National Shipbuilding Office

Session 4

Harnessing the Offshore Renewables Opportunity

Harnessing the Offshore Renewables Opportunity

Introduction

Rod Paterson, NSO Deputy Director

CATAPULT
Offshore Renewable Energy

Supporting Supply Chain Growth

Andy Macdonald

14th March 2023

Credit: Equinor Hywind Floating Offshore Wind Farm

The Offshore Renewable Energy Catapult

The UK's leading technology innovation and research centre for offshore renewable energy

Mission: to accelerate the creation & growth of UK companies in the offshore renewable energy sector.

- Unique facilities, research, engineering capabilities
- Bringing together innovators, industry & academia
- Accelerating creation and growth of UK companies
- Reducing cost and risk in renewable technologies
- Growing UK economic value
- Enabling the transition to a low carbon economy

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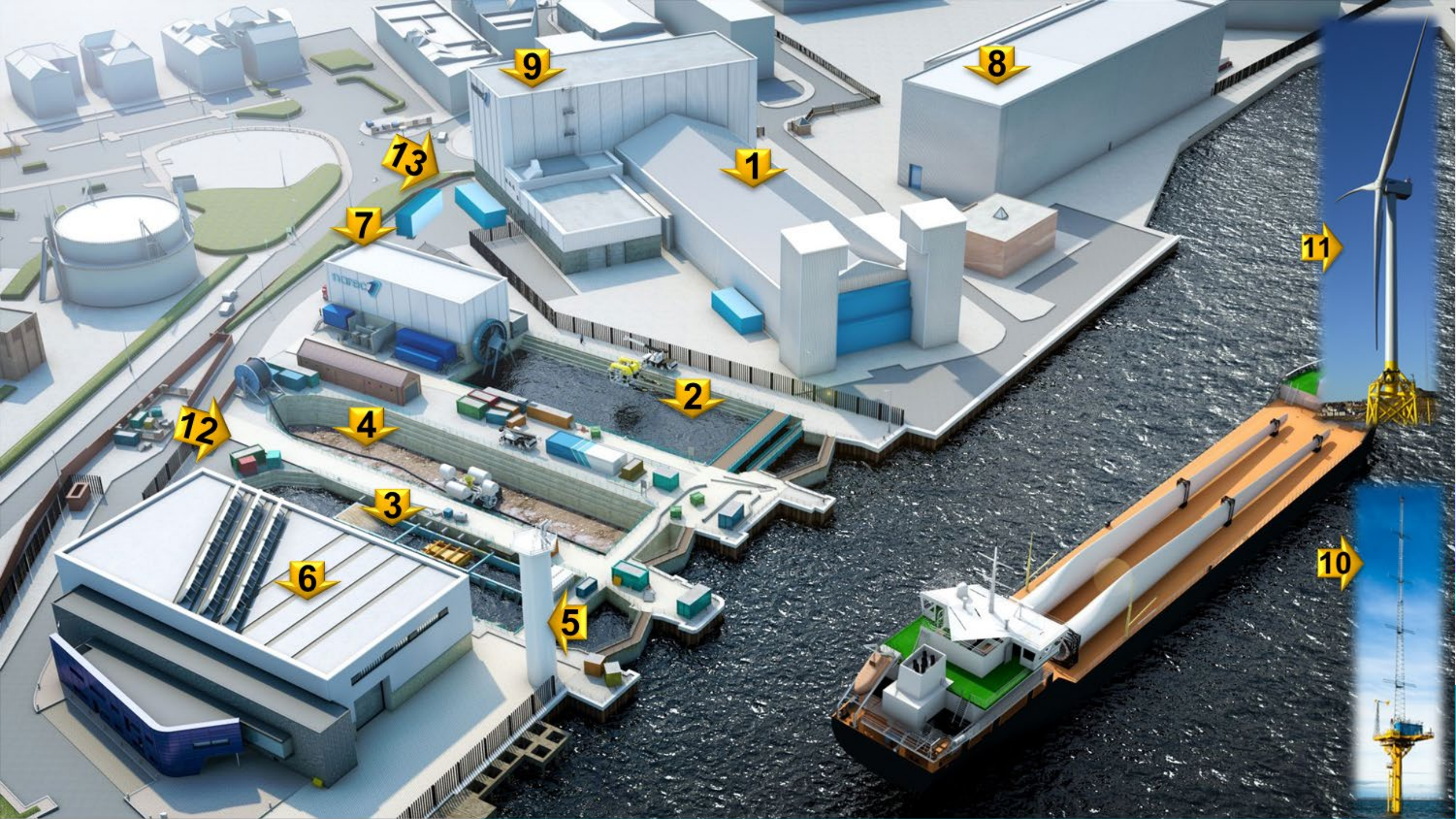
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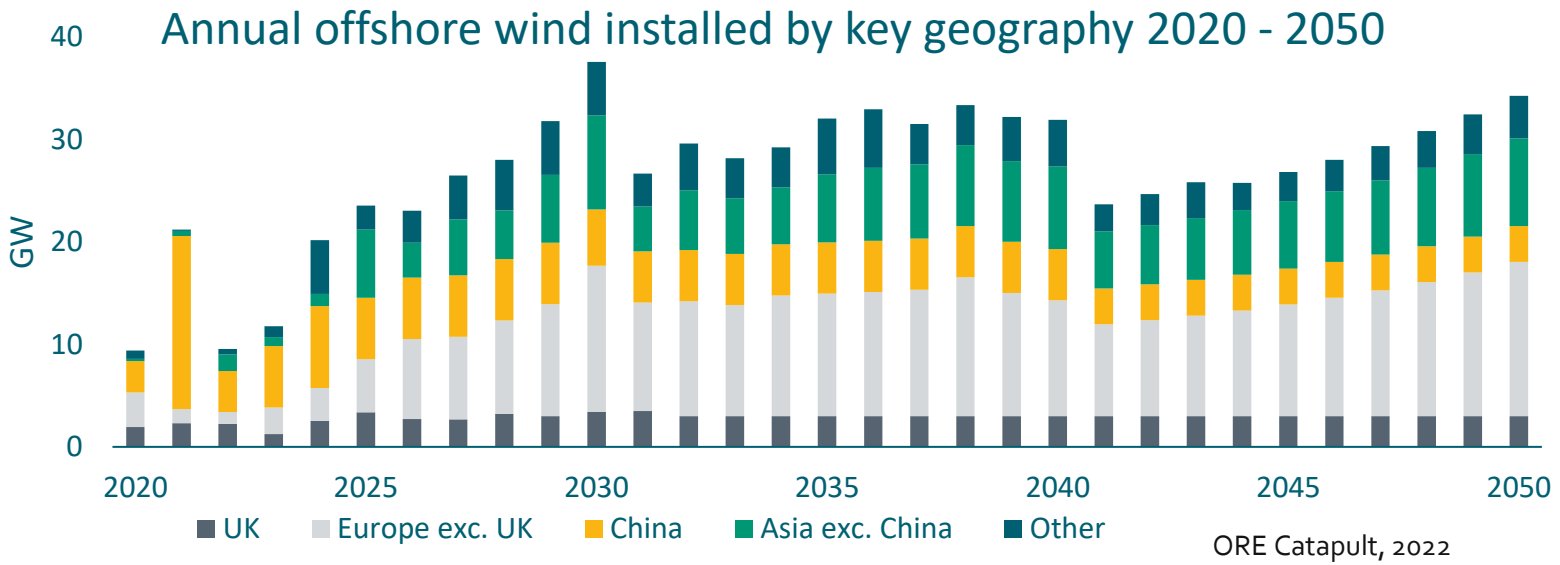
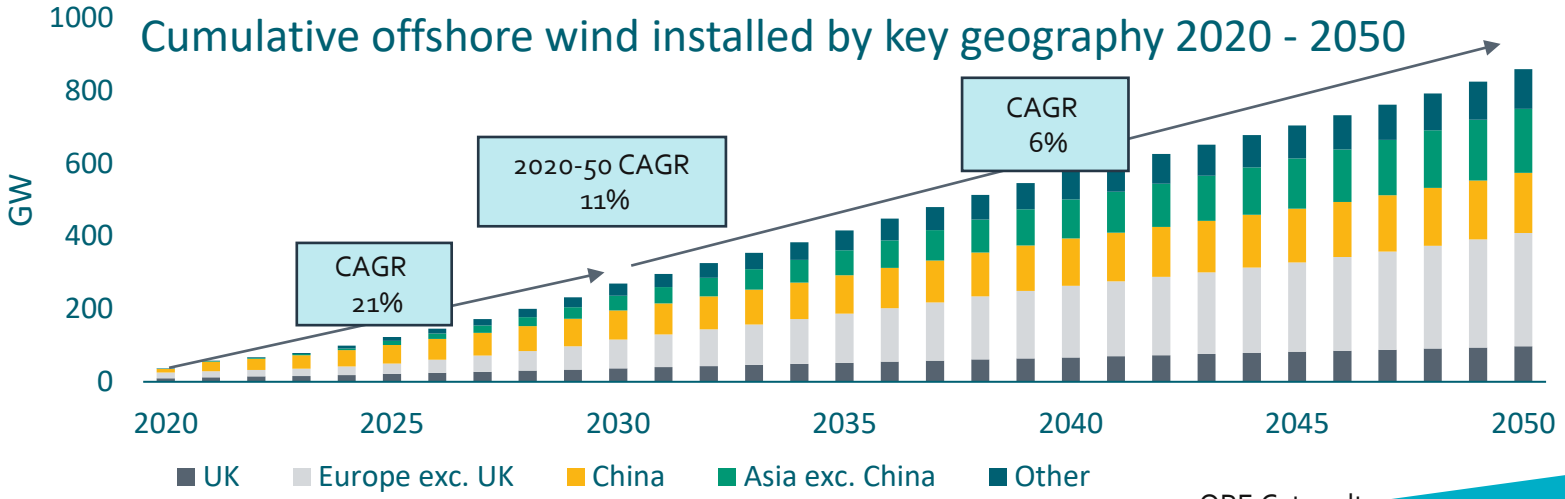
Offshore wind global capacity forecast



ORE Catapult, 2022



ORE Catapult, 2022

- Annual installations increase from ~22GW in 2021 to 36GW in 2030 and 34GW in 2050

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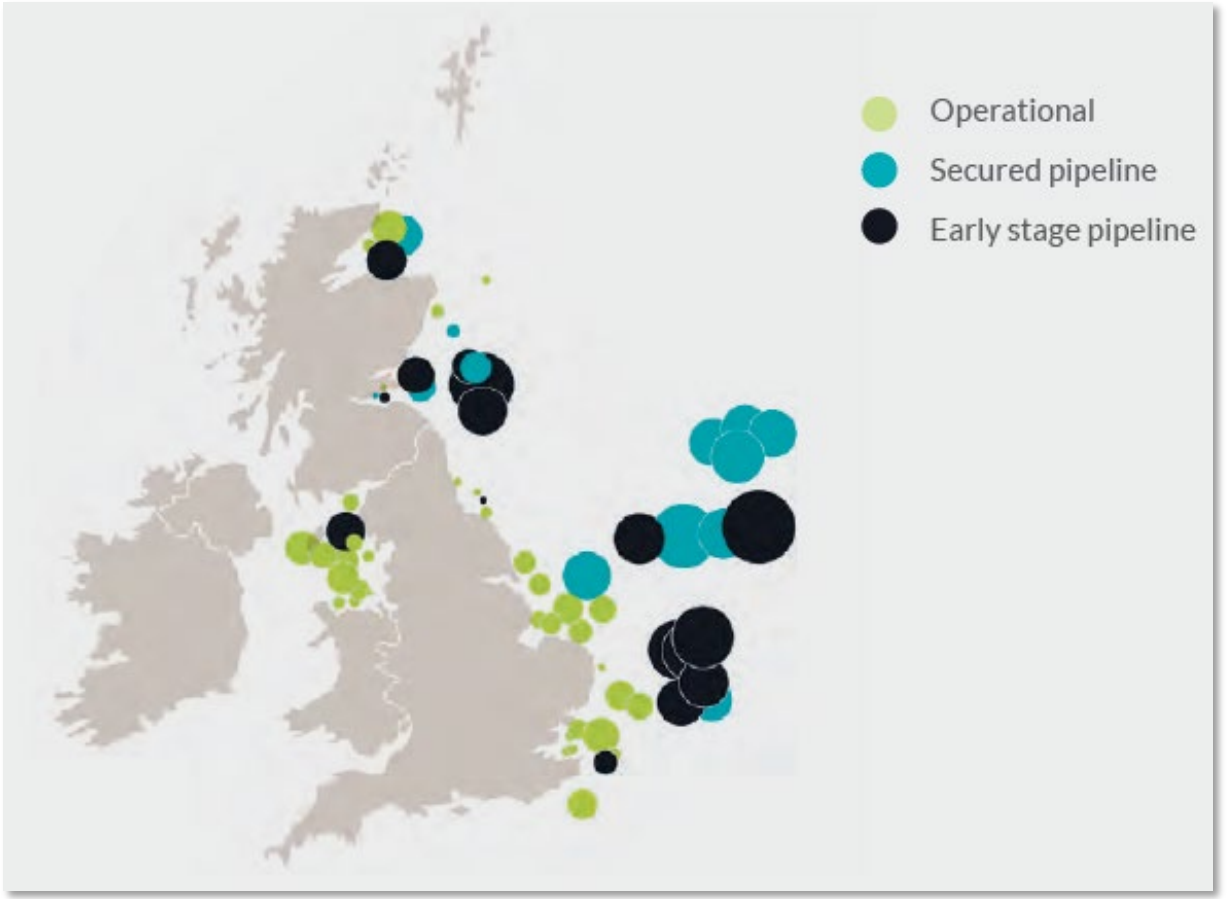
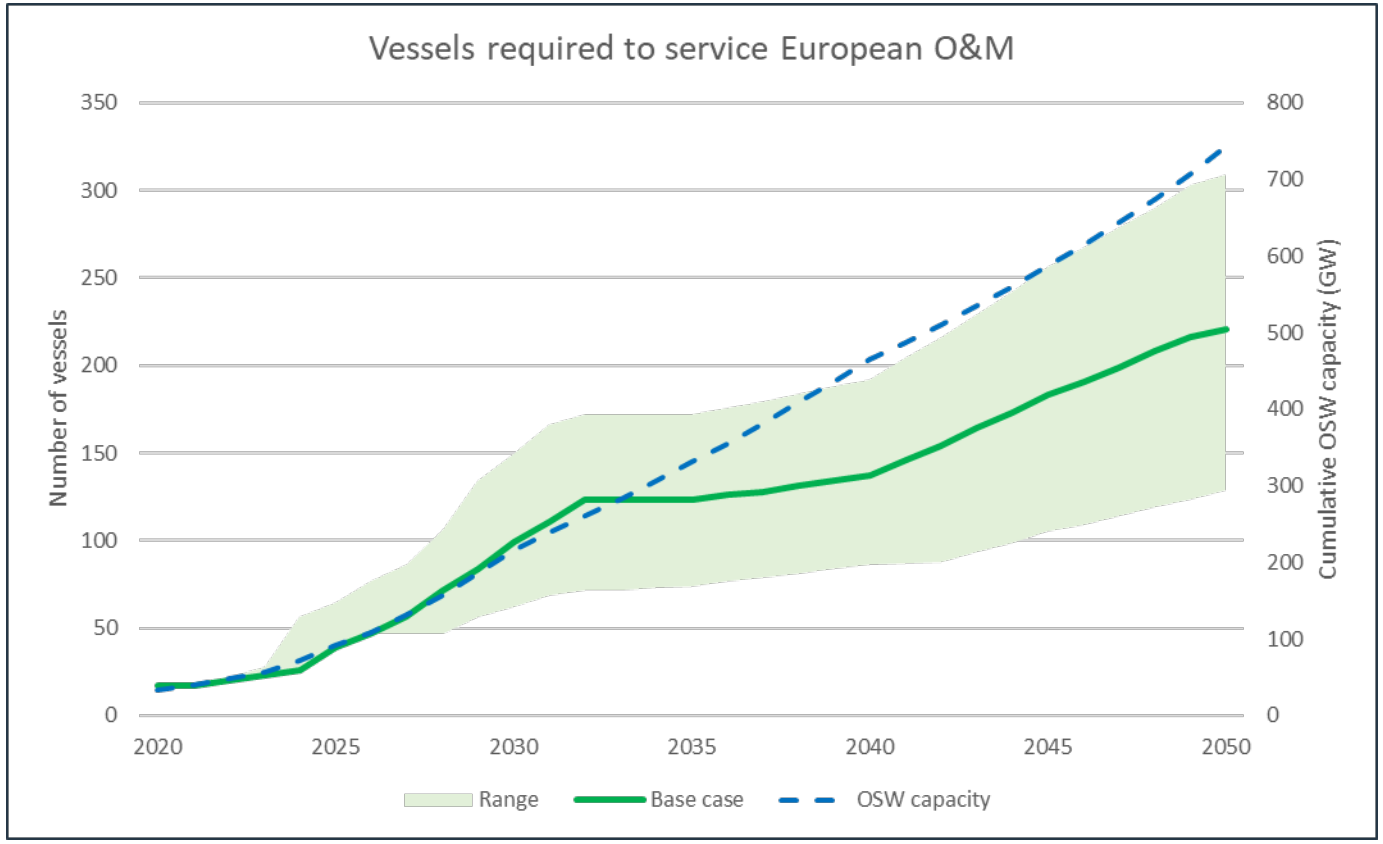
Vessel Demand Factors

- Increased deployment
  - Increased installation rate and operational wind farms
- Distance from shore
  - Change from CTVs to SOVs
- Deeper waters – floating wind
  - New installation and O&M methods required



SOV Vessel Demand to 2050

- Offshore wind still a rapidly expanding industry, significant vessel newbuilds needed to support this.
- Between 62-149 vessels required in European Waters by 2030, and up to 309 by 2050.
- None of current UK operated SOVs built in the UK.
- None operating zero emission propulsion technologies.



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Offshore Renewable Energy

Supply Chain Support

How can Catapult help?

Supply chain growth needs technology and company development with both underpinned by innovation.

- Research
- Test and validation
- Commercialisation

Supply Chain Programmes

Companies at different stages require different types of support:

- Launch Academy for early stage
- F4OR to get ready to win work
- OWGP to enable company growth

LAUNCH ACADEMY

F4OR

Offshore Wind Growth Partnership

Introduction to OWGP

Offshore Wind Growth Partnership

OWGP is a long-term business transformation programme for the UK offshore wind supply chain

Funding:

- OWIC (offshore wind developers) are funding OWGP.
- OWGP will leverage regional and national public funding

Delivery:

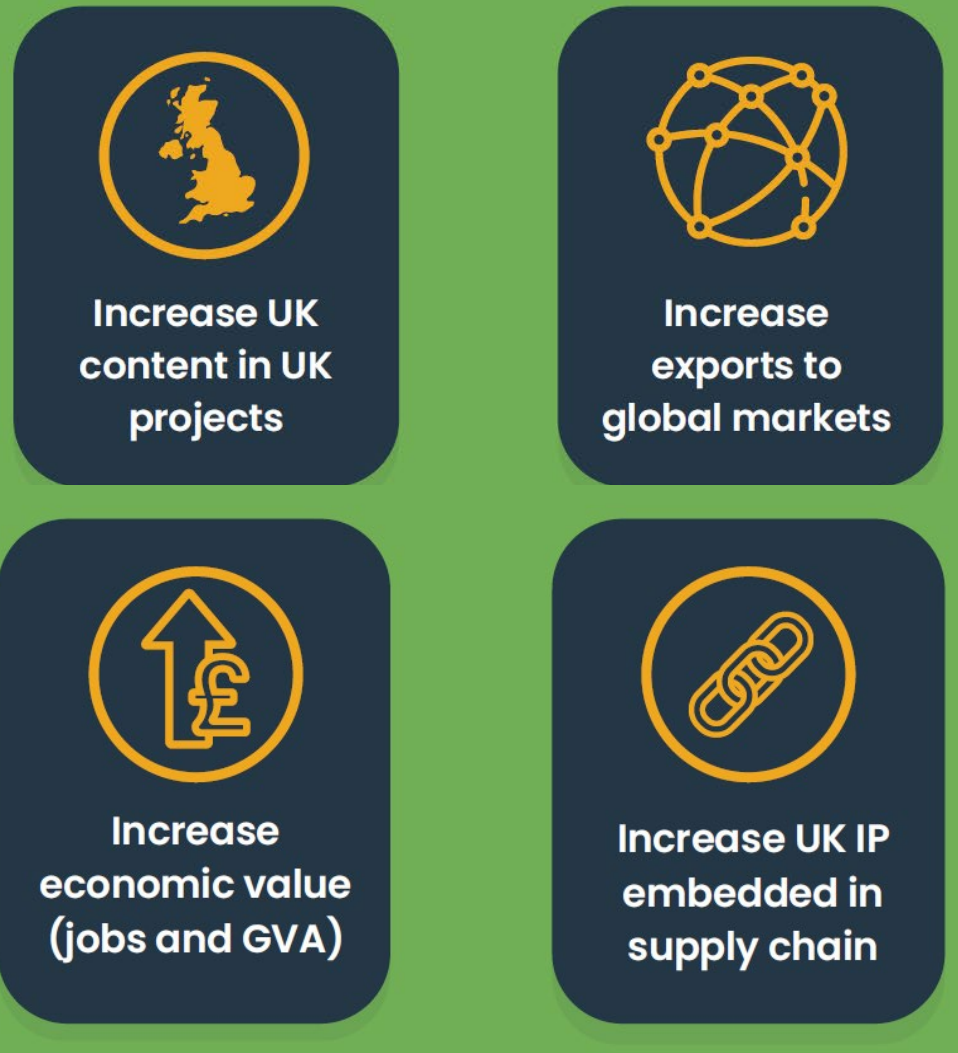
Budget of £100m over ten years to provide:

- **Business Transformation** – structured programmes to help companies grow.
- **Grant Funding** – for developing new products, services, capacity and capability

Funded by Offshore Wind Industry Council

Delivered by CATAPULT Offshore Renewable Energy

The aims of OWGP are:



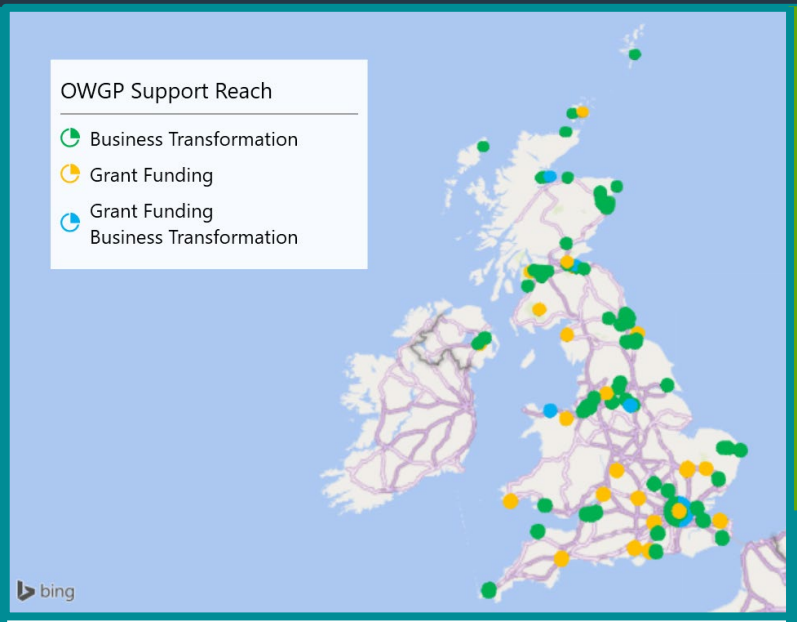
OWGP Programmes

Offshore Wind Growth Partnership

Grant Funding

Innovation Grants
£25k - £100k

Development Grants
£100k - £1m



- Over £13m funded to date
- 200 companies supported
- Next funding call from May ‘23

Business Transformation

WEST (Wind Expert Support Toolkit)
Foundation - provision of specialist advice, market intelligence and insight into the sector for all businesses.

Sharing in Growth Offshore Wind
Advanced - embedding proven approaches to drive organisational improvements with exiting OSW supply chain.

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ENGAGE WITH US

GLASGOW

BLYTH

LEVENMOUTH

GRIMSBY

ABERDEEN

CHINA

LOWESTOFT

WALES

CORNWALL

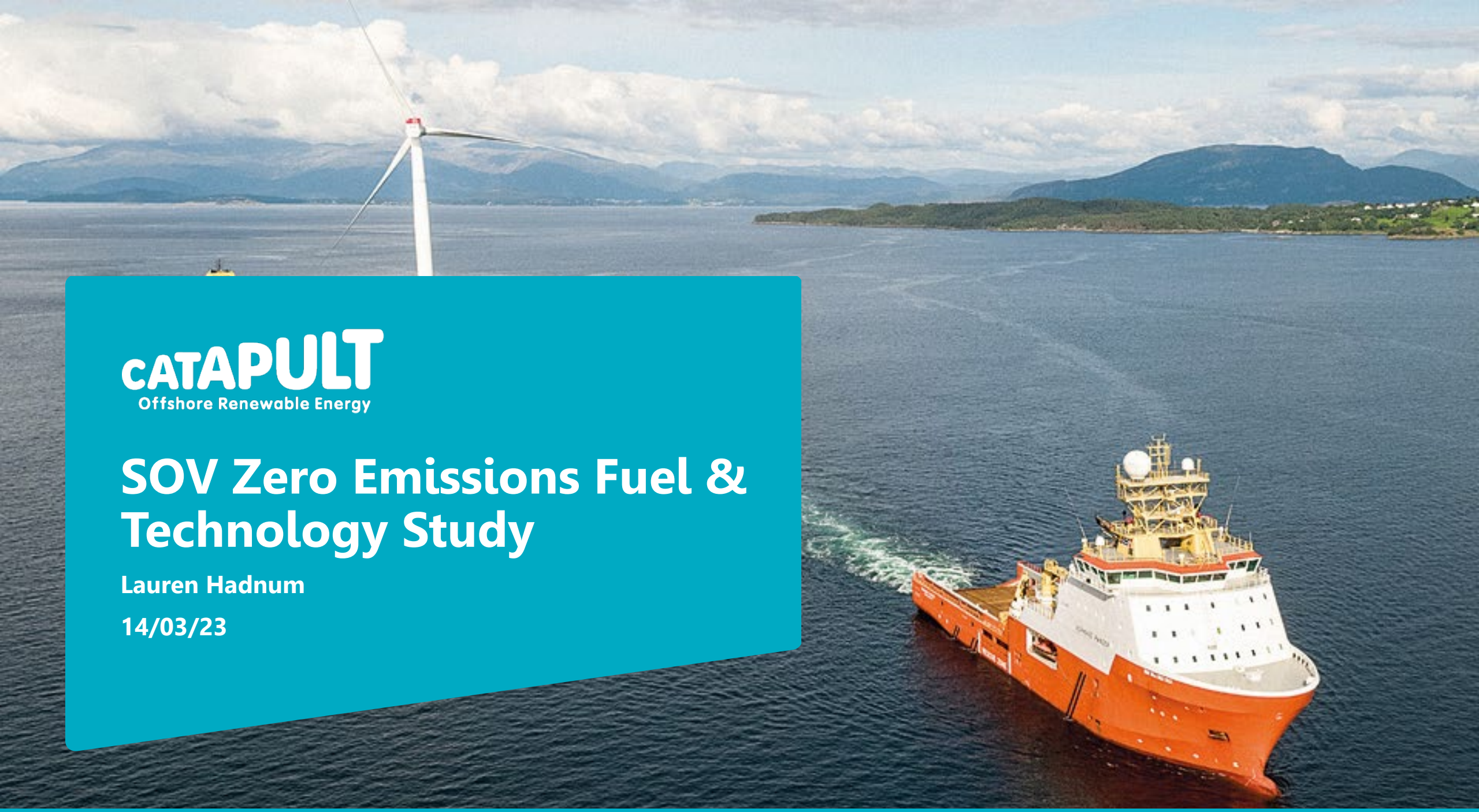
CATAPULT
Offshore Renewable Energy

Morgan, Mona, and Morven Joint Venture

John Davies

14 March 2023

Partners in UK offshore wind



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SOV Zero Emissions Fuel & Technology Study

Lauren Hadnum

14/03/23

Credit: Equinor Hywind Floating Offshore Wind Farm

Project Partners

bp

EnBW

National Shipbuilding Office

University of Strathclyde Glasgow

CATAPULT Offshore Renewable Energy

mtc Manufacturing Technology Centre

The University of Edinburgh

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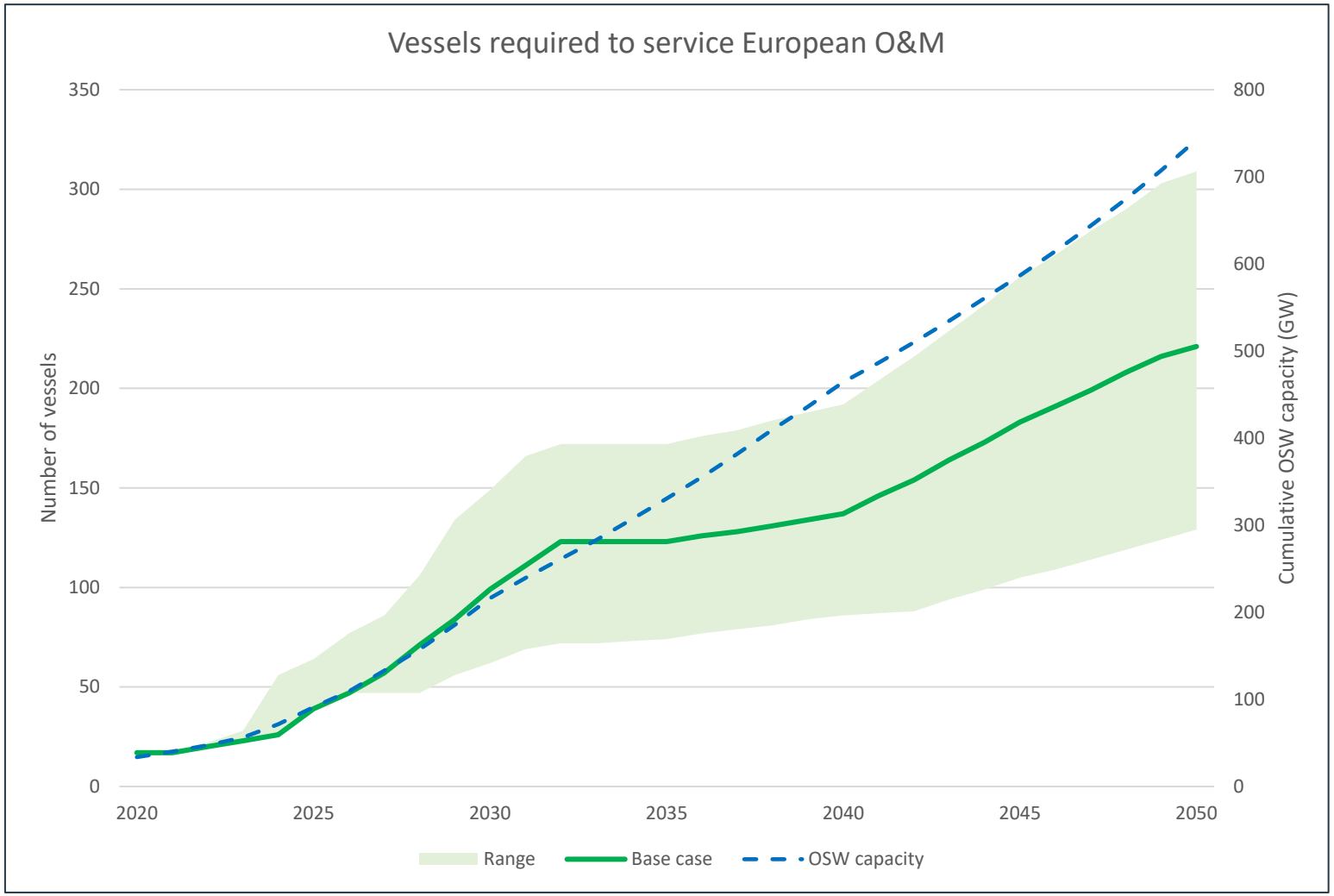
SOV Opportunity & Challenge

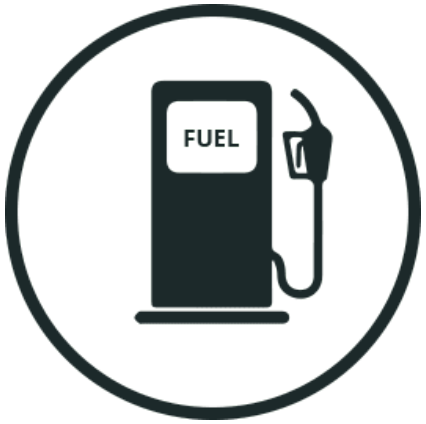
- Offshore wind still a rapidly expanding industry, significant vessel newbuilds needed to support this.
- Between 62-149 vessels required in European Waters by 2030, and up to 309 by 2050.
- No SOVs currently servicing UK windfarms were built in the UK.
- No SOVs currently servicing UK windfarms utilise zero emission propulsion technologies.



A comprehensive study of all aspects of developing and deploying a “greener” SOV from the UK

WP1: Legislation & Regulation

ORE Catapult:
John Walker, Molly Isaacs, & James Mantell

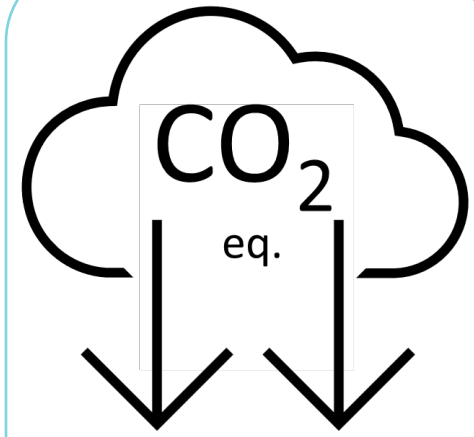


WP2: Energy Sources

University of Edinburgh:
John Low

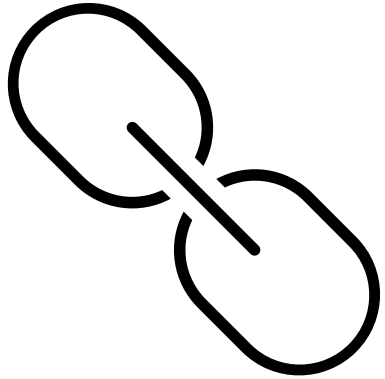
WP3: Technology

University of Strathclyde:
Byongug Jeong



WP4: Emissions

ORE Catapult:
Lewis Stevenson



WP5: Supply Chain

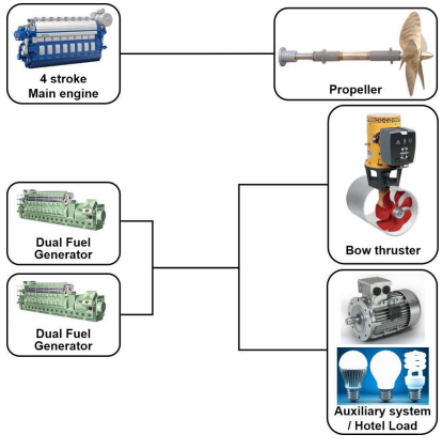
Manufacturing Technology Centre:
Cy Keogh

Technology review

Fuels:	
Biodiesel	Battery Electric
LNG	Hydrogen
Methanol	LOHC
Ammonia	Hybrids

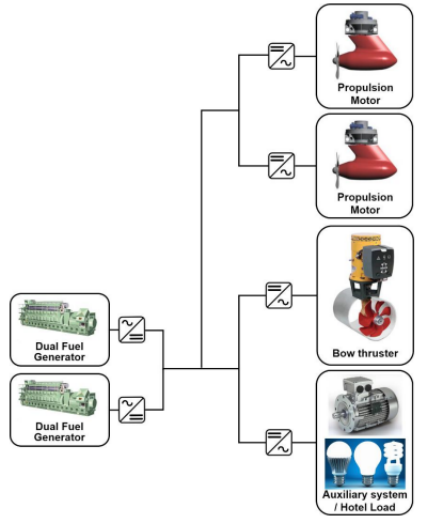
Scenario 1~4:

Dual fuel ICE with LNG/Biodiesel/Methanol/Ammonia



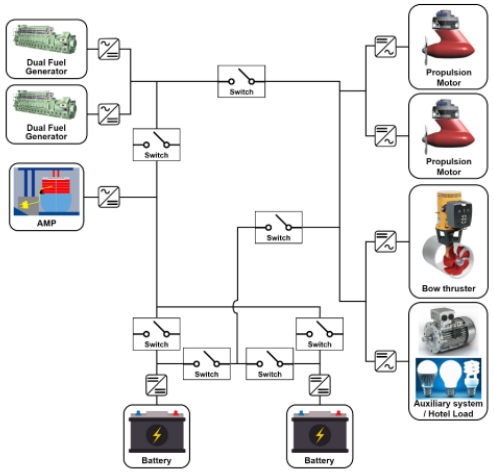
Scenario 5~8:

Dual fuel generator with LNG/Biodiesel/Methanol/Ammonia

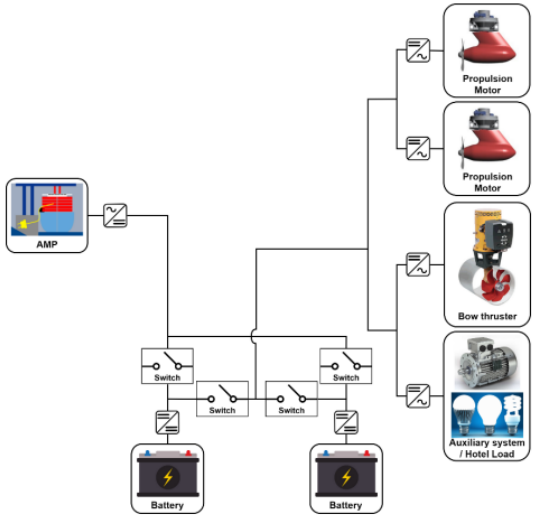


Scenario 9~12:

Diesel generator with
LNG/Biodiesel/Methanol/Ammonia and Battery

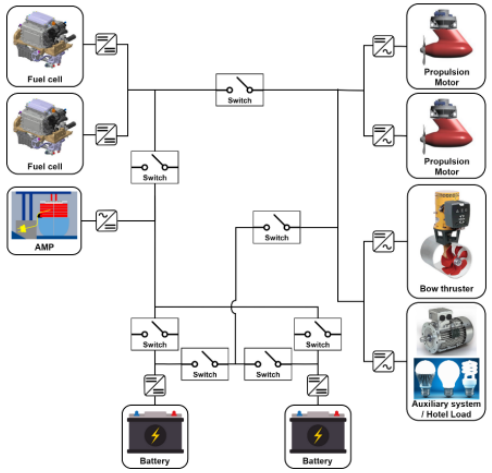


Scenario 13: Full Battery



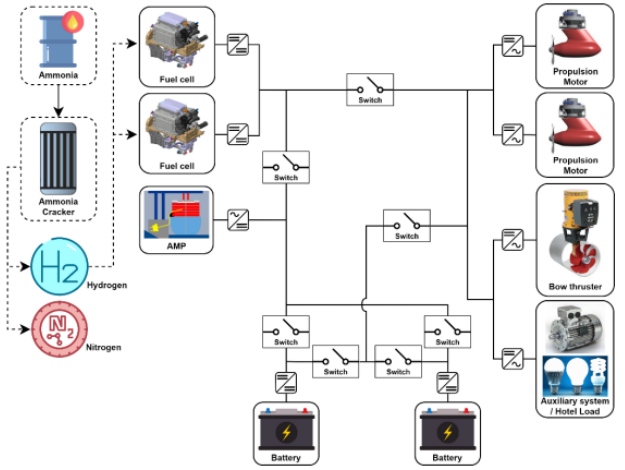
Scenario 14:

Fuel cell with Hydrogen and Battery



Scenario 15:

Fuel cell with Ammonia, Cracking system and Battery

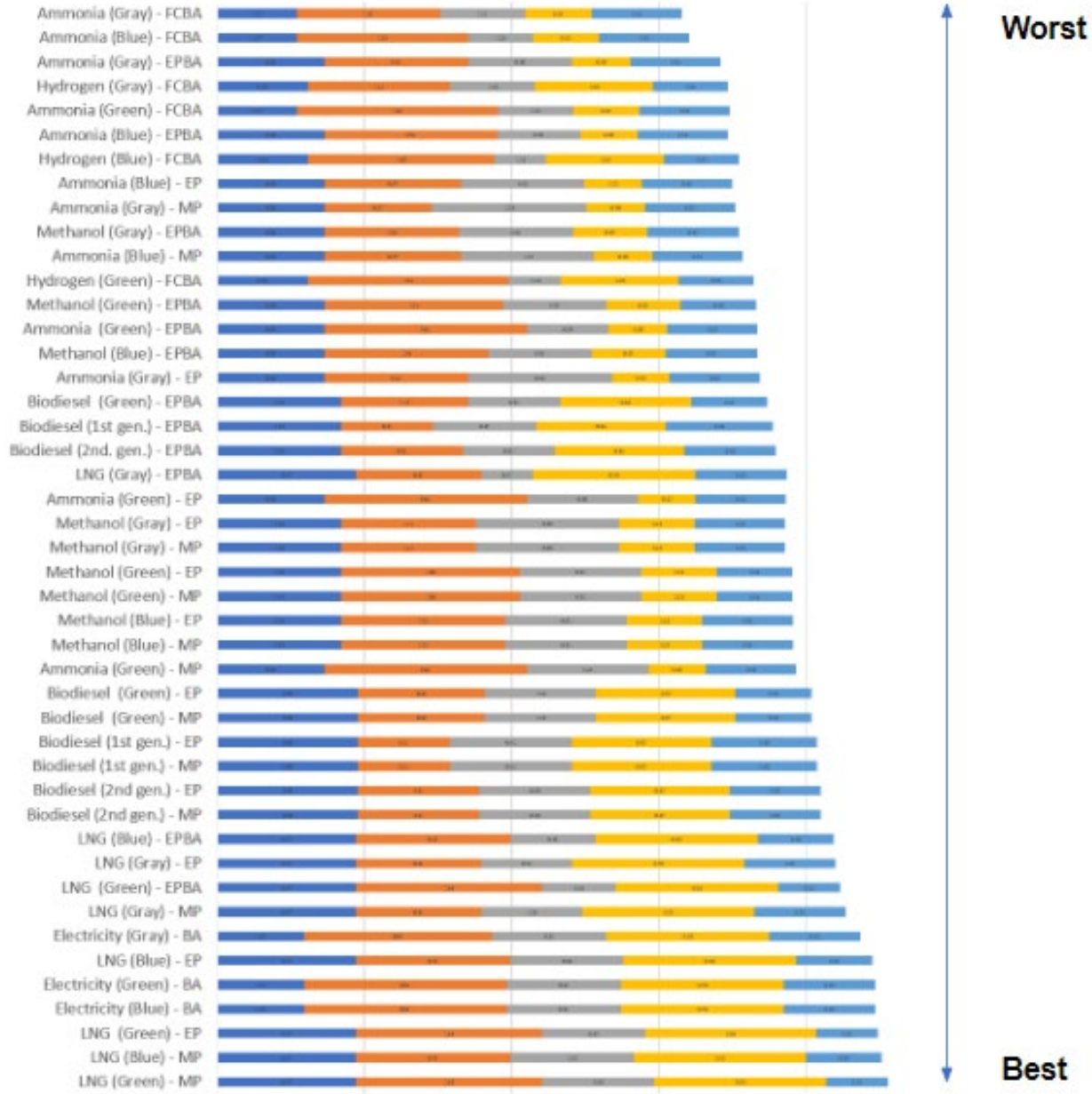


Technology selection

- We've completed a process of assessing the available technologies against a range of technical, environmental, economic, safety and fuel availability factors, based on a need for TRL6 by 2026.

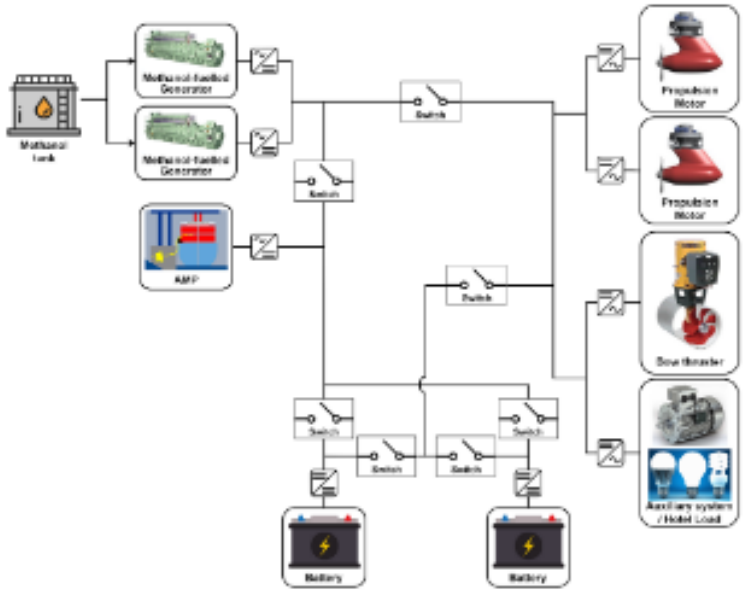
- Aligning with industry trends we see LNG, electric and biodiesel vessels score well.

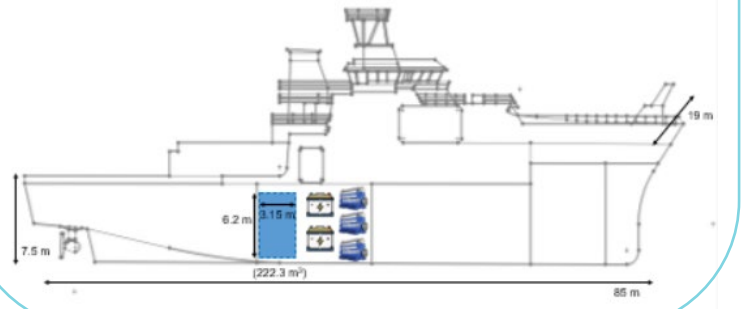
- However, LNG and biodiesel not considered further due to:
  - Minimal technical merit – these are available.
  - Lack of production and port availability in Scotland.
  - Residual environmental impact.
  - Bio sourced fuels not preferred for maritime usage.



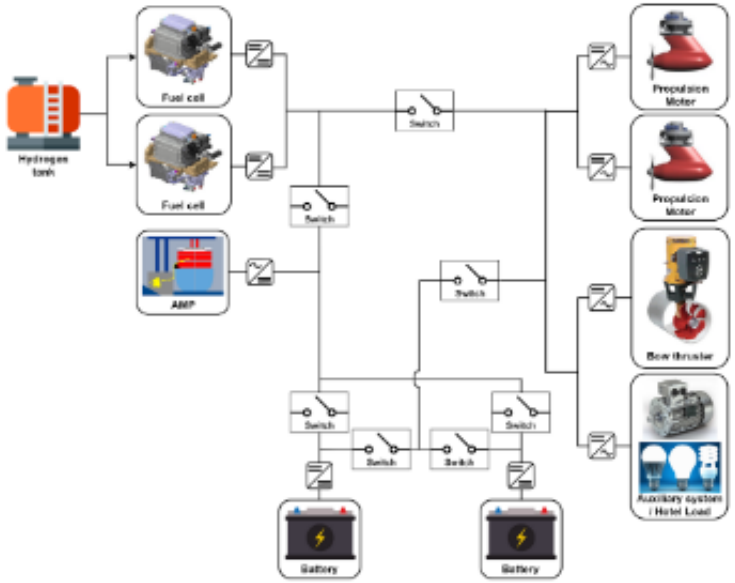
Technologies we're progressing to conceptual design

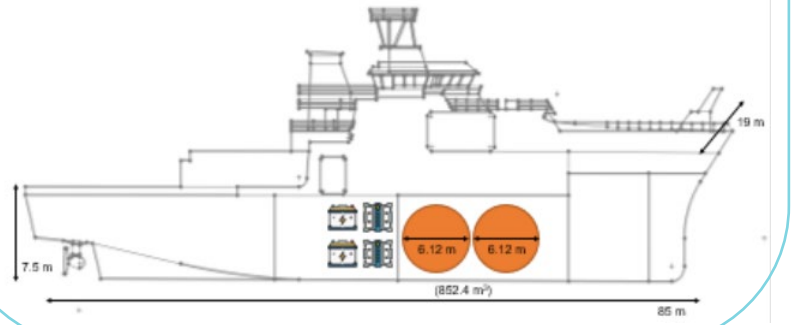
1st: Battery electric architecture with a small methanol back up



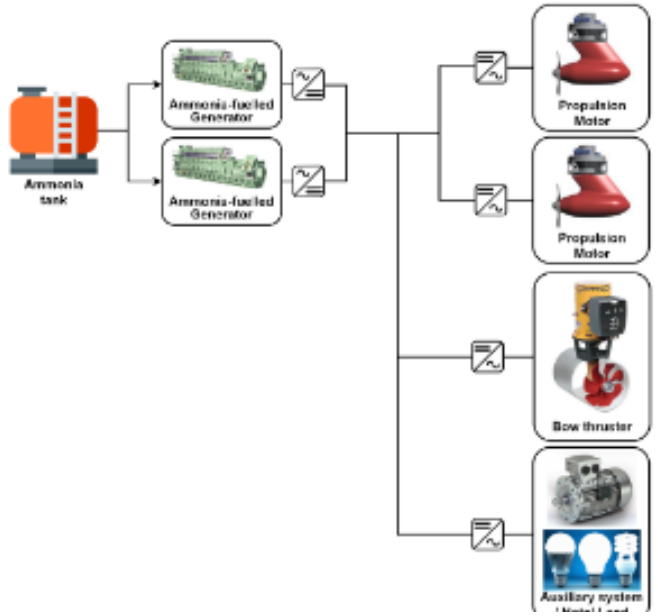


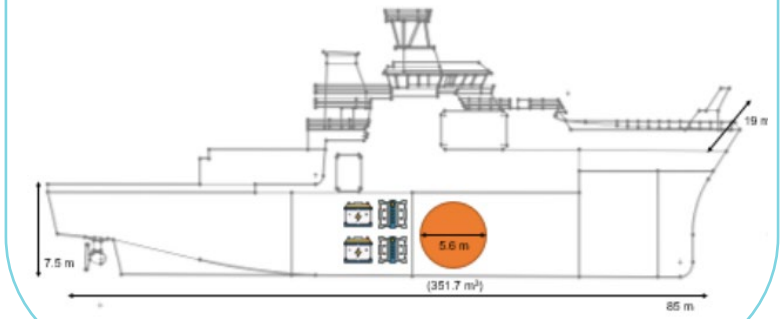
2nd: Hydrogen Fuel Cell architecture



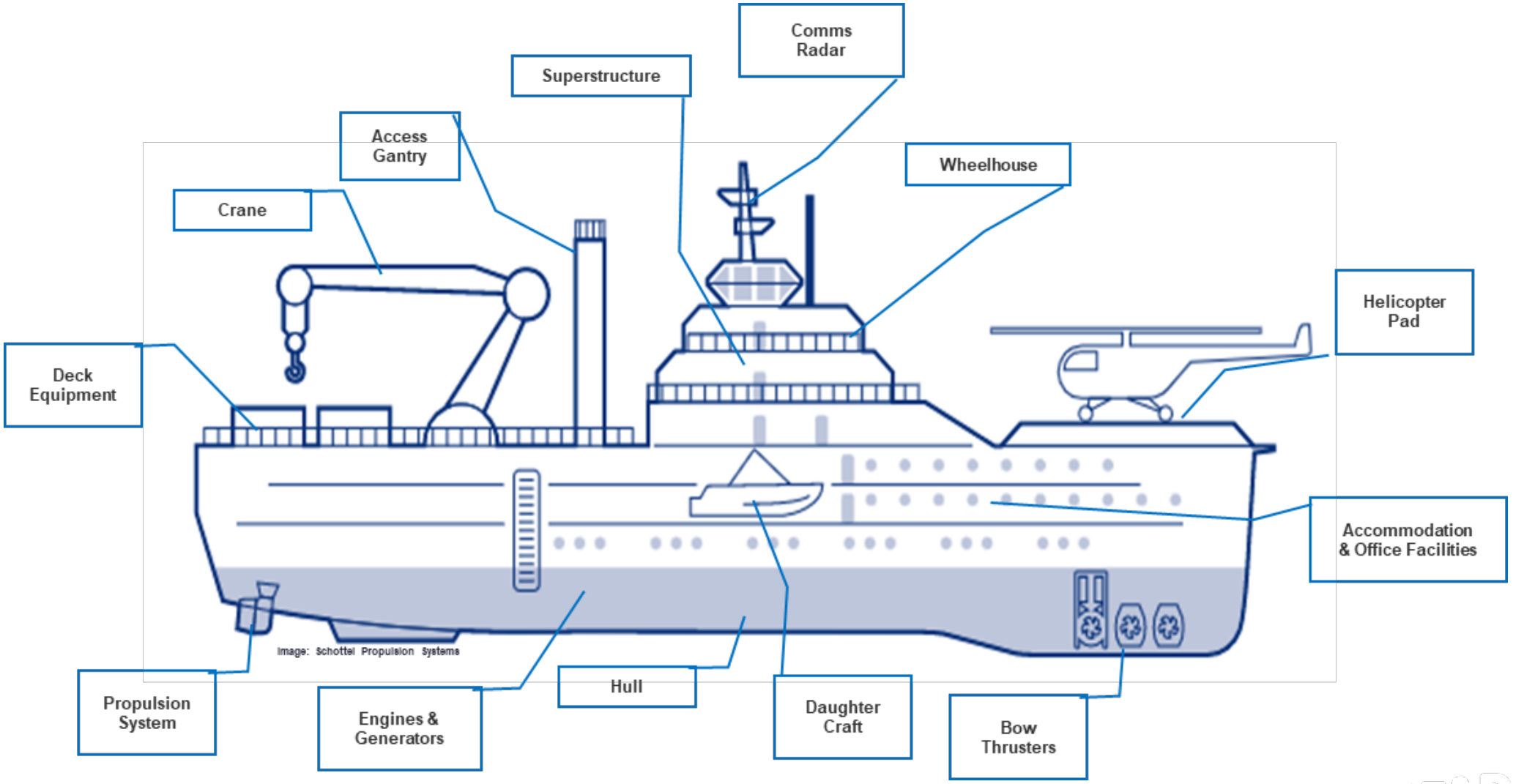


3rd: Ammonia Vessel – Mechanical or Electric propulsion (ICE type)

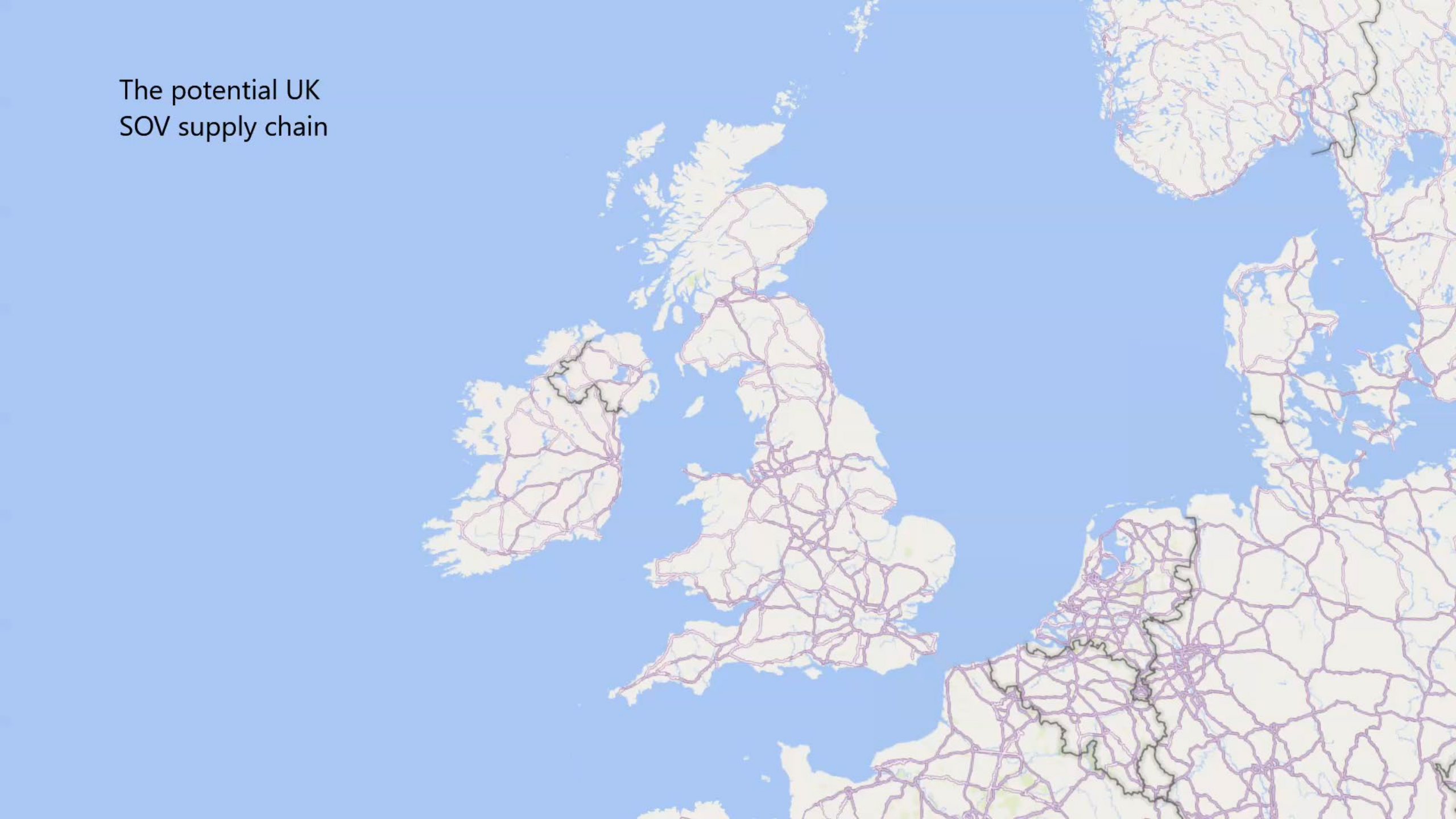




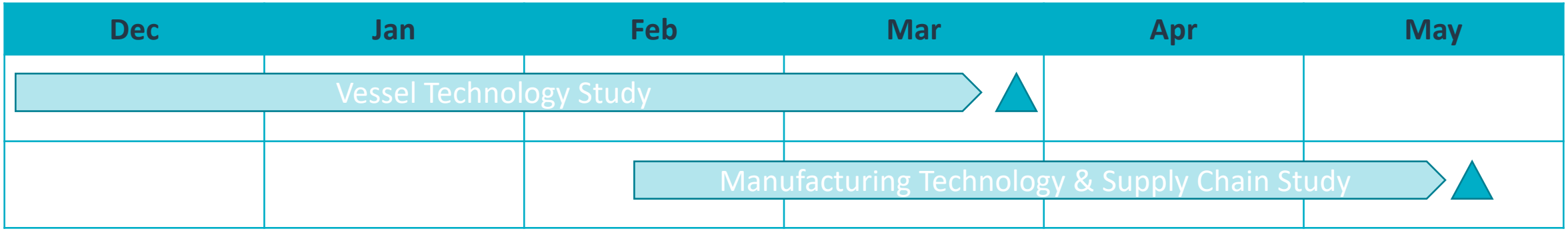
Supply Chain assessment



The potential UK
SOV supply chain



Next steps…



We'd like to hear from you if:

- You have the ability to deliver technology, components or skills relevant to SOV build.
- You have queries or comments on today's presentation.
- You'd like to be included in dissemination of project outcomes.

Email us:

lauren.hadnum@ore.catapult.org.uk cy.keogh@the-mtc.org

THANK YOU

Q & A

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Q&A