



Offshore Wind Development in the UK



Roy Evans
Head of Development
and Asset Management

1 December 2010

The Crown Estate

Is a landowner

Is not a regulator

Is a public body – The Crown Estate Act 1961

Is not part of Government – but works closely with Government, statutory bodies *etc.*



**Urban
Estate**



**Rural
Estate**



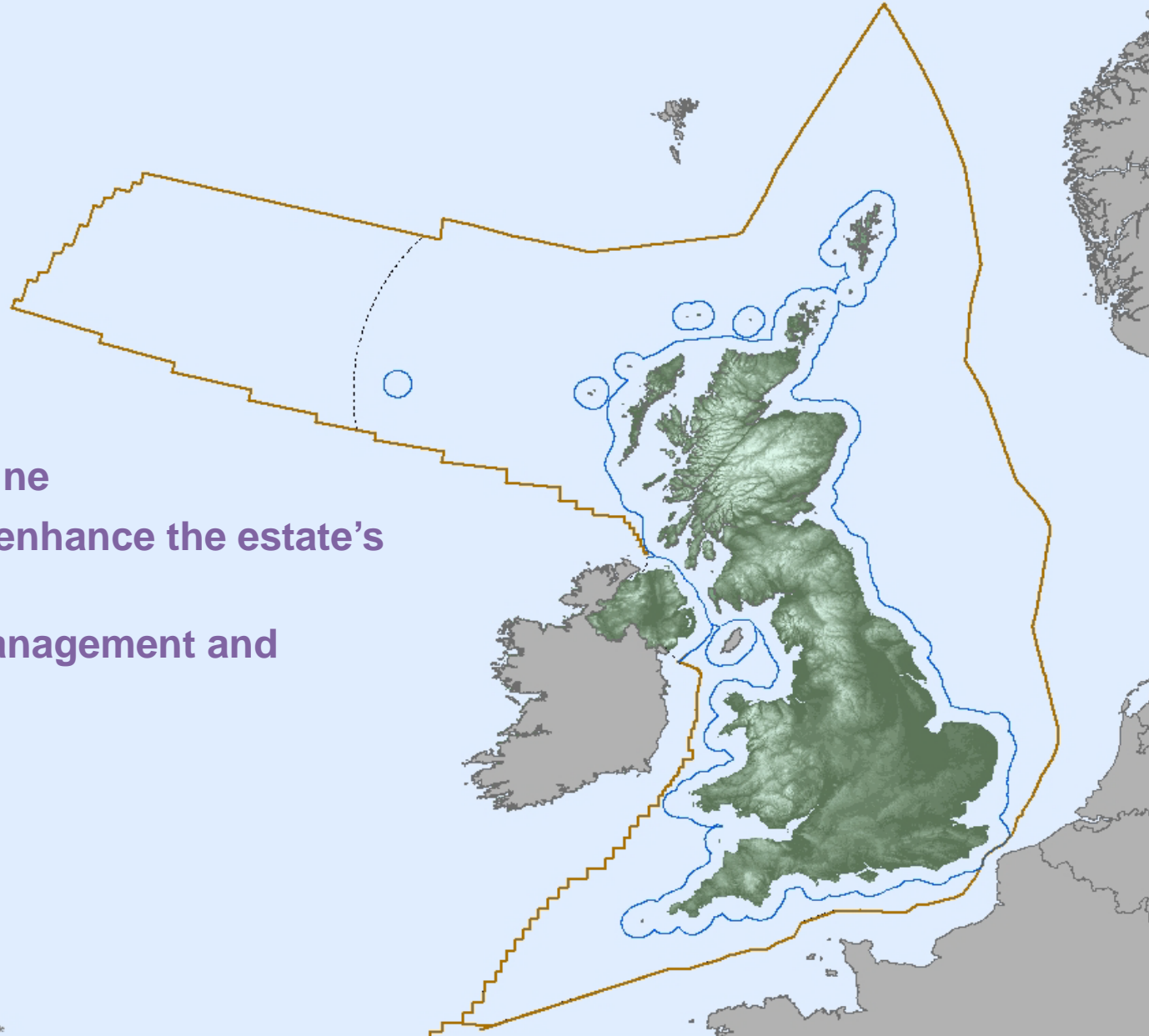
**Windsor
Estate**



**Marine
Estate**

The Marine Estate

- 850,000 km²
- 22000km of coast line
- A responsibility to enhance the estate's value
- Subject to good management and stewardship



The Marine Estate does not include:



- Water column
- Fisheries
- Rights to Oil, Gas and Coal
- Public rights of navigation

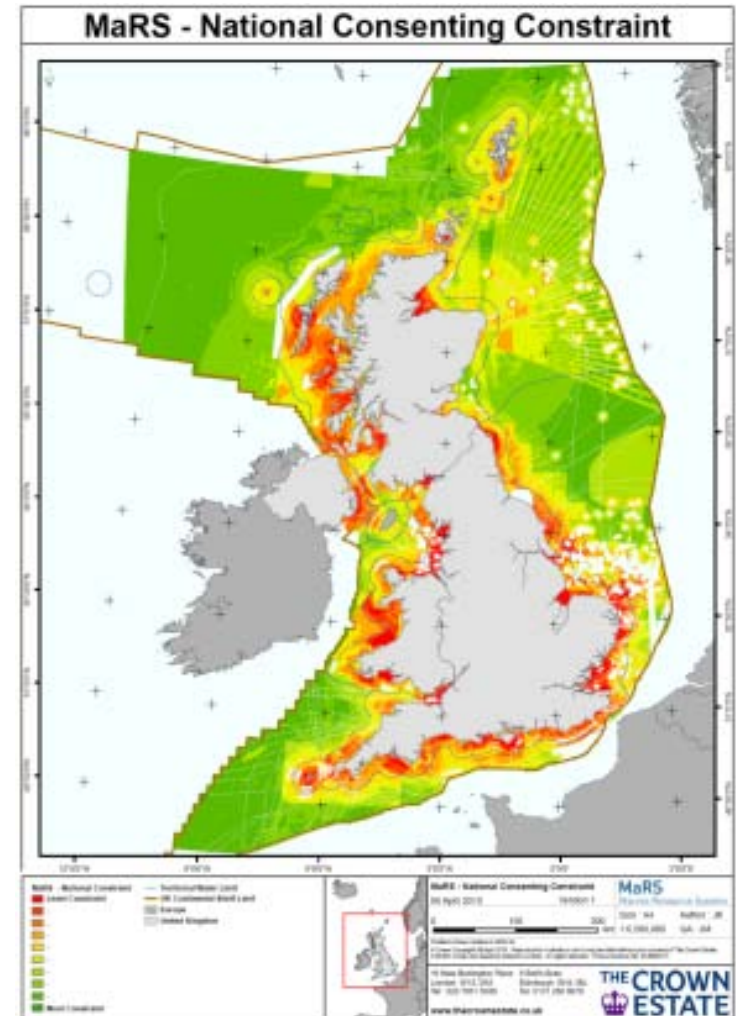
How we are organised to deliver

Three operational teams:

- Energy and Technology
- External Affairs
- Development and Asset Management

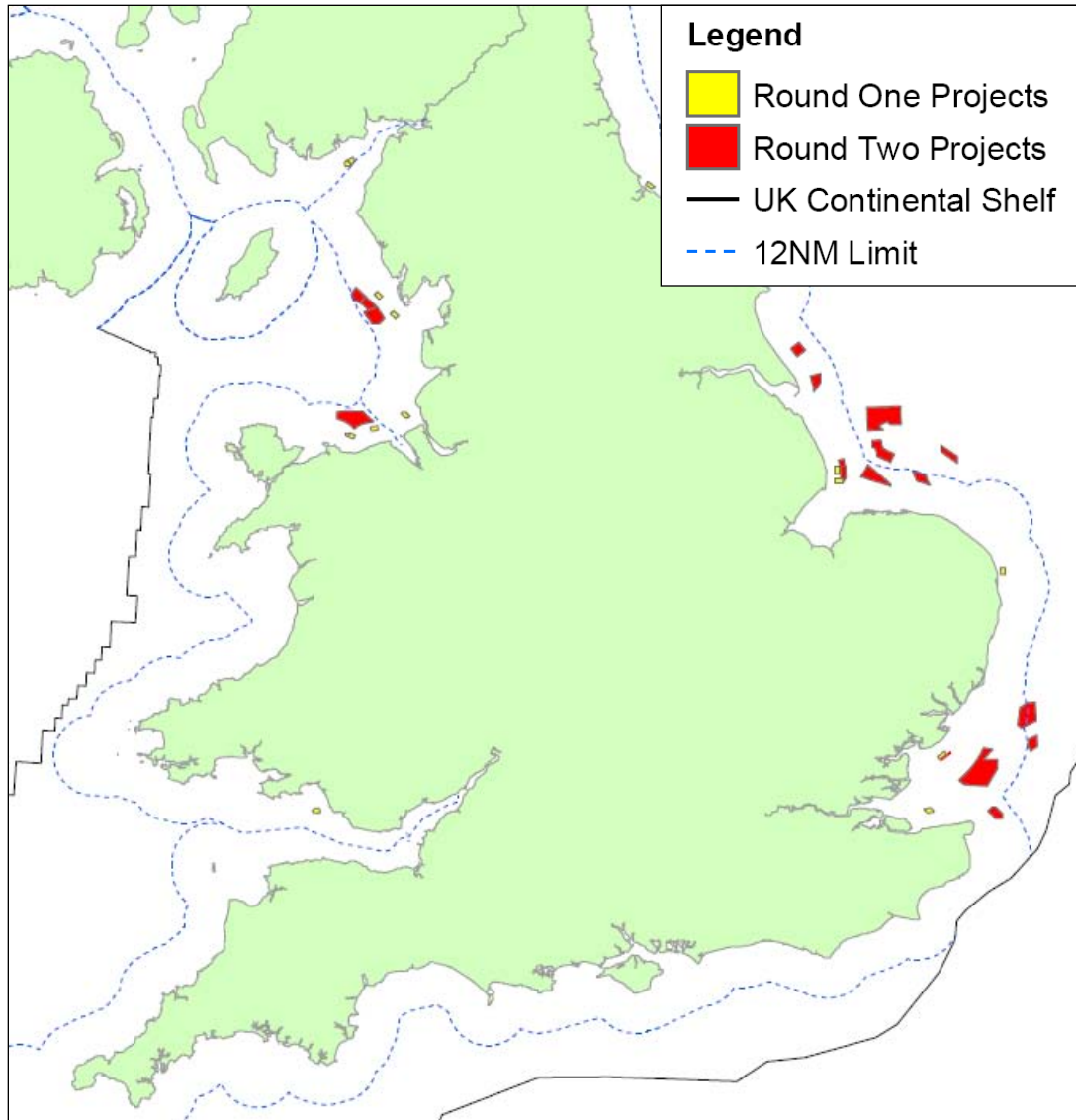
And one special projects team:

- MaRS



Policy Context

- Climate Change Act requires 80% emissions cut by 2050.
- EU requires UK to produce 15% of energy from renewable sources by 2020. This could mean 30% renewable electricity.
- Renewables also offer benefits in terms of green jobs and security of supply



Rounds 1 and 2

UK is the world leader in offshore wind

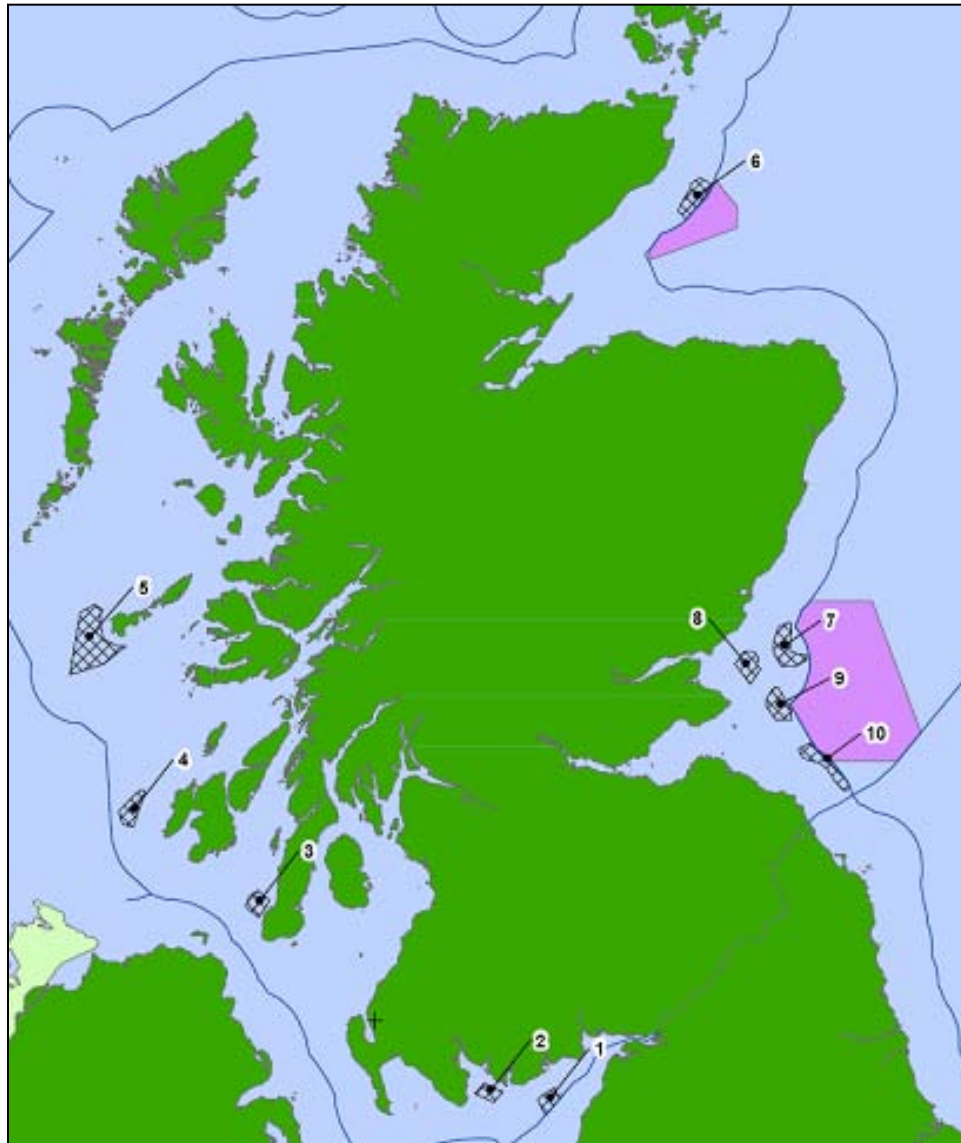
1.3 GW operational (15 projects)

2.2 GW under construction (6 projects)

1 GW consented, pre-construction (3 projects)

2.6 GW awaiting consent (6 projects)

2.7 GW pre-application (includes Extensions)



Scottish Territorial Waters

- 10 Sites awarded exclusivity agreements early 2009
- Total 5.3GW under development
- Scottish Government currently carrying out an Strategic Environmental Assessment

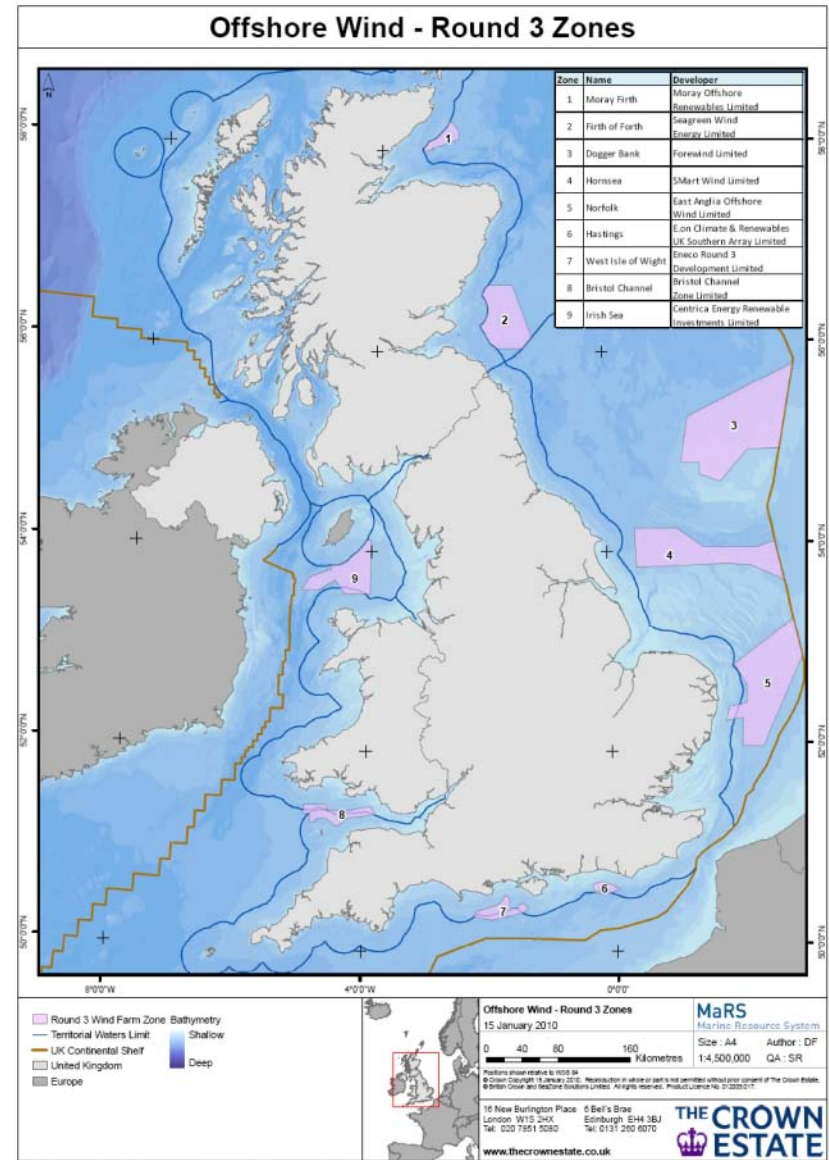
Round 3

UK target of 15% energy from renewables by 2020

- + Climate change mitigation
- + Security of supply
- + Jobs

In response, The Crown Estate launched the Round 3 competition for 9 development zones – awards made Dec 2009

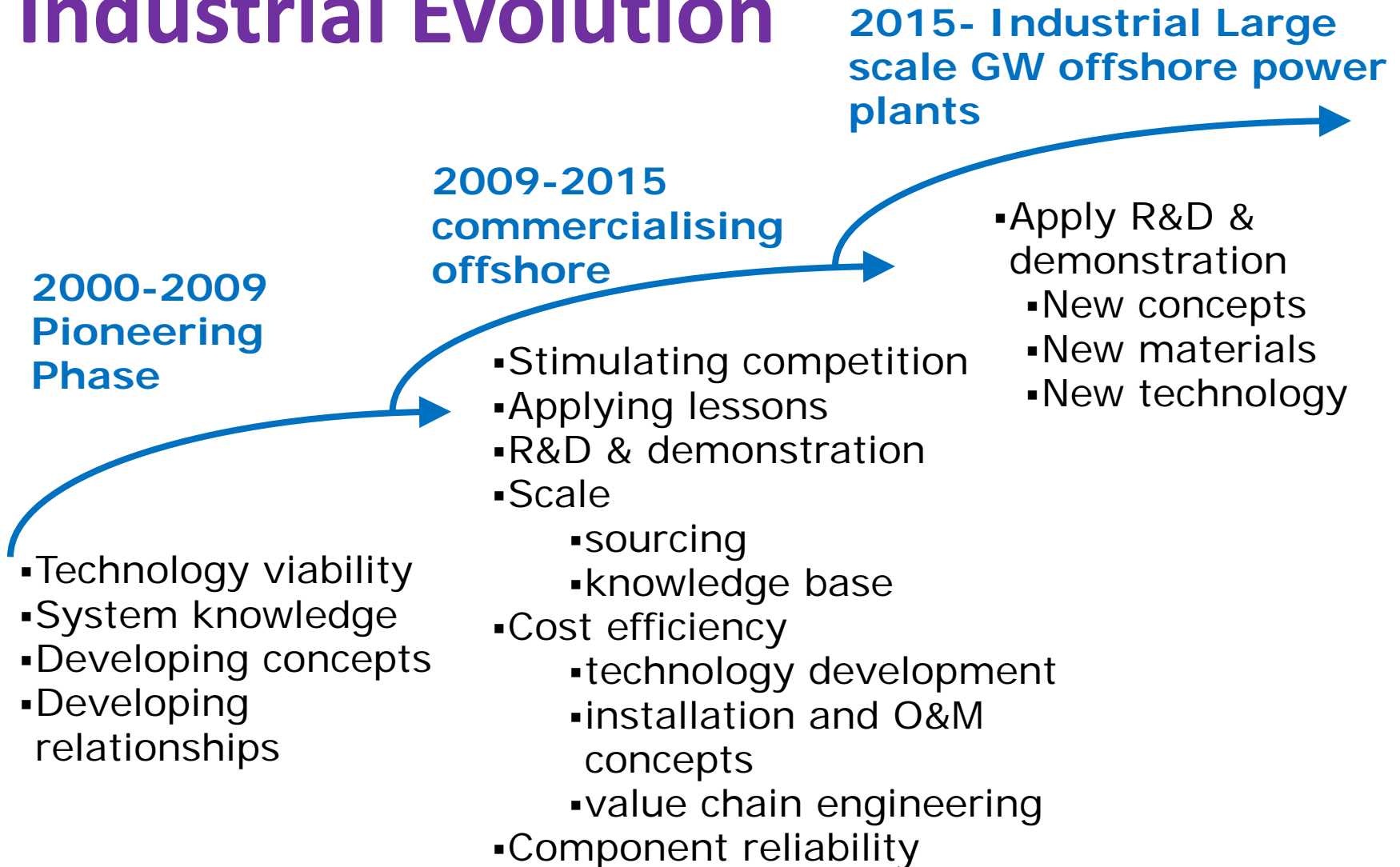
32 GW pipeline now under active development



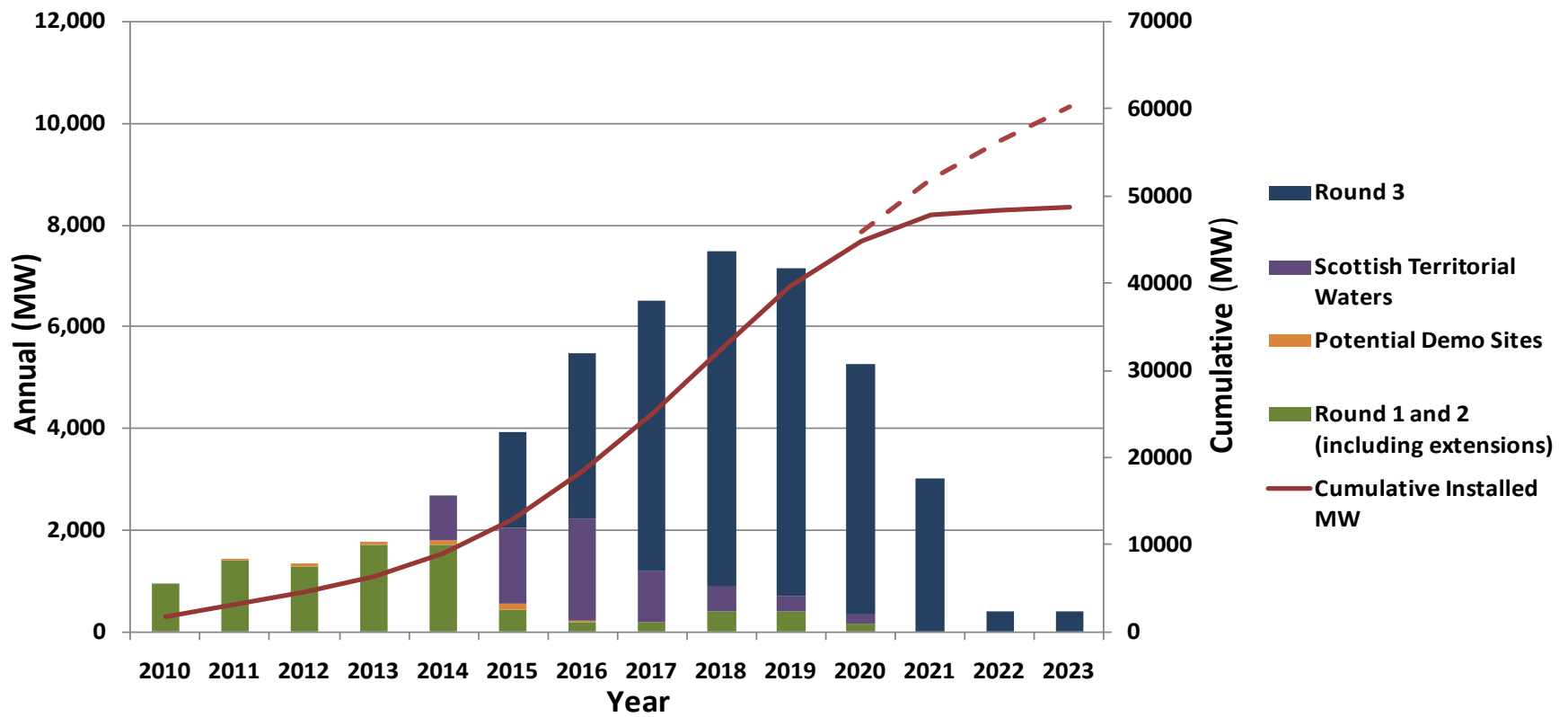
The Round 3 Approach

- Development in partnership with The Crown Estate to consent
Shared development risk. Pre-consent co-funding > £100m. Contract obligations on programme and budget to consent. Competition criteria based on confidence in end-to-end delivery.
 - A zonal approach (exclusivity for development partner/consortium)
Assess cumulative impact, engage holistically with stakeholders, supply chain confidence, strategic supply chain development.
 - Direct intervention by The Crown Estate to promote and de-risk
Investment in enabling actions on national issues, master planning, workstreams on key risks, forums of developers and politicians.
-

Industrial Evolution



Opportunity for generating capacity from all current leasing rounds



Information from Developers forward plans and projected capacity

Strategic Challenges to Programme Delivery

Health & Safety

- Rapid sector growth, further from shore

Supply Chain & Skills

- Competing markets, capacity, early investor confidence, delivering infrastructure investment and OEMs, leadership on skills



Planning & Consents

- New Planning Act, revisit IPC and NPS's, untested new processes and teams, funding aviation solutions, MCZ uncertainty

Grid & Technology

- Coordinated offshore devt, OFTO regime, charging, technical standardisation, risk and perception

Project Economics & Financing

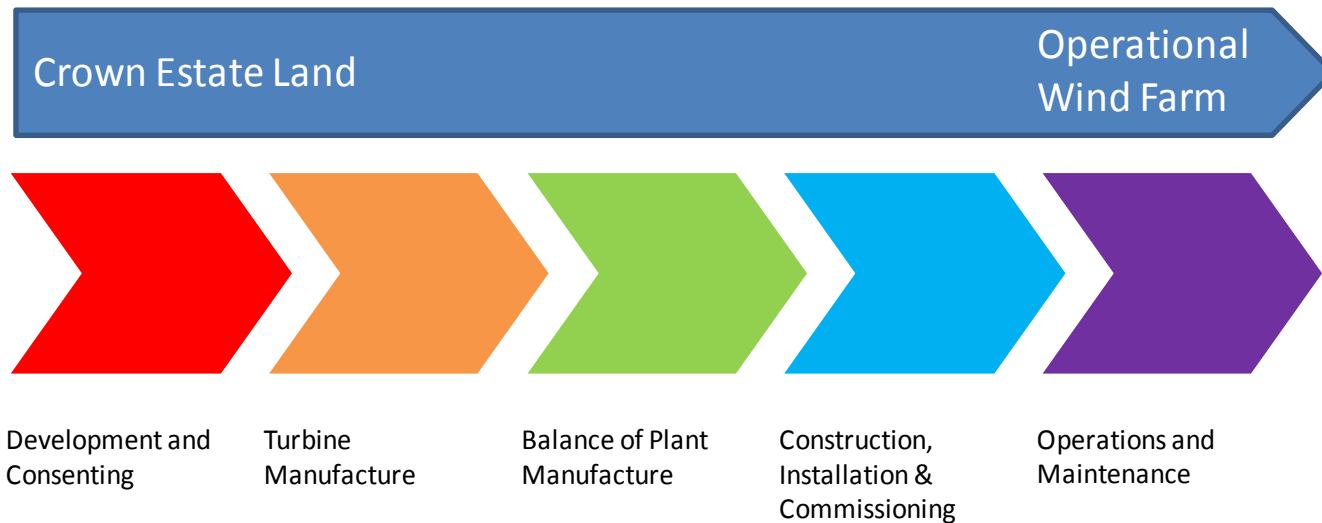
- Consented projects reaching investment hurdle rates, access to construction finance, facilitating refinancing when operational

Supply Chain and Skills Strategic Workstream

Adrian Fox

Supply Chain Manager

Definition



Scope of Workstream

- Supply Chain Development across the programme



Challenges



Key Stakeholders

- Zone Partners & Tier 1 suppliers
 - DECC, BiS, UKTI, WAG and Scottish Government
 - Regional Development Agencies, DA delivery groups
 - RenewableUK, Scottish Renewables
 - National Skills Academy Power
 - Energy and Utility Skills: Power Sector Skills Strategy Group

 - Other stakeholder groups as necessary – e.g. The Carbon Trust, Knowledge Transfer Partnerships
-

Current Topic Areas

Skills

Caseworker
support

Training

Gap Analysis

Production

Manufacturing

Construction
and Installation

Operations and
Maintenance

Supply Chain Management

Code of
Practice

Database

Cost reduction

Activities to Date

- UK Regional Supply Chain events
 - Formation of Offshore Wind Developers Forum (OWDF)
 - Formation of Inter-Regional Offshore Wind Group (RDAS and DAs)
 - European Supply Chain presentations
 - MCA Caseworker support
 - Stewardship diploma
 - Project Management workshop (with RUK)
-

Future Activities

- Facilitating UK wide national ports and harbours strategy
 - Coordination of supply chain events around UK aimed at Tier 2,3 companies in each sub sector
 - Overseas supply chain briefing meetings in selected European countries
 - Investigate need for National Offshore Wind Supply Chain Office.
-

Future Activities

- Realisation of Supply Chain Code of Practice
- Cost Reduction Industry Initiative
- Engaging OFTO organisations in supply chain initiatives
- National Supply Chain Events Feb / March 2011
- Skills gap analysis
- STEM careers guide (with RUK)



UK Offshore Wind Supply Chain Events – SECOND SERIES

INVESTING IN OUR FUTURE – GETTING DOWN TO THE DETAIL

WITH OVER 1GW OF WIND POWER GENERATION OFF OUR COASTS, AN AMBITIOUS PROGRAMME OF DEVELOPMENT OUT TO 2020 AND BEYOND, THE UK IS POISED TO CREATE A WORLD LEADING INDUSTRY BRINGING INVESTMENT AND JOBS.

Key to realising this vision is a competitive, reliable and flexible supply chain that will form the backbone of the industry. These events will take us a stage further in understanding what UK companies need to do to step up to the challenge, providing updated information and networking opportunities to build relationships.

Please contact the appropriate organiser overleaf for further details.

THE CROWN ESTATE

ENERGY SECURITY

Department of Enterprise, Trade and Investment

The Scottish Government

Picture: Hatched and W&AF Heavy Industries Duxton

Enabling



Coordinating

UK NATIONAL WIND INDUSTRY SUPPLY CHAIN ENABLERS

Who does what...



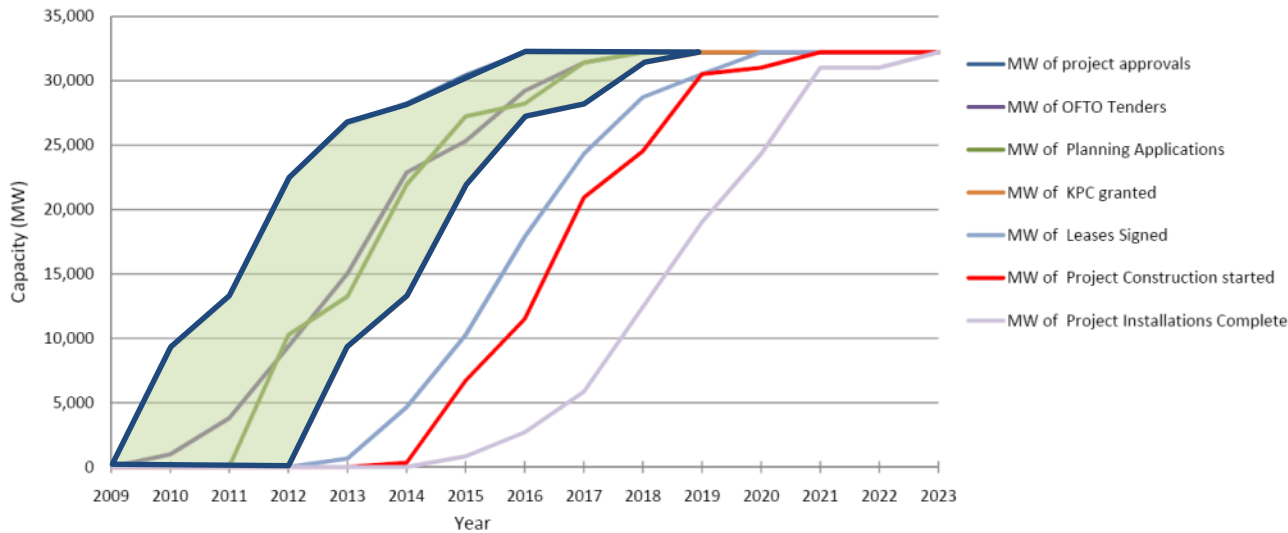
DECC's UK Renewables Service

| | | (INCLUDING OFFSHORE WIND DELIVERY GROUP) | (LOW CARBON UNIT & SHAREHOLDER EXECUTIVE) | INCLUDING DECC's UK Renewables Service (BUSINESS DEVELOPMENT) | & EMBASSIES |
|----------|---|---|---|---|---|
| HEADLINE | <ul style="list-style-type: none"> • Enable development of supply chain in order to meet Government targets and maximise the UKs' return from offshore wind | <ul style="list-style-type: none"> • Maximise and accelerate deployment of UK offshore wind • Enhance UK job and wealth creation | <ul style="list-style-type: none"> • Maximise business opportunities for the UK | <ul style="list-style-type: none"> • Meet renewable energy targets and maximise business opportunities for the UK | <ul style="list-style-type: none"> • Meet targets, support DECC/OGDs with major companies/projects and take leading role with smaller potential projects |
| SCOPE | <ul style="list-style-type: none"> • Facilitate & coordinate (mainly) UK supply and cost improvement • Create sense of industry identity • Watching brief - flag up key supply chain issues publically • Investment in supporting infrastructure / technology where appropriate | <ul style="list-style-type: none"> • Promote new technologies • Promote best practice • Identify bottlenecks and address • Develop strength and depth of UK supply chain • Encourage key component manufacturers to set up in UK • Provide an industry view to potential companies, organisations and trade associations wishing to engage with the wind supply chain | <ul style="list-style-type: none"> • Support negotiations with key firms looking to locate their operations in the UK • Deliver government investments in offshore wind testing and demonstration facilities. • Shareholder executive (for large investment decisions) • Investments in industry where appropriate • Support for innovation, skills, regional and R&D policy | <ul style="list-style-type: none"> • Inward investment – wind industry specifics • Supply chain business development • Innovation support • Close contact with wind players, UK co's • Support and empower regional activity | <ul style="list-style-type: none"> • Inward investment - generic sell of UK and overseas posts • Leads on relationship with overseas companies in market • UKTI posts generate new leads |

Informing

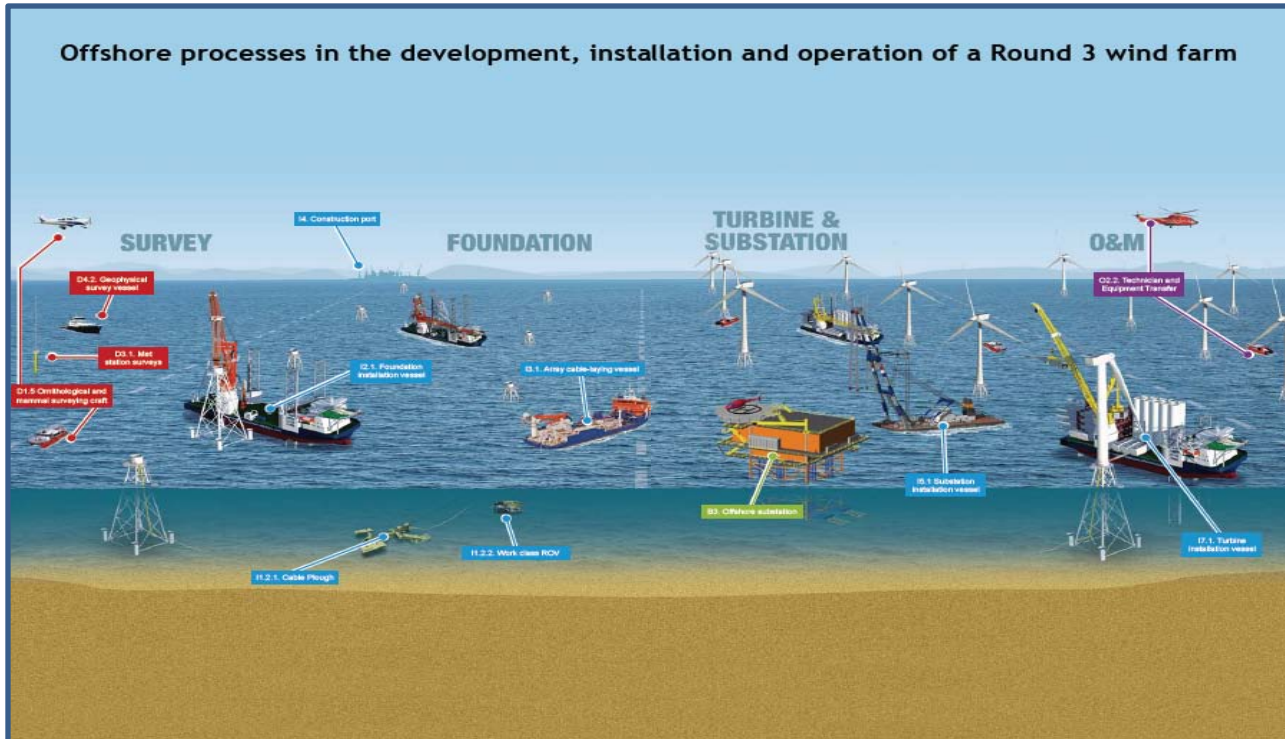
Round 3 programme delivery curves

CONSENTING













































Informing

Offshore processes in the development, installation and operation of a Round 3 wind farm



Reporting Progress

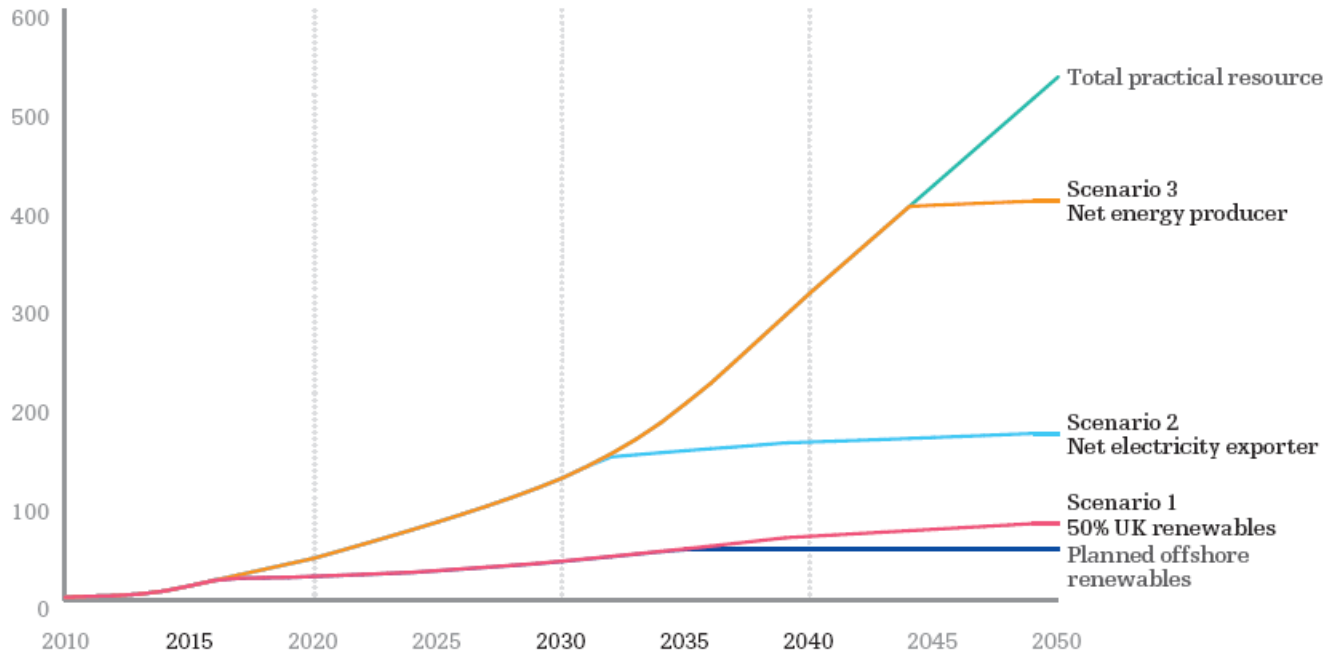
| | Development and Consenting | | | Turbines | | | | Balance of Plant | | | | | Installation and Commissioning | | | Operations and Maintenance | | | | | | |
|------|---|---|---|---|--|---|---|--|---|--|---|---|---|---|---|---|---|---|--|--|---|---|
| | Finance | Development and Environmental Services | Statutory Consultees | WTG | Blades | Castings and Forgings | Gearboxes and large bearings | Towers | Subsea cabling | Concrete Foundations | Steel foundations | Offshore electrics | Onshore electrics | Construction ports | Turbine and Foundation installation | Cable Installation | Civil engineering & CM | Maintenance | Operation | Onshore facilities | Transport and accommodation | |
| 2009 | a  | gg  | r  | r  | gg  | a  | a  | gg  | r  | gg  | a  | a  | a  | a  | r  | r  | a  | a  | gg  | gg  | a  | |
| 2010 | a  | g/a  | r  | a  | a  | a  | a  | g  | r  | g  | a/r  | a/g  | a/g  | r  | a  | r  | a  | a  | g  | g  | a  | |
| - | - | -0.5 | - | +1 | -1 | - | - | - | - | - | -0.5 | +0.5 | +0.5 | -1 | +1 | - | - | - | - | - | - | - |

Note: 2010 is an interim assessment- gap analysis to follow.

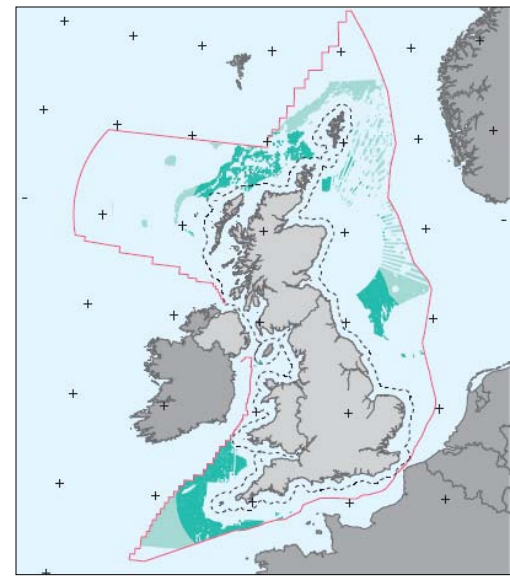
Supply Chain Scorecard

Future potential

Deployment scenarios



Floating wind: Practical resource



| Technology | Scenario 1 GW | Scenario 2 GW | Scenario 3 GW |
|------------|------------------|------------------|------------------|
| Fixed | 70 | 116 | 116 |
| Floating | 2 | 33 | 245 |

Illustrations courtesy of The Offshore Valuation Group