Wind Decommissioning Joint Industry Initiative Project

27th November 2019

Steve Ross – Digital & Data Business Lead

CATAPULT
Offshore Renewable Energy

Shall we begin……?

We are not yet friends
We are not enemies
We are currently strangers, with some memories…..

…….and hopefully from today to collaborate and share some great ideas and thinking

The Catapult Network

CATAPULT Offshore Renewable Energy

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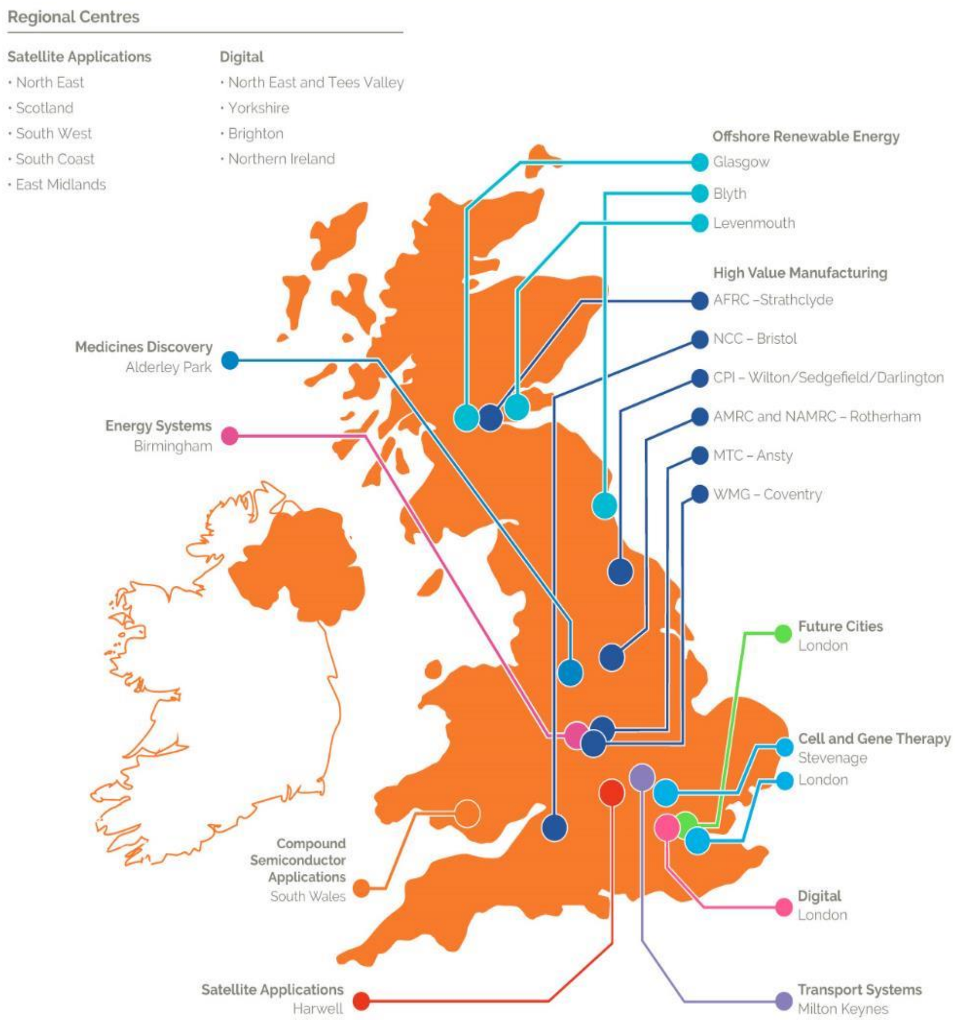
Innovate UK

Designed to transform the UK's capability for innovation

Core grant leveraged with industry and other public funding



Our Mission and Vision

Our mission

To accelerate the creation and growth of UK companies in the ORE sector

Our vision

To be the world's leading offshore renewables technology centre by 2023

- **Centres of Excellence**
- **Academic Research Hubs**
  in partnership with leading universities
- **Expanding our assets in Blyth and Levenmouth**
  the world's foremost open-access facilities

The Role of ORE Catapult

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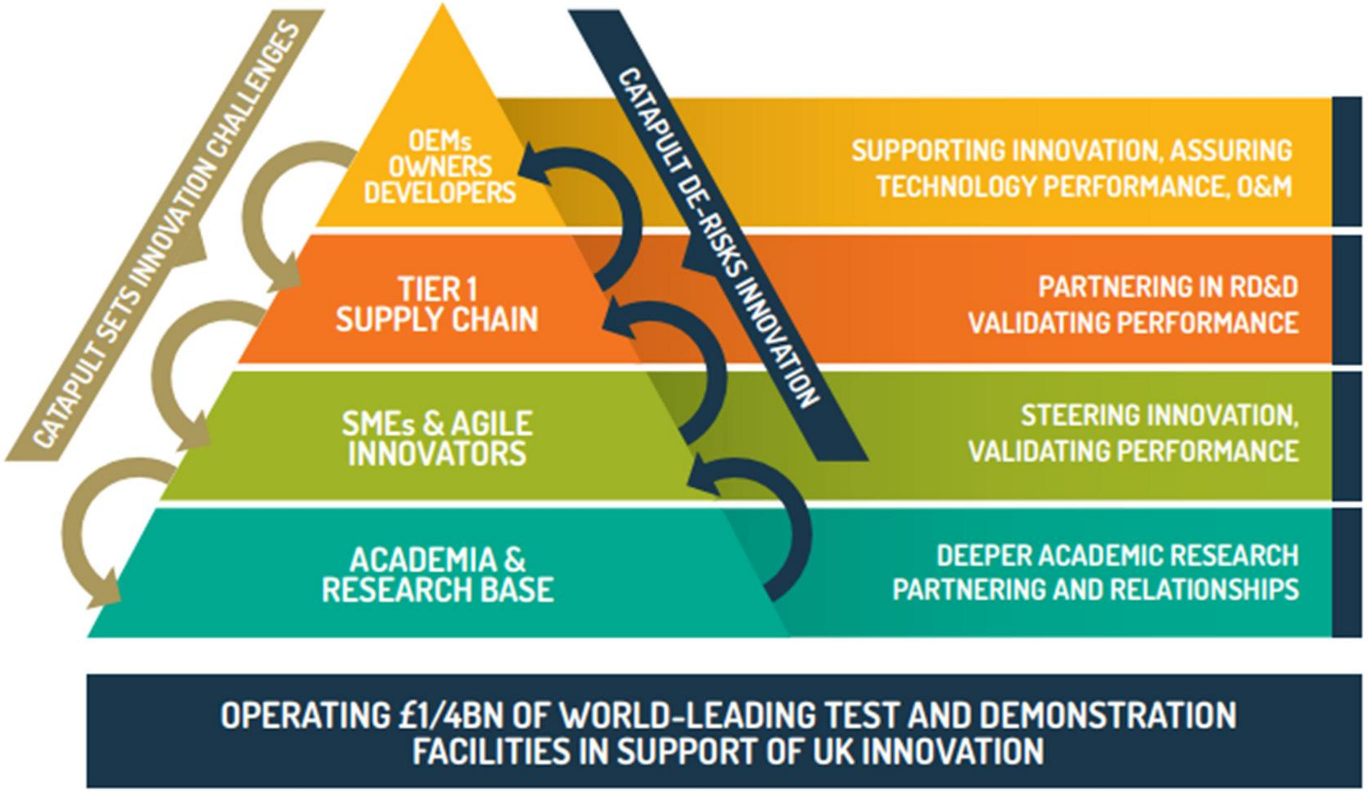

This is our current business model – BUT by its very nature it is disruptive and open to change

Global Market and Technology Opportunity

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The ultimate potential for offshore renewables is truly enormous.

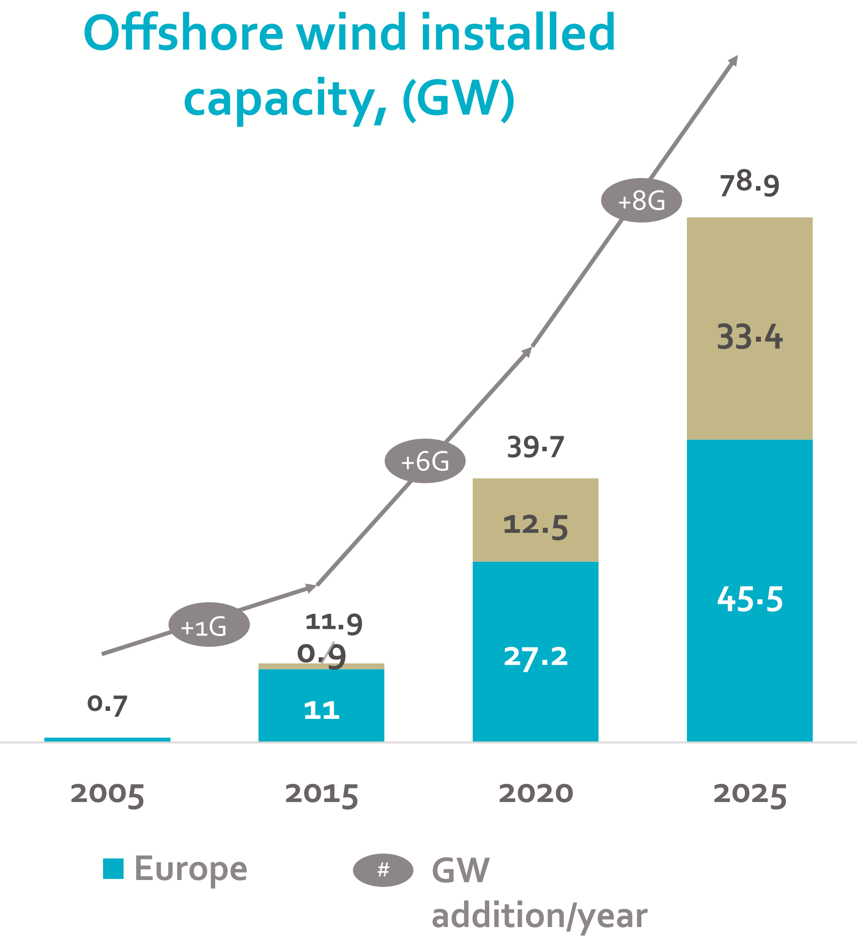
By next year:

- 10GW will be installed in the UK
- +10GW across the rest of Europe
- 5GW in China

By 2030:

- up to 40GW in UK waters
- +20GW in the US

- **Global investment in excess of £250bn**



Source: Bloomberg New Energy Finance (BNEF), H2 2016 offshore wind market outlook

So why are we knocking them down!....?

Decommissioning Costs

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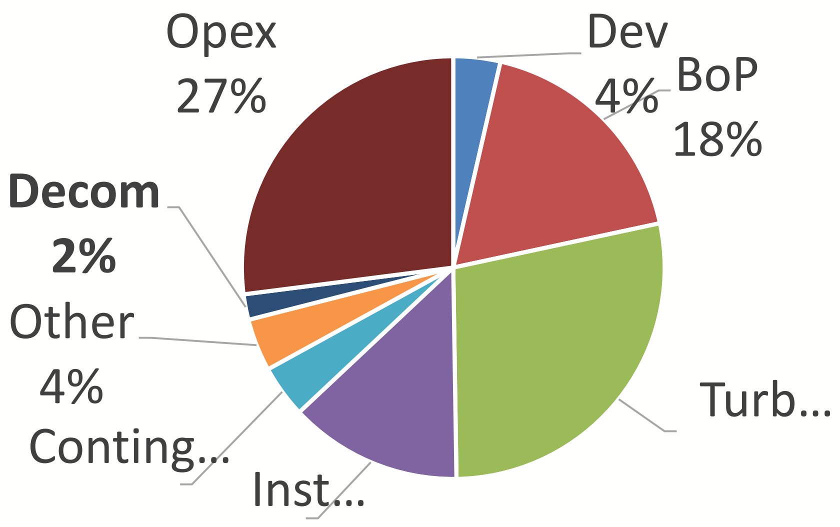
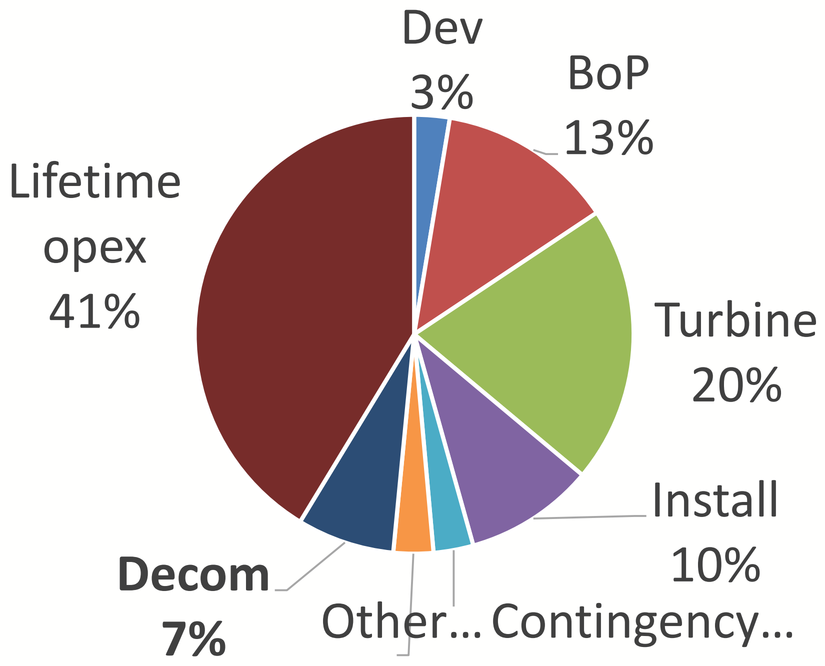
Levelised Cost Of Energy breakdown £/MWh



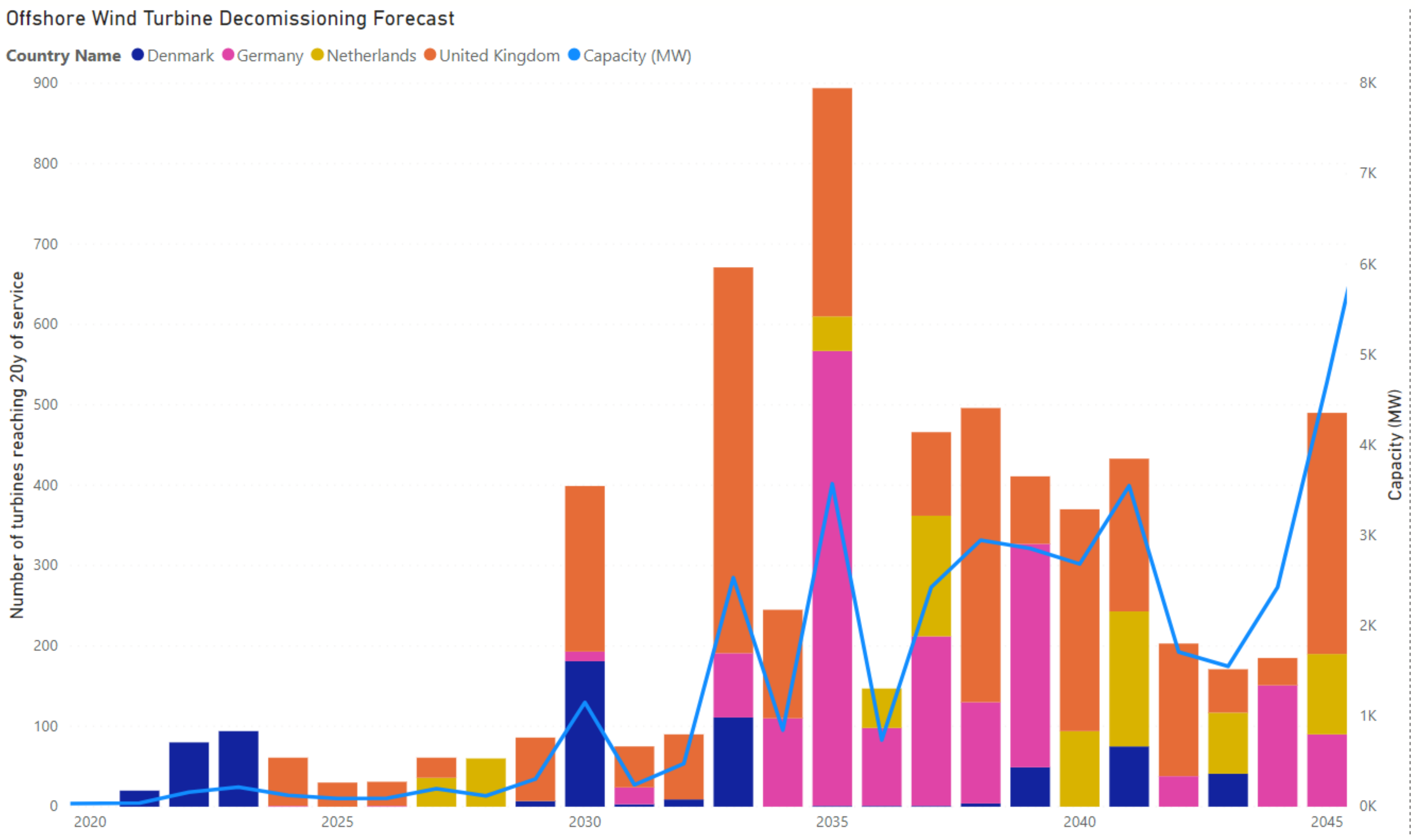
2025

Lifetime spend breakdown £/kW



Development phase → Decommissioning

Decom Forecast – No. of Turbines and Capacity (MW)



Fundamental Process of Decommissioning JIP

Remove

- Disassemble
- Cut
- Extract

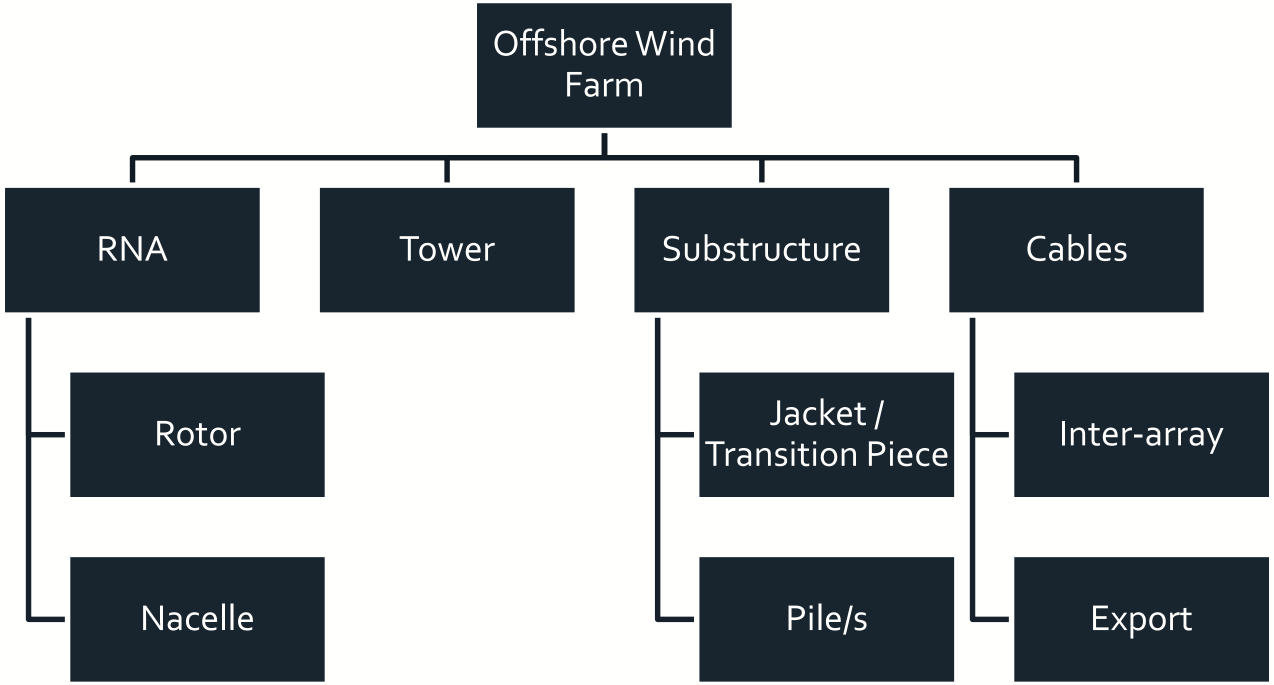
Transport

- Handling
- Transit
- Storage

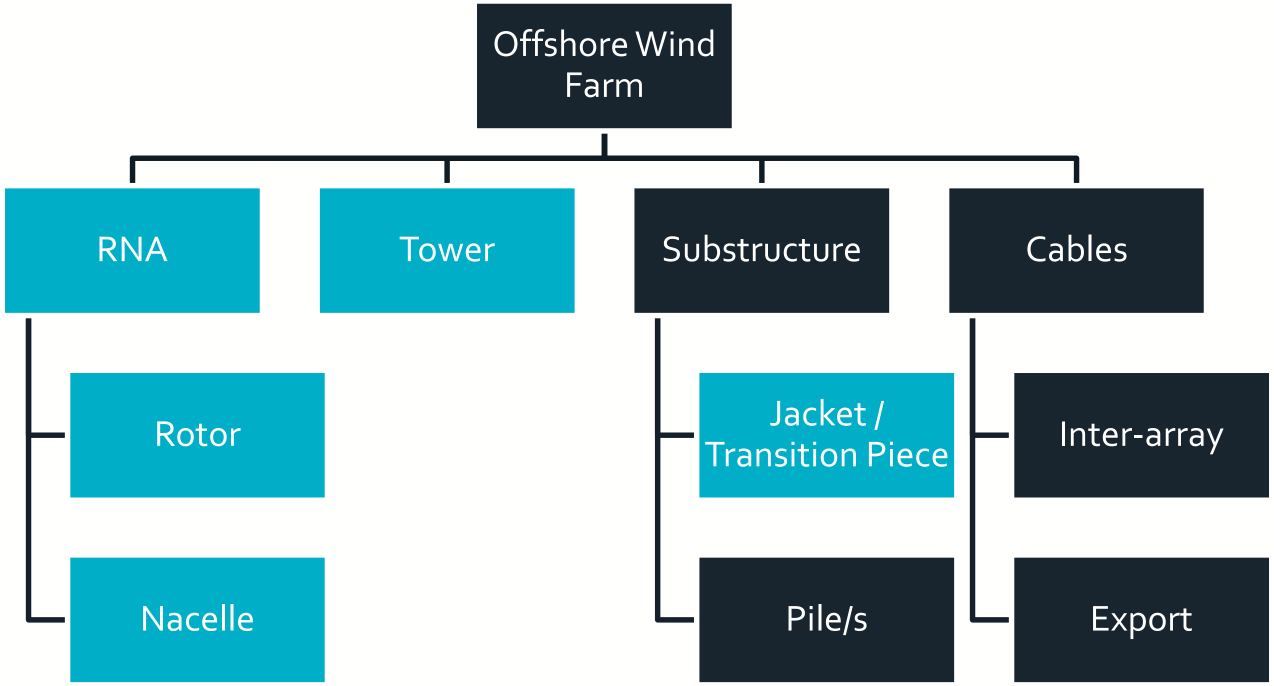
Dispose

- Process
- Recycle
- Landfill

Offshore Wind Farm Anatomy

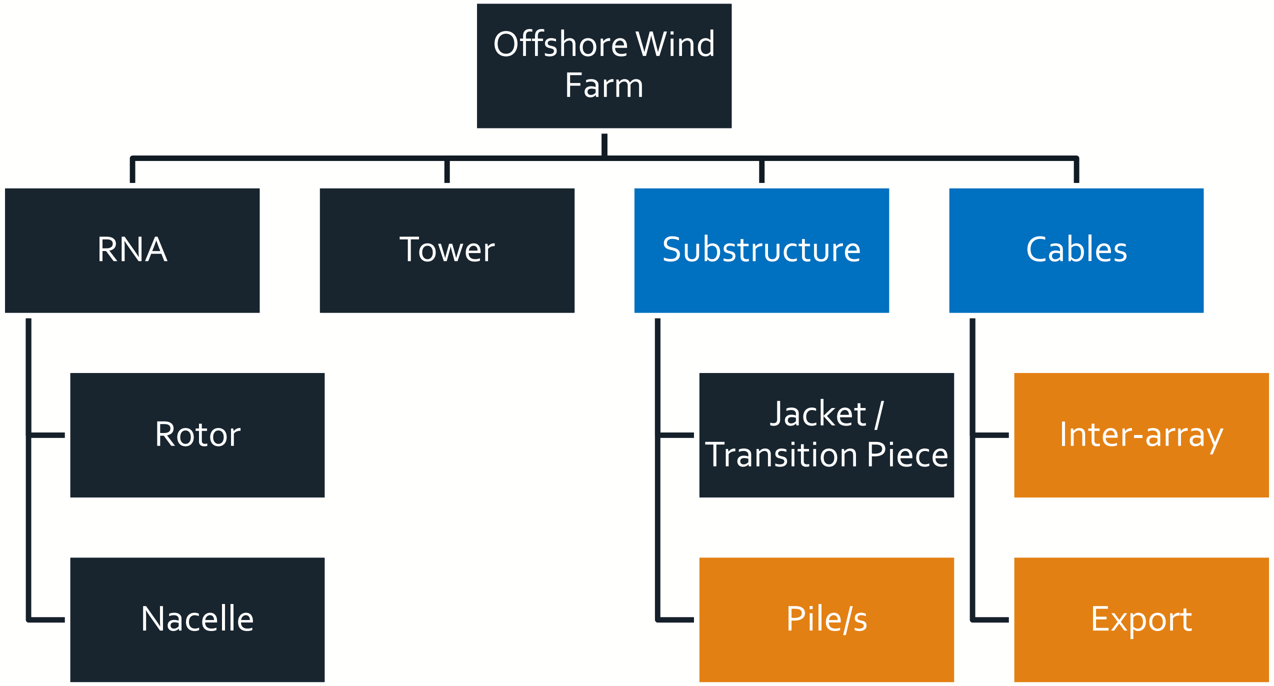


Offshore Wind Farm Anatomy



REMOVE, TRANSPORT, DISPOSE

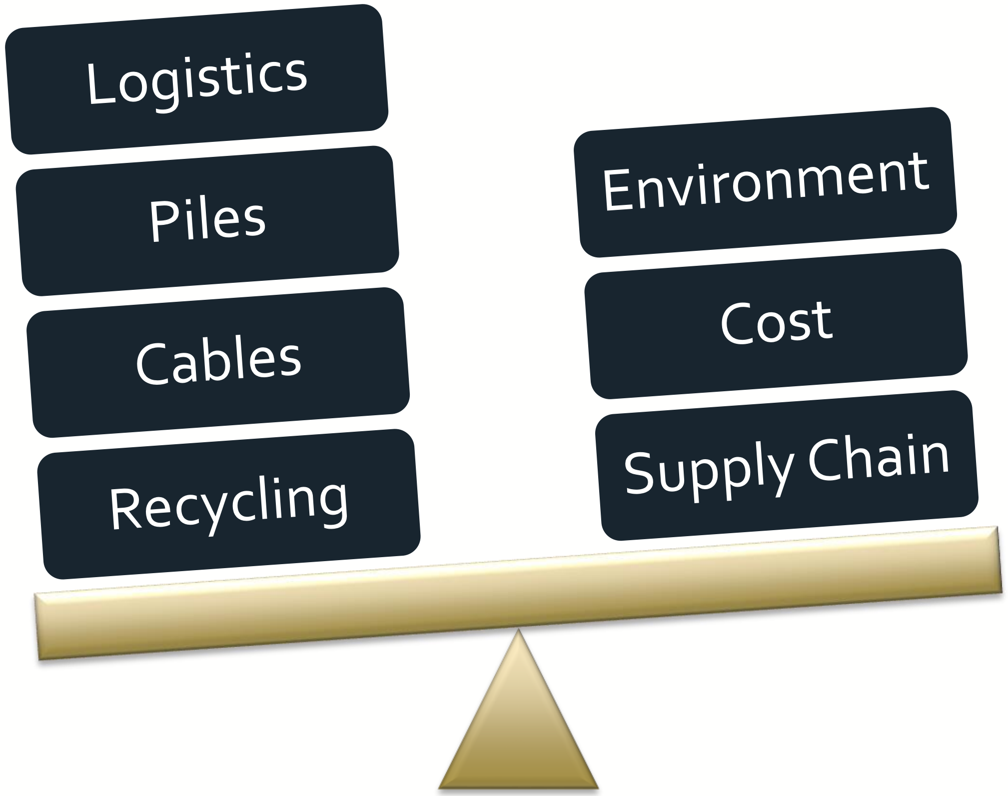
Offshore Wind Farm Anatomy



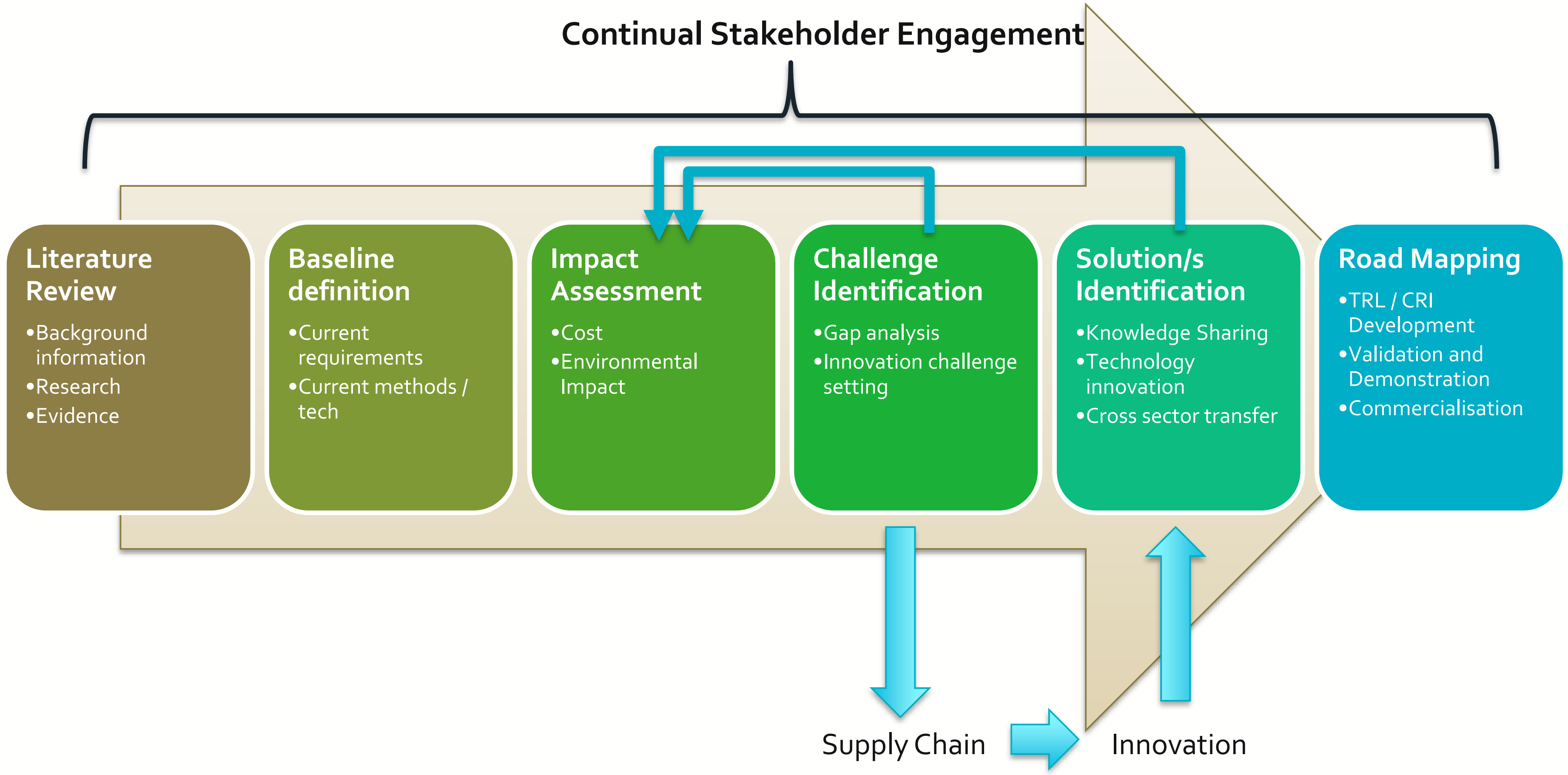
REMOVE? PARTIAL REMOVAL? LEAVE?

TRANSPORT, DISPOSE

Decommissioning | **Assessment**



General Process



Who has already committed to support?

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ZERO WASTE SCOTLAND

Oil & Gas UK – the voice of the offshore industry

Crown Estate Scotland – Oighreachd a' Chrùin Alba

EDF renewables

THE CROWN ESTATE

CATAPULT Offshore Renewable Energy

The Oil & Gas Technology Centre – Your Innovation Partner

e·on Climate & Renewables

JIP structure

- £500k JIP focussed on cables, pilings and recycling and with additional work streams being considered
- Involvement of both asset owners, supply chain and academia
- Technology/innovation and cost reduction driven
- Know how required – especially sub-sea
- Understanding of economic and ecological impacts
- Cross sharing of ideas and thinking – and what to avoid
- Cross-sector support

Thank You

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