NZWEA Offshore Wind Wānanga

23 August 2022

Offshore Wind 101

Giacomo Caleffi – Copenhagen Offshore Partners

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Steps into Offshore Wind

Vindeby (1991 - Denmark)

11 x 450kW turbines

Horns Rev (2002 - Denmark)

80 x 2MW turbines

Hywind (2017 - Scotland)

5 x 6MW floating turbines

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Timeline of an Offshore Wind project

3-5 years ← → **Feasibility and development**

Approvals and licence needed to proceed

2-3 years ← → **Construction**

25-35 years ← → **Operation and maintenance**

2-3 years ← → **Decommissioning or repowering**

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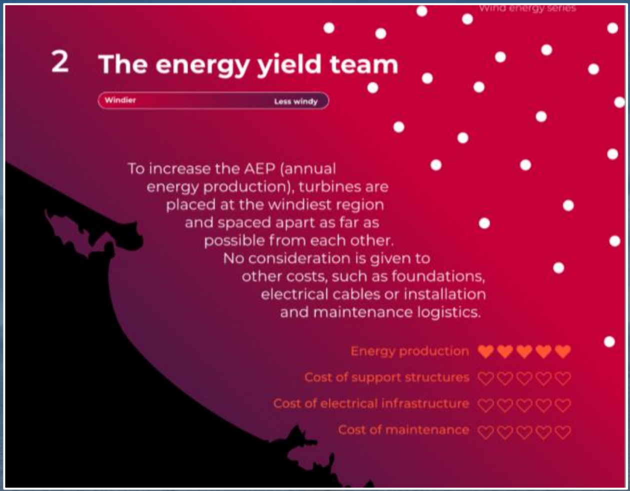
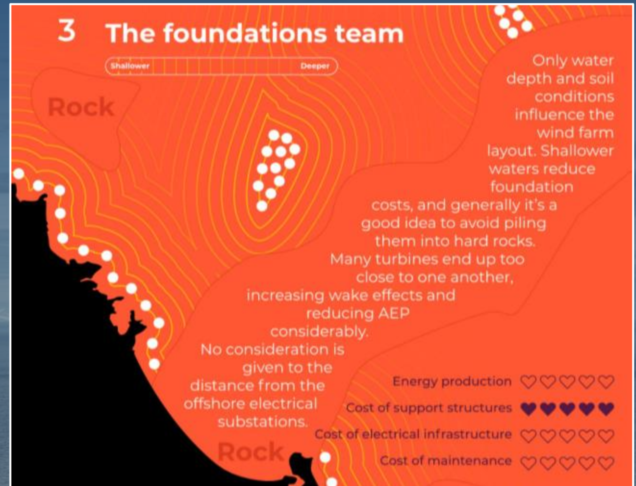
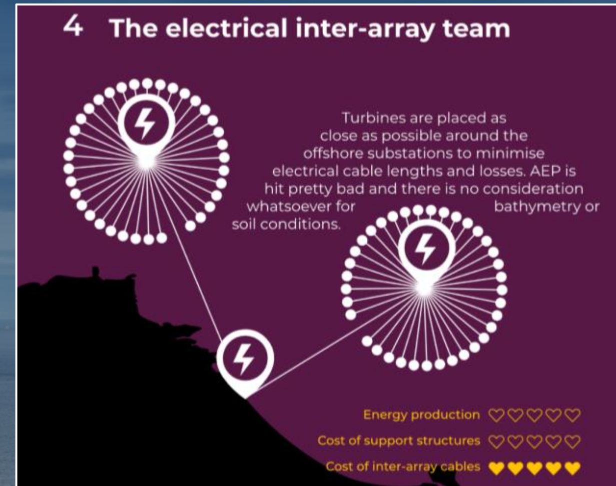
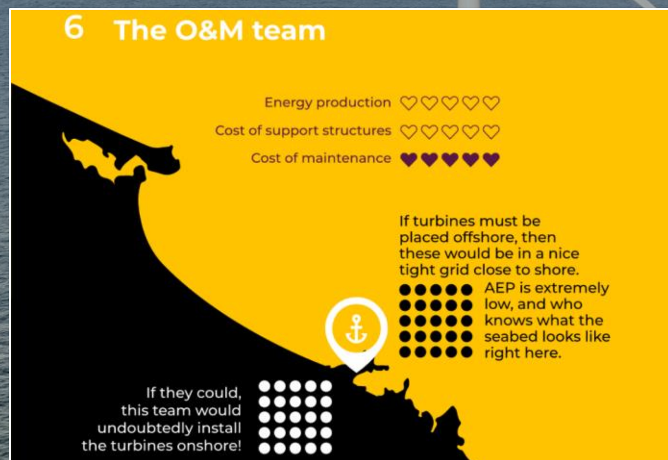
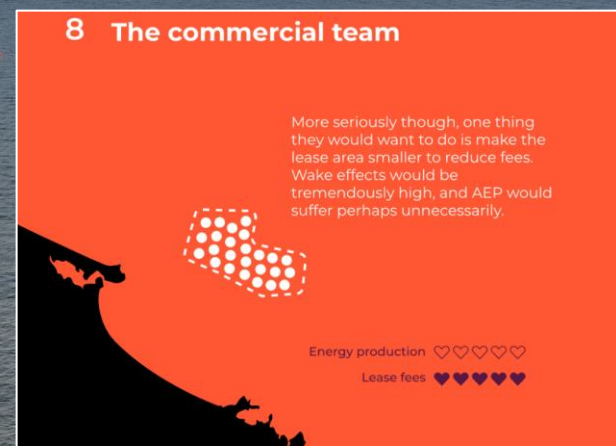
Wind farm layout





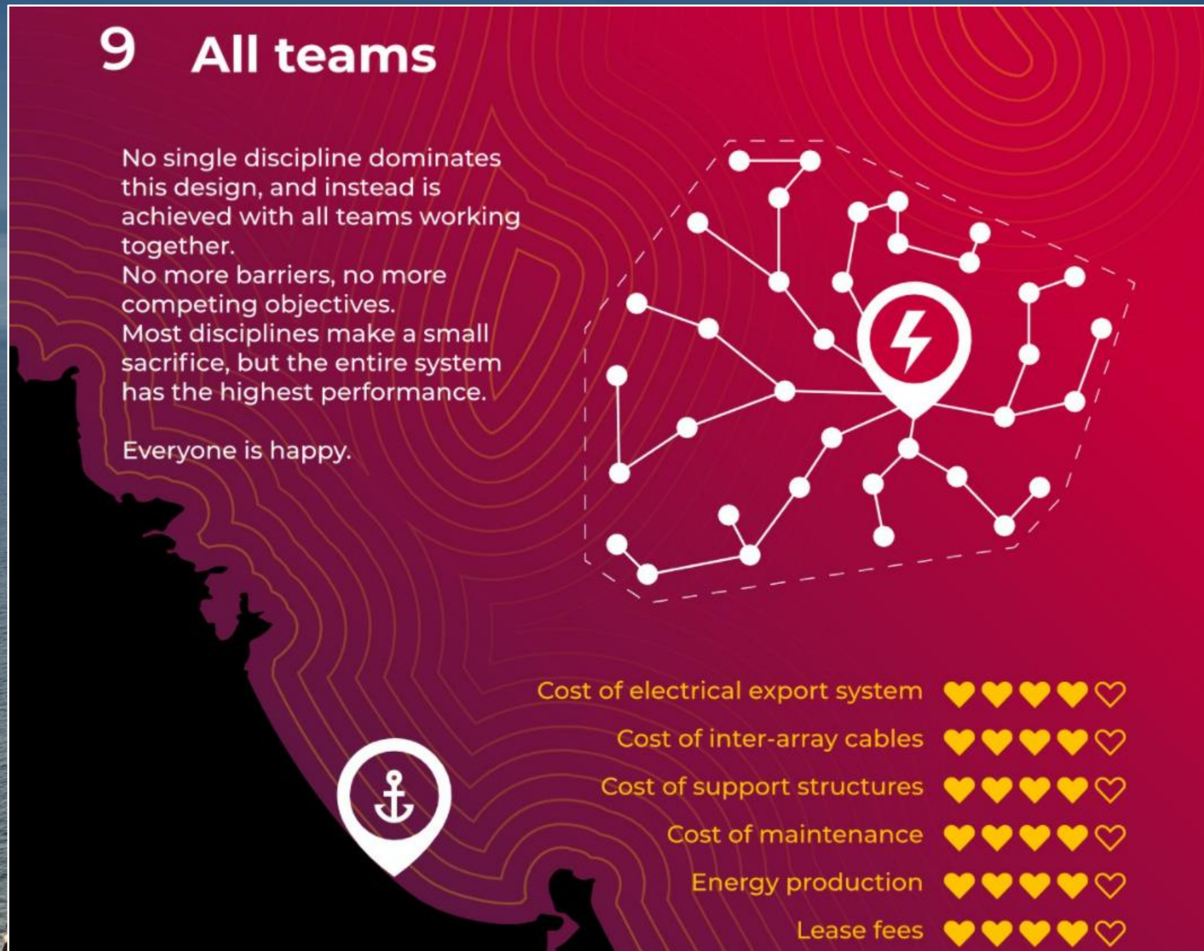






Source: Sebastian Sanchez Perez-Moreno, LinkedIn

Wind Farm layout



Source: Sebastian Sanchez Perez-Moreno, LinkedIn

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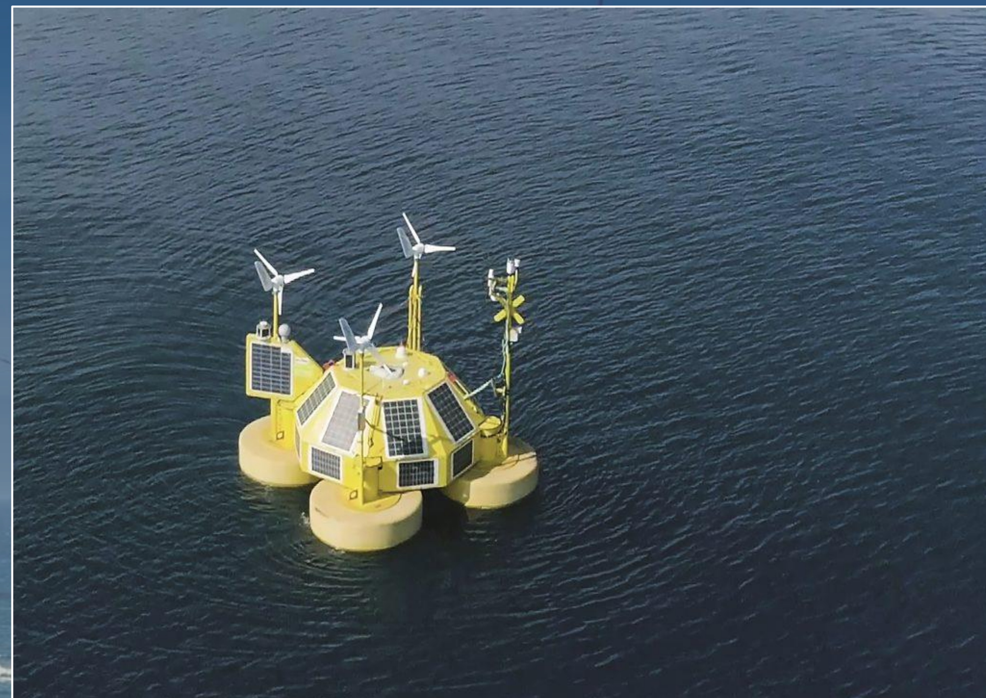
Development

Wind measurements

Metmast

Floating LiDAR



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Development

Environmental monitoring

Benthic environment

Fish

Marine mammals

Seabirds

Coastal processes

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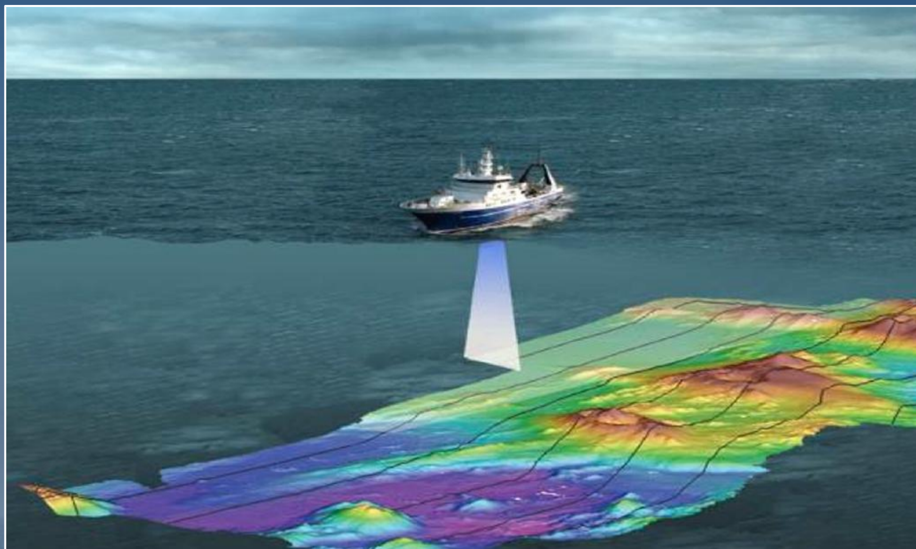
Development

Geophysical and Geotechnical

Bathymetric survey



Seabed sampling vessel

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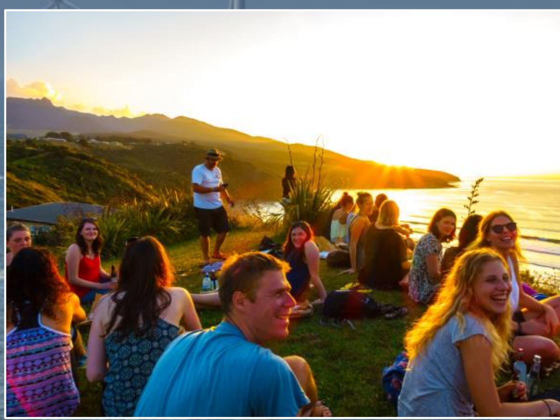
Development

Social License

Minimize visual impact

Engage local communities



Partner with iwi

Support regional economies

Coexist with fisheries

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Construction

Wind turbines

SG 14-236 DD

IEC class	I, S
Nominal power	14 MW
Rotor diameter	236 m
Blade length	115 m
Swept area	43,500 m²
Hub height	Site-specific
Power regulation	Pitch-regulated, variable speed

POWER REGULATION	Pitch regulated with variable speed
OPERATING DATA	
Rated power	15,000 kW
Cut-in wind speed	3 m/s
Cut-out wind speed	30 m/s
Wind class	IEC S or S,T
Standard operating temperature range	from -10°C to +25°C* with a de-rating interval from +25°C to +45°C *high ambient temperature variant available
SOUND POWER	
Maximum	118dB(A)
ROTOR	
Rotor diameter	236 m
Swept area	43,742 m²
Aerodynamic brake	three blades full feathering

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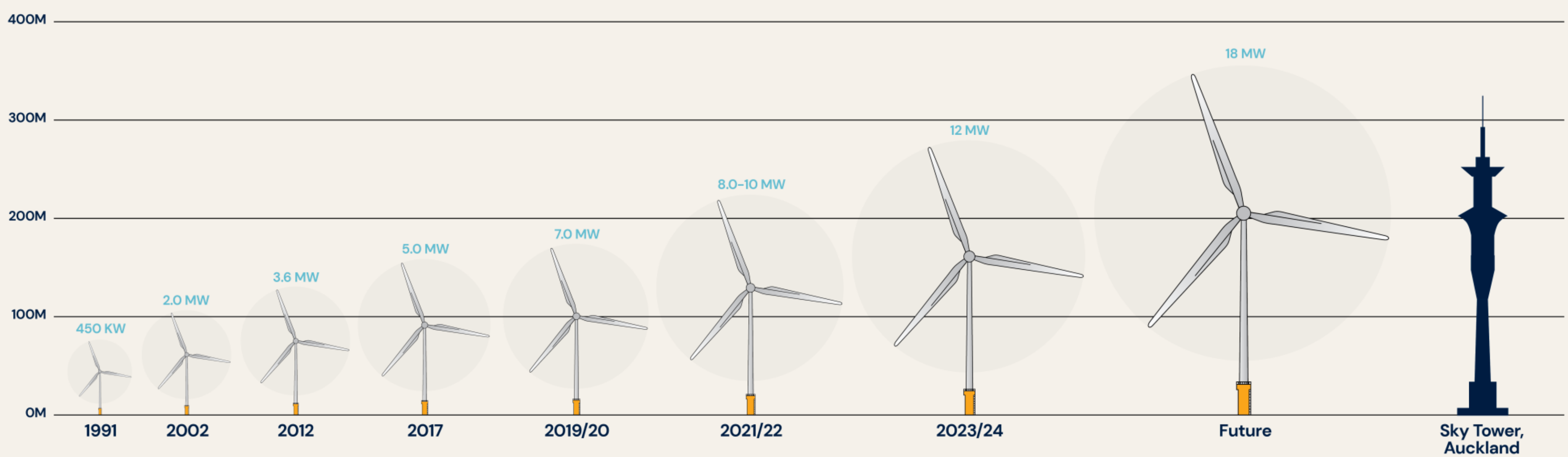
Construction

Wind turbines



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Construction

Foundations

Monopile

Jacket

Floating

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Construction

Offshore substation

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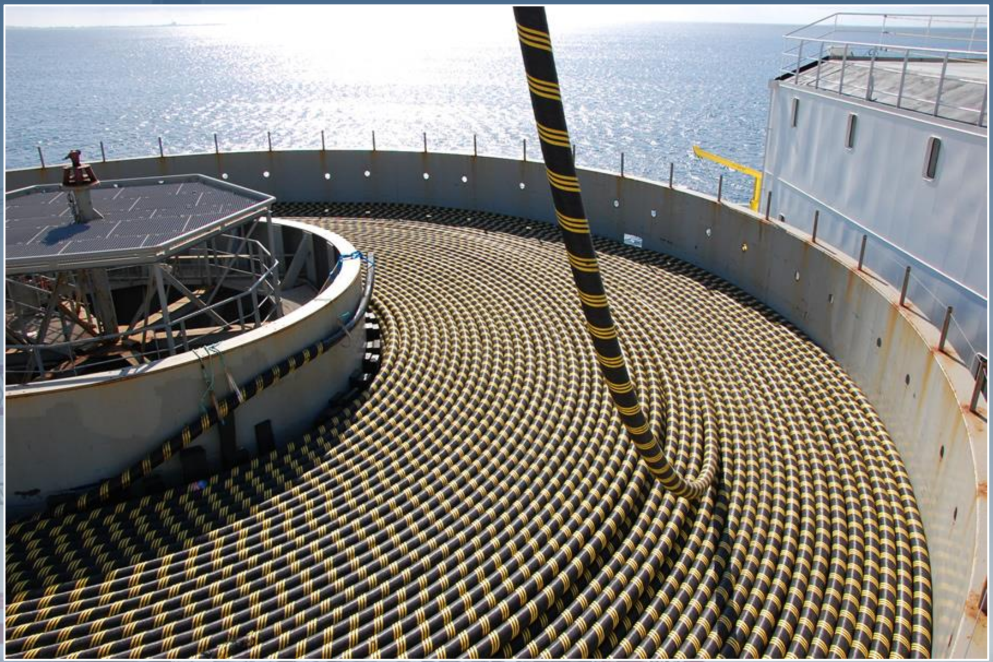
Construction

Cables



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Vessels

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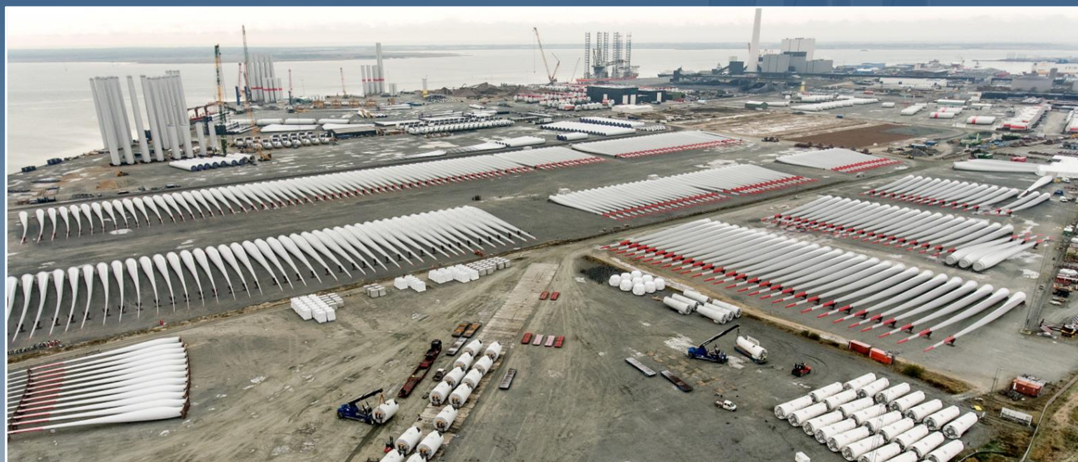
Construction

Ports

Construction and marshalling port



Operations and Maintenance port

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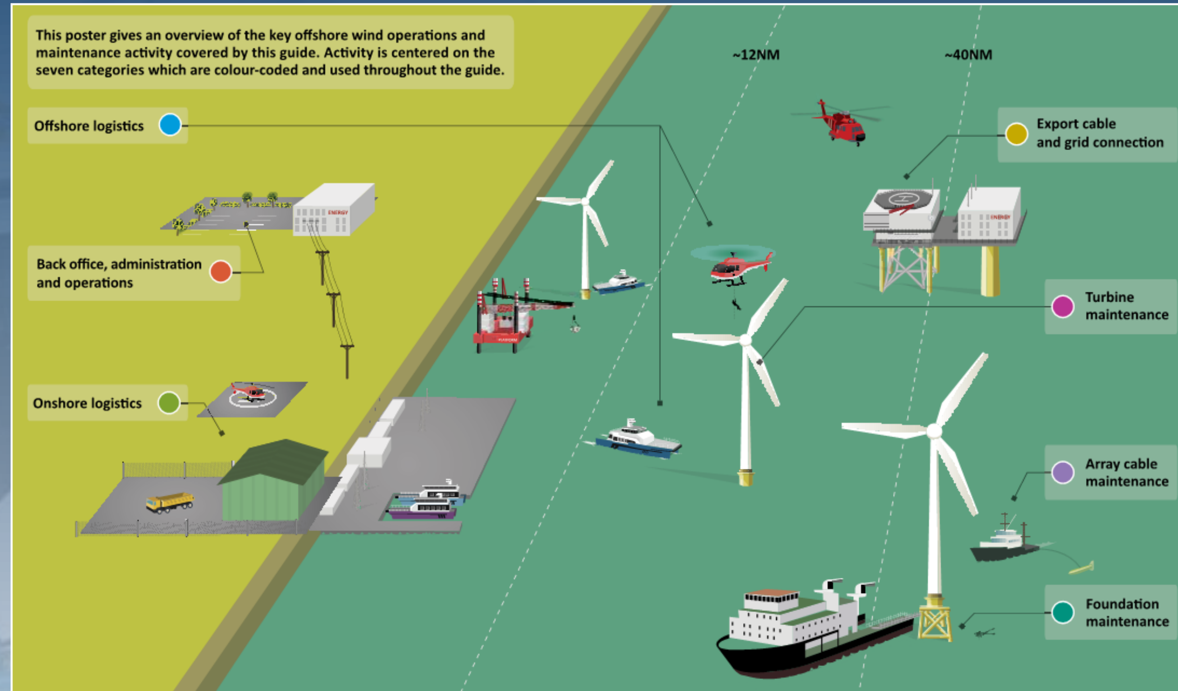
Operations and Maintenance

- Onshore logistics
- Workboats
- Aviation
- Crane barge services
- Offshore accommodation
- Turbine maintenance
- Turbine spare parts
- Offshore substation maintenance
- Export cable surveys and repairs
- Onshore electrical
- Array cable surveys and repairs
- Scour and structural surveys
- Foundation repairs
- Lifting, climbing and safety equipment
- SCADA and condition monitoring
- SAP and marine coordination
- Weather forecasting
- Environmental monitoring
- Administration



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Thank You

For further information:

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