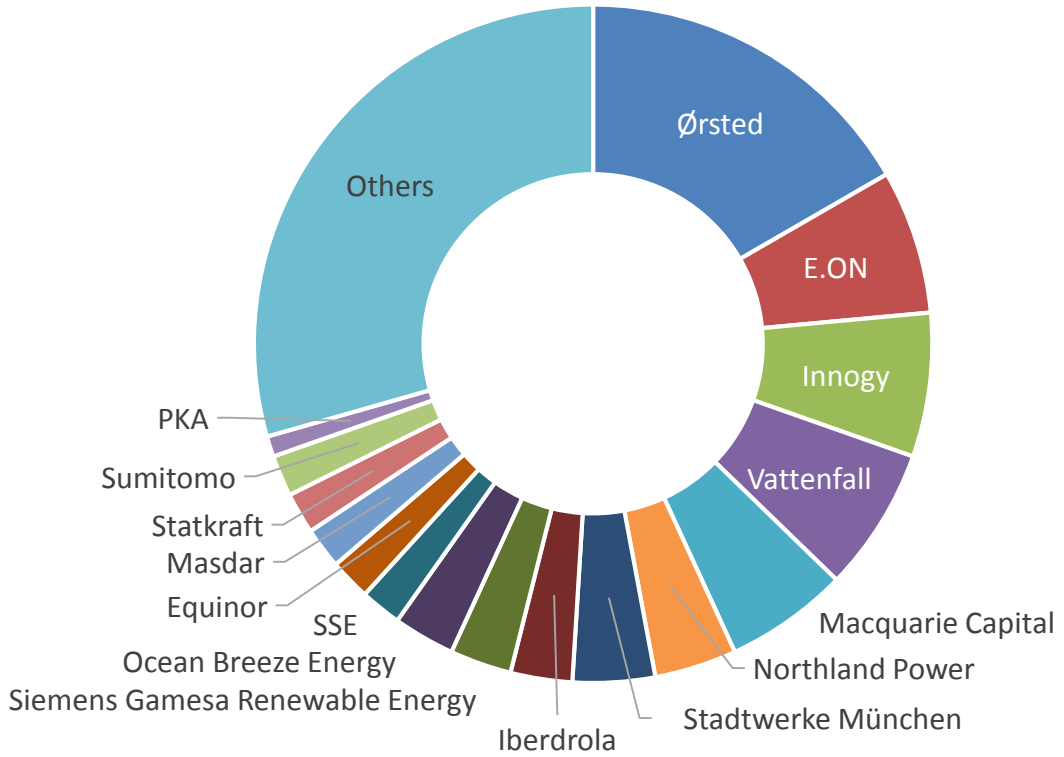


Source: Bloomberg New Energy Finance (BNEF), 1H 2018 offshore wind market outlook

Trends

- LCOE focus
- Auctions
- Merchant market
- Size of turbine
- Globalisation – supply chain
- OPEX

European developers share of installed capacity



Utilising expertise from the offshore and maritime industries to add value in the offshore wind industry!

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Offshore strengths

Large komplex projects with multiple contracts

Marine operations key

Understanding of ocean and material strength

Knowledge of offshore operations and maintenence

Understanding technology risk and use

H&S

Large pool of ressources

Offshore expertise applied

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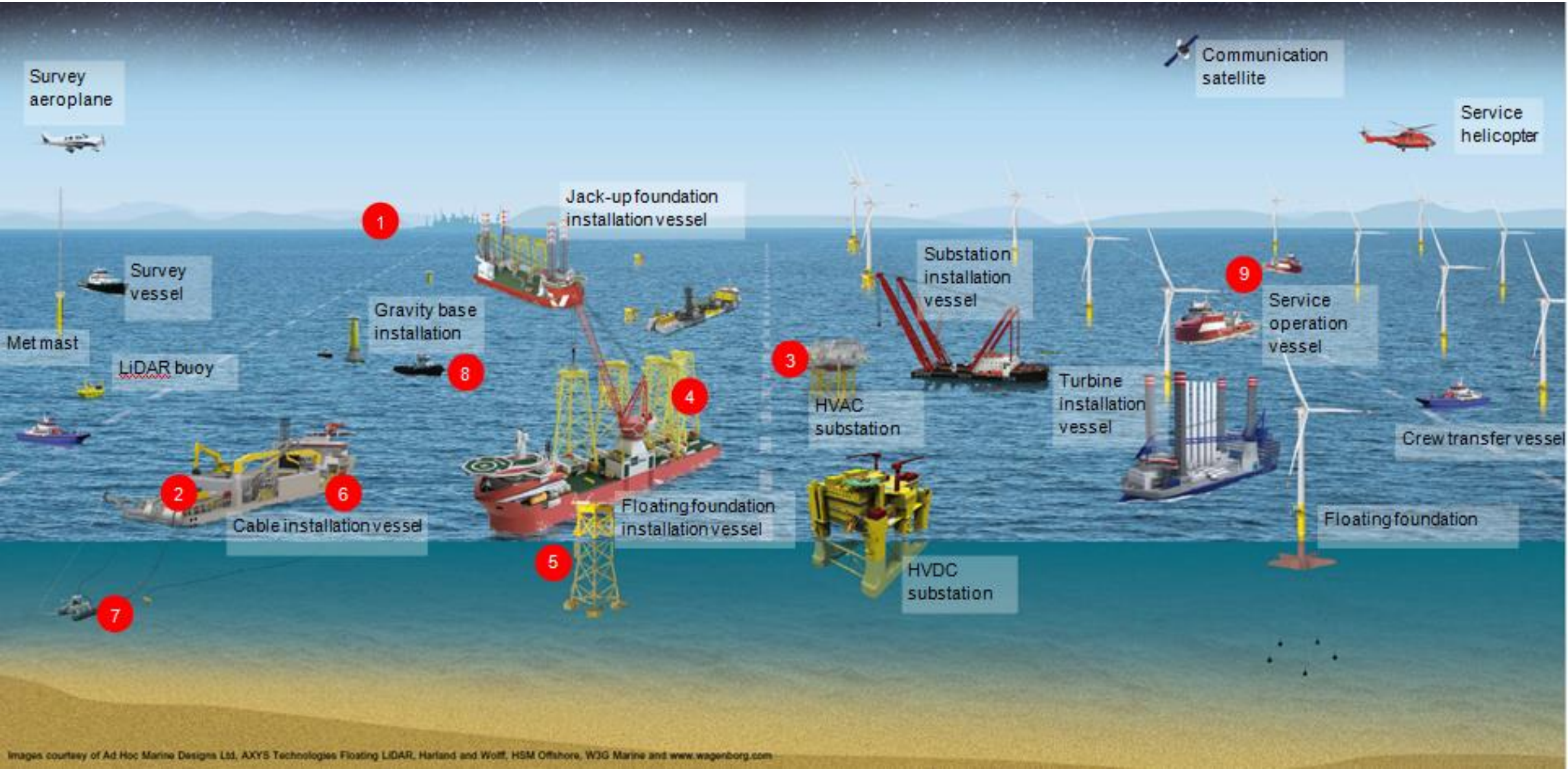
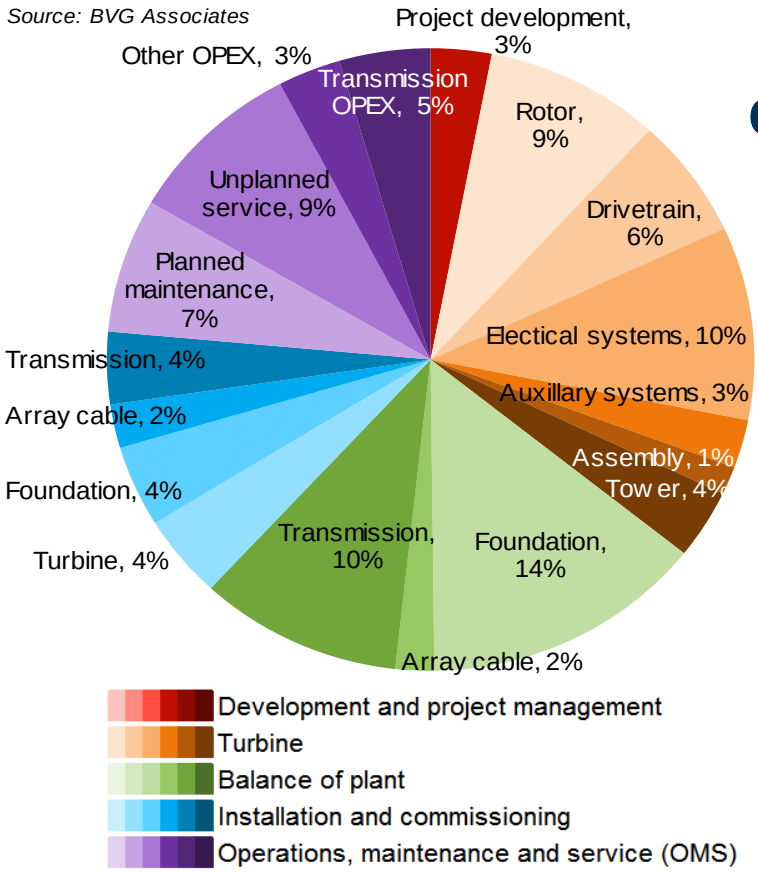


Images courtesy of Ad Hoc Marine Designs Ltd, AXYS Technologies Floating LiDAR, Harland and Wolff, HSM Offshore, W3G Marine and www.wagenborg.com

Expertise and industry opportunity mapping

Contribution to LCOE

Source: BVG Associates



“There will be **huge demand for new innovative offshore solutions and expertise with a global reach** as offshore wind is expanding into new markets.”

Major offshore wind developer

Opportunities based on 6 criteria

Track record in offshore wind

Synergies with current expertise

Appetite from offshore wind

Potential for **LCOE benefit**

Size and timing of investments

Size of the opportunity

Major opportunities

- Project management
- Subsea cables
- Offshore substation structures
- Turbine foundations
- Installation equipment and support services
- Maintenance and inspection services
- Vessels and equipment

Offshore expertise in offshore wind

- Development & project management
- Balance of plant
- Installation and commissioning
- Operations & maintenance

Sub element	Lifetime spend*		Norwegian suppliers
Environmental surveys	0.1%	55 kr million	
Consenting and development services	0.5%	264 kr million	
Site investigations	0.5%	264 kr million	
Project management	2.1%	1,156 kr million	

Sub element	Lifetime spend*		Norwegian suppliers
Subsea cables	4.8%	2,643 kr million	
Transmission	3.2%	1,762 kr million	
Substation structures	2.1%	1,156 kr million	
Turbine foundations	7.6%	4,185 kr million	
Secondary steelwork	1.4%	771 kr million	

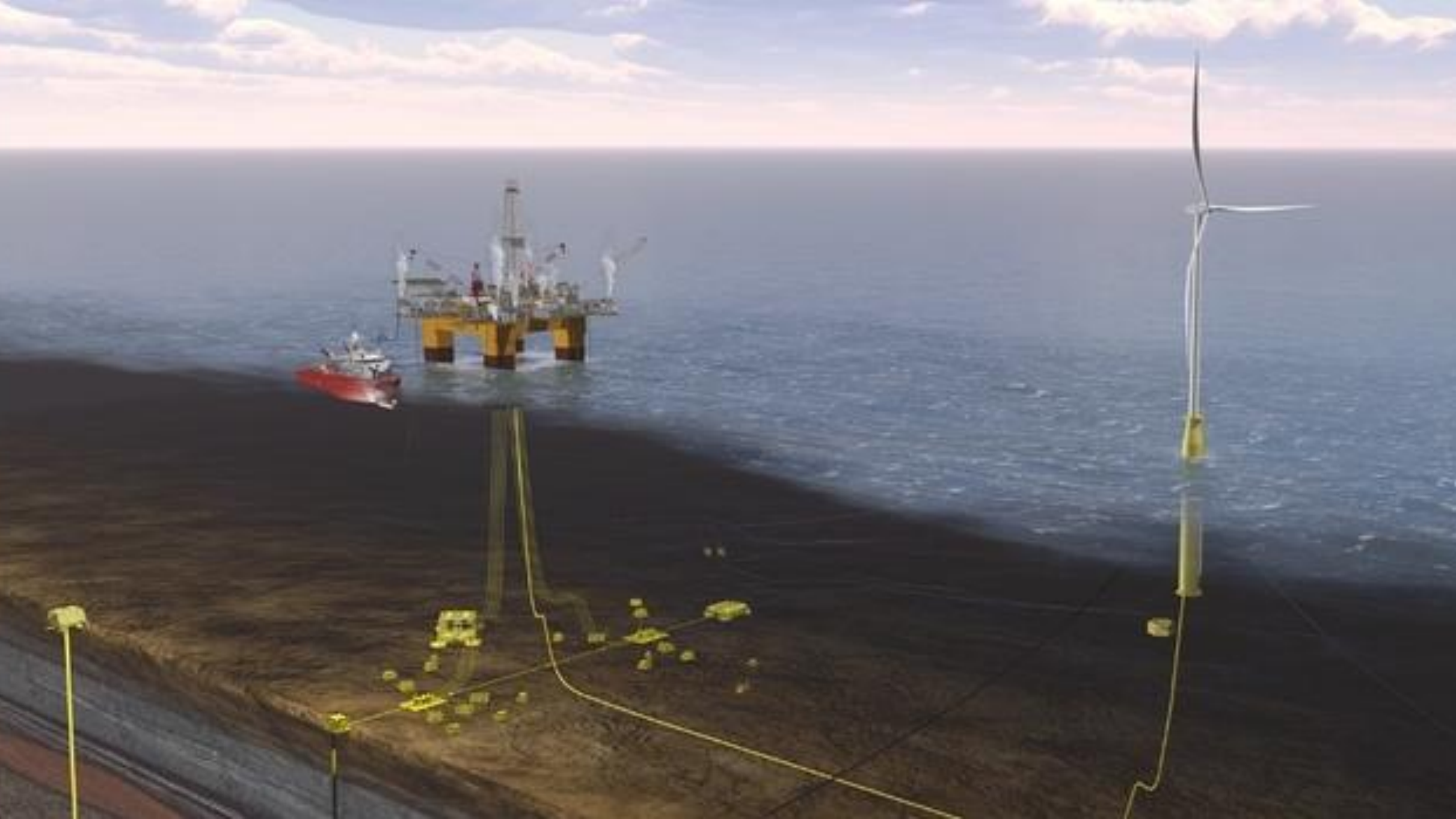
Sub element	Lifetime spend*		Norwegian suppliers
Installation ports and logistics	0.6%	330 kr million	
Turbine and foundation installation	4.9%	2,698 kr million	
Cable installation	2.4%	1,322 kr million	
Substation installation	0.4%	220 kr million	
Installation equipment and support services	3.0%	1,652 kr million	
Onshore works	0.6%	330 kr million	

Sub element	Lifetime spend*		Norwegian suppliers
Maintenance and inspection services	14.8%	8,192 kr million	
Vessels and equipment	16.4%	9,091 kr million	
O&M ports	3.8%	2,109 kr million	

Floating offshore expertise

…put to use in floating wind

- Engineering of substructures, towers and systems
- Procurement
- Transportation and logistics
- Mating of turbines with structure and generators
- Towing, anchoring and operations
- Static and dynamic cables
- Verification and warranties



seatower

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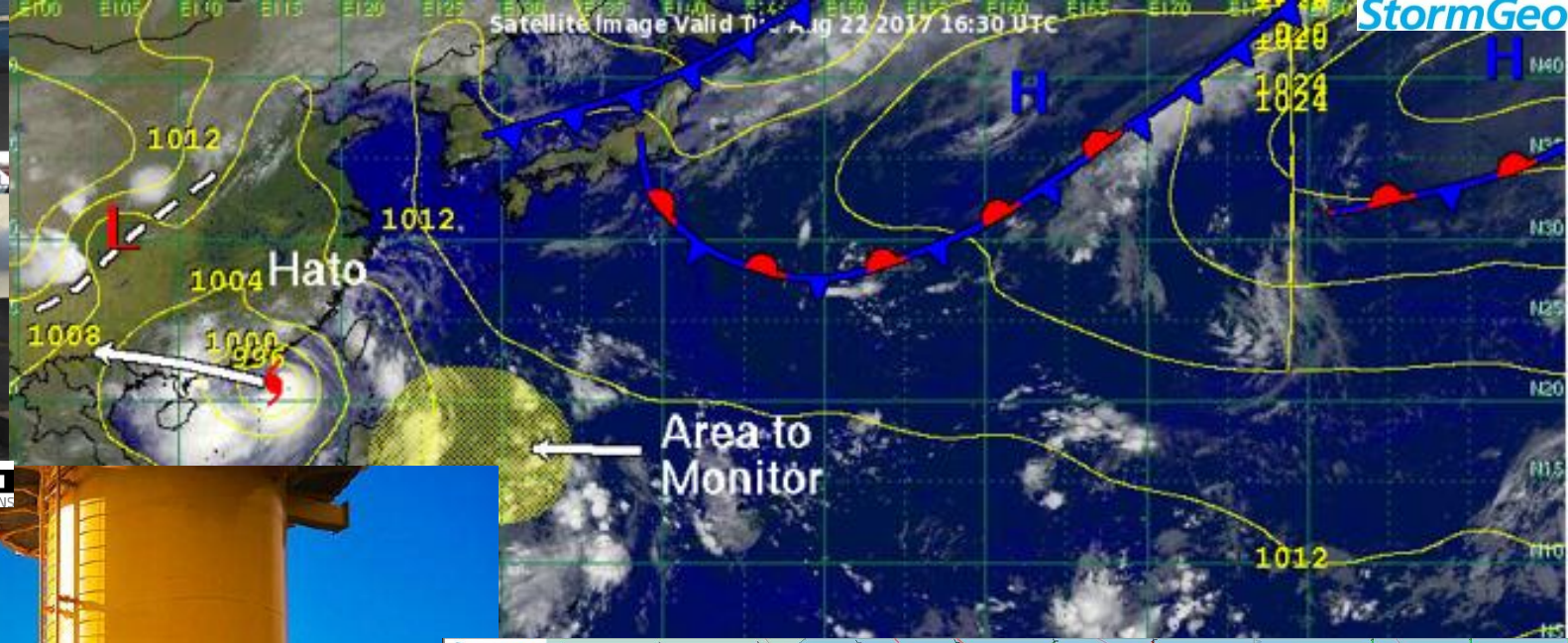
UPTIME

KONGSBERG

Kongsberg EmPower



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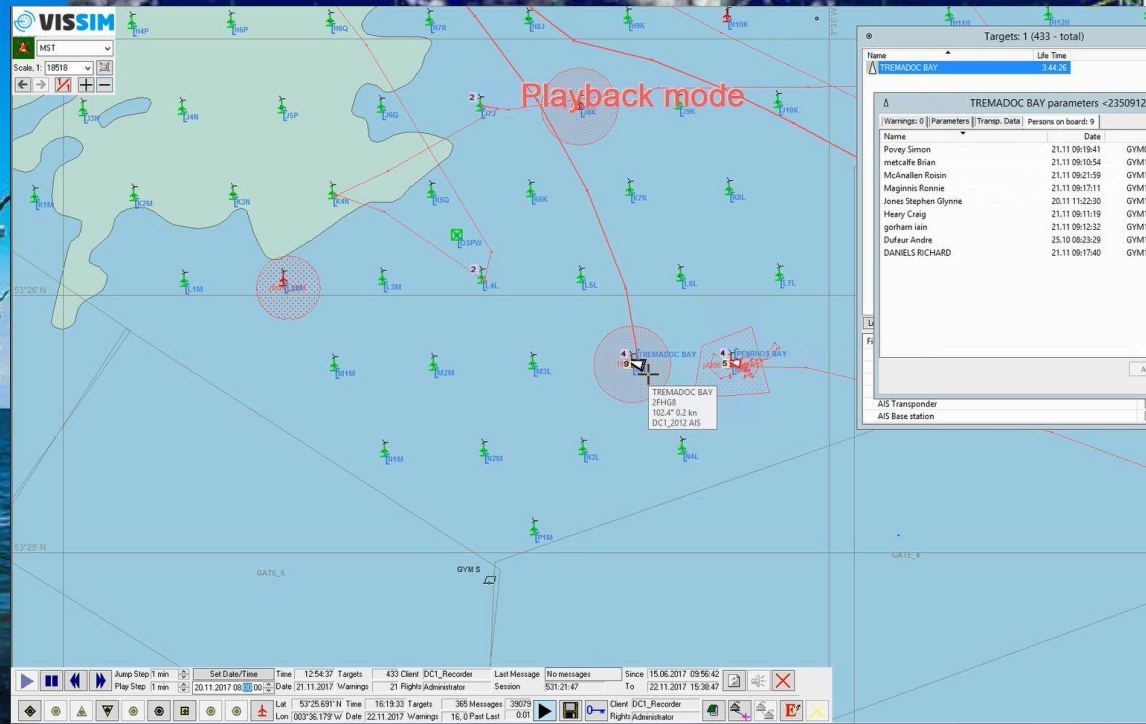
SMART SOLUTIONS



JOTUN

Adding value to offshore wind!

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