

Floating offshore wind: the offshore wind knowledge base in the UK and Ireland

Kate Freeman

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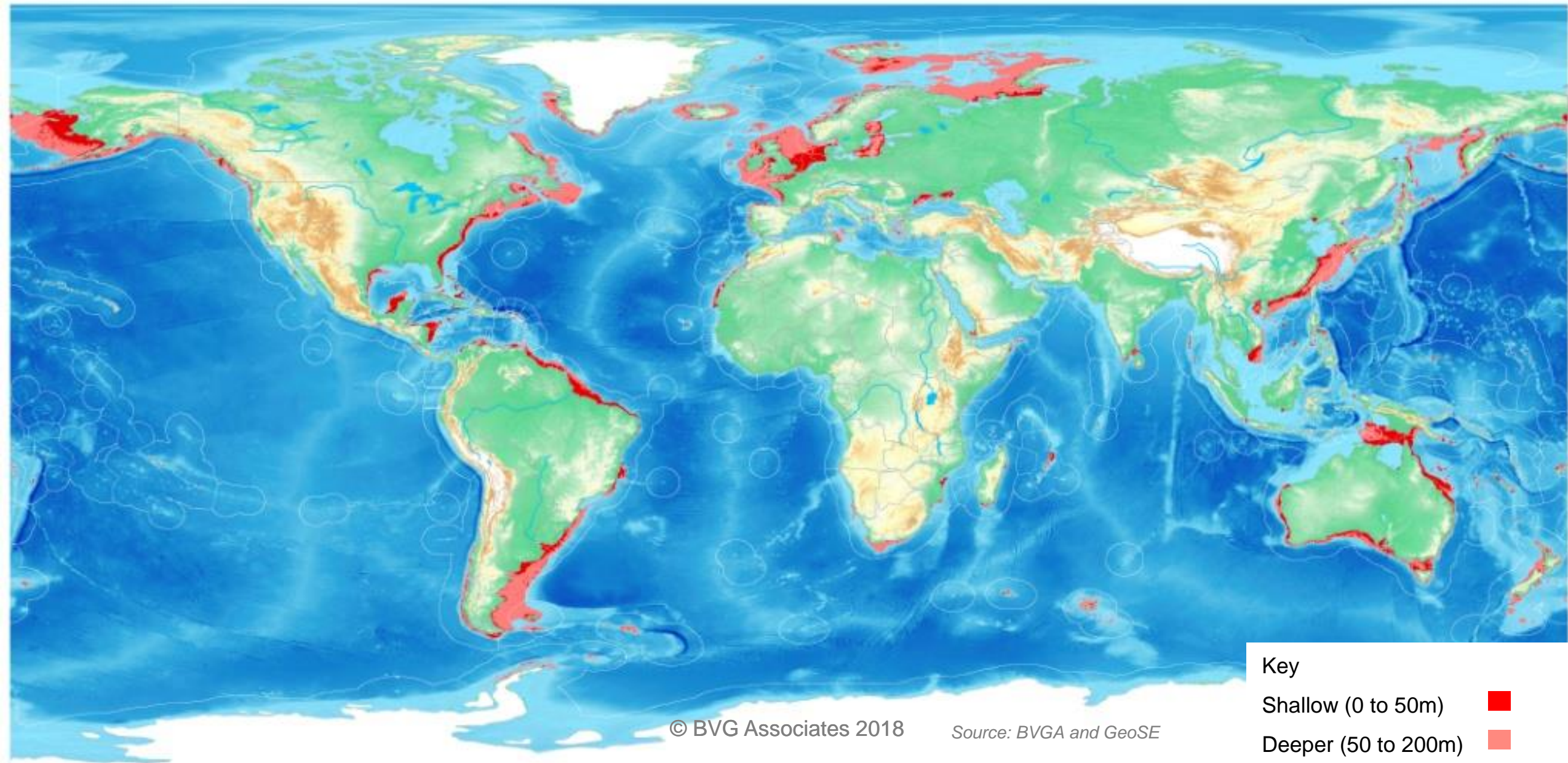


Onshore wind



Offshore wind

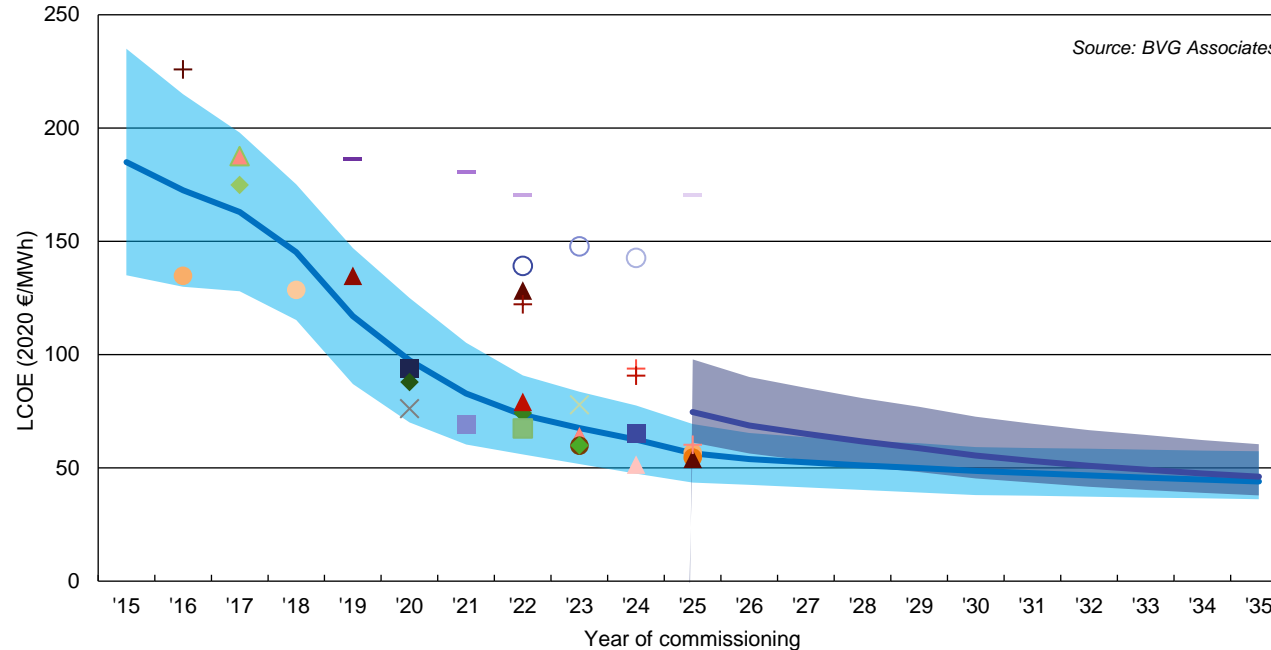
1. Why floating offshore wind? Great resource.



2.1 Great resource isn't great opportunity: also need good LCOE

LCOE reductions in bottom-fixed can be transferred into floating in many cases (although watch the logistics)

Higher LCOE than fixed on comparable sites for much of the next decade



- Offshore wind
- Gode Wind 1&2 (DE)
- EA1 (UK)
- Vesterhav (DK)
- Triton Knoll (UK)
- Gode Wind 3 (DE)
- Norwester, Mermaid, Seastar (BE)
- CBB, Teeside, Seagreen (UK)
- Calvados (FR)
- Maryland (US)
- Ocean Wind (US)
- Yunlin (TW)
- Bottom-fixed offshore wind
- Walney Extension (UK)
- Arkona (DE)
- Horns Rev 3 (DK)
- Kriegers Flak (DK)
- Hornsea 2 (UK)
- OWP-W, Borkum Riffgrund 3 (DE)
- Hollandse Kust (NL)
- Fécamp (FR)
- Block Island (US)
- Revolution Wind (US)
- Mayflower (US)
- Greater Changhua 1 (TW)
- Floating offshore wind
- Gemini (NL)
- NNG (UK)
- Borssele 1&2 (NL)
- Borssele 3&4 (NL)
- Moray Firth (UK)
- He Dreiht (DE)
- CBA, Forthwind, Sofia (UK)
- Saint-Nazaire (FR)
- Vineyard (US)
- Empire Wind (US)
- Formosa (TW)
- Greater Changhua 2a (TW)

2.2 Uncertainty in LCOE

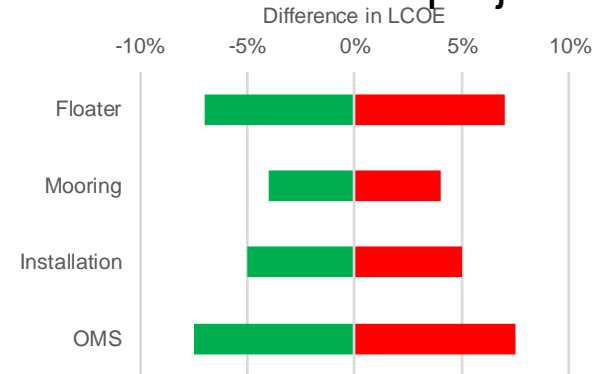
In 2020, we looked at financial and technical risks for an example project commissioning in 2030

Technical uncertainty in floater, mooring, installation and OMS cost

Manufacturing and installation costs, including logistics for commercial scale projects

Large component replacement strategy

Design optimisation / cost reduction



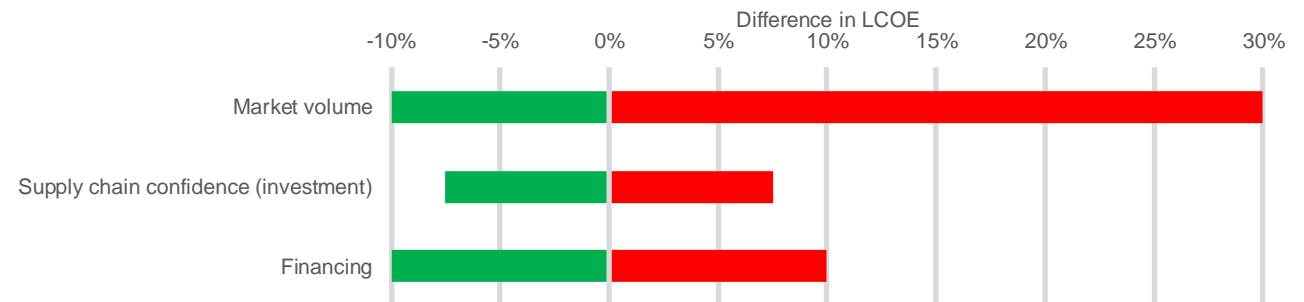
Commercial uncertainty in market volume, supply chain confidence, financing

Investment for manufacturing

Investment for logistics

Risk reduction and management

Revenue certainty: the cost gap

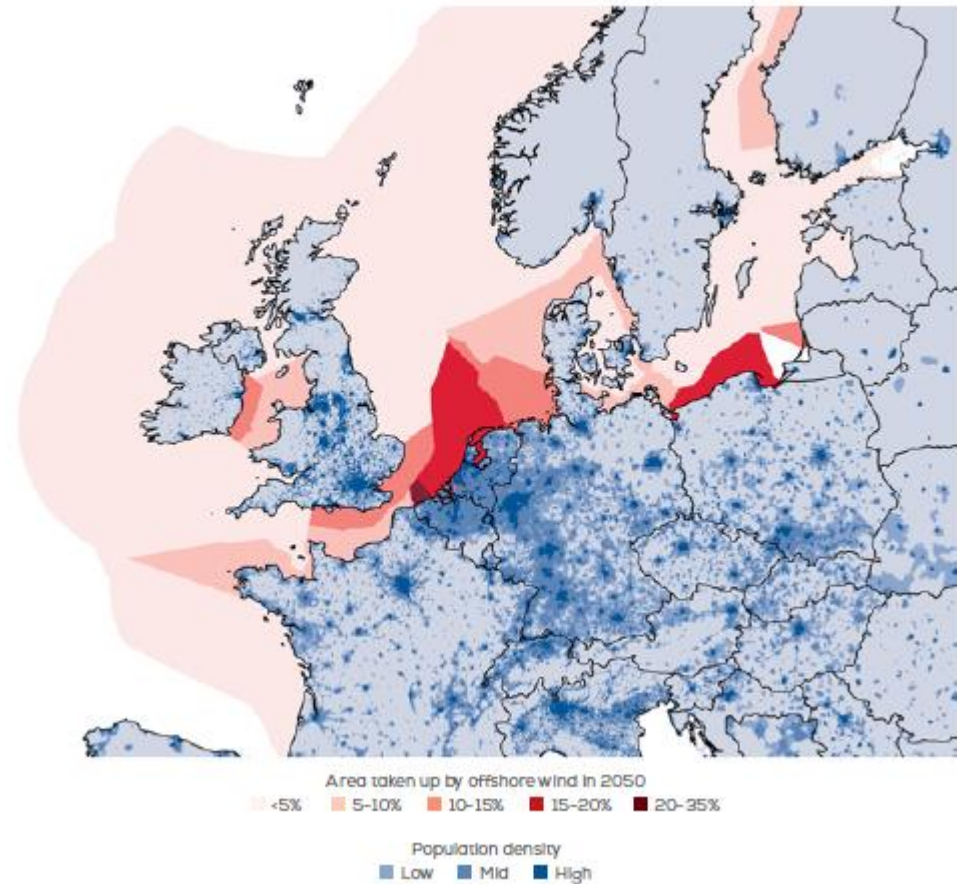


3.1 Great resource, LCOE and decarbonisation makes opportunity for UK and Ireland

WindEurope, *Our energy, our future*, 2019, 450GW vision for 2050

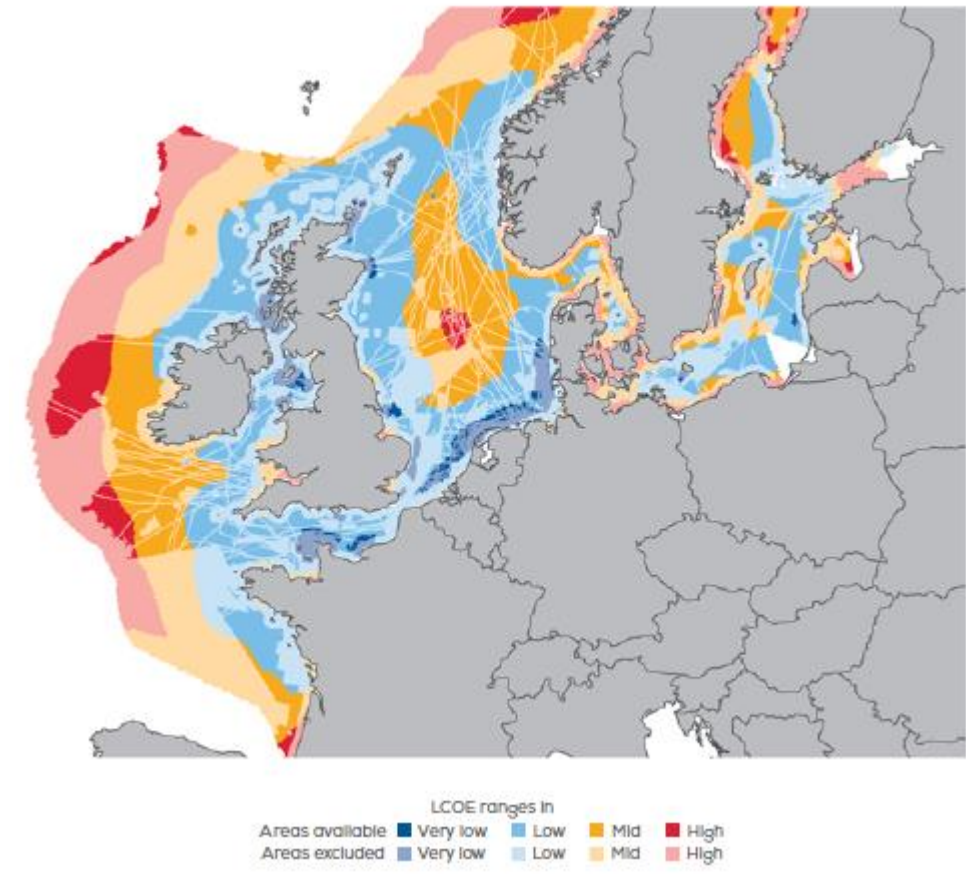
Area of offshore wind (450GW is area the size of Ireland)

FIGURE 4
Location of 380 GW of offshore wind in 2050 by percentage of total sea area (without spatial exclusions), by sub-region



Areas excluded (shown with LCOE)

FIGURE 7
Relative LCOE for offshore wind in the North Seas (with spatial exclusions)



3.2 Opportunity for UK and Ireland: volumes

Using 450GW as a total (30% of Europe's future electricity demand) assign capacity to different areas

Total values shown per country (tables in the report have per sub-region)

- All totals are under the scenario described (i.e. they are a way of meeting 450GW, not the only way)
- UK has the highest total: 80GW
- Ireland has 22GW (mainly for export – either using grid or fuel)
- Huge opportunity for the UK and Ireland
- Does need floating: probably approx. half the opportunity

COUNTRY/AREA	CAPACITY (GW)
UK	80
Netherlands	60
France (excl. Mediterranean)	40
Germany	36
Denmark	35
Norway	30
Poland	28
Ireland	22
Sweden	20
Finland	15
Belgium	6
Lithuania	4
Latvia	3
Estonia	1
Total	380

COUNTRY/AREA	CAPACITY (GW)
Rest of Mediterranean	31
France (Mediterranean)	17
Spain	13
Portugal	9
Total	70

4.1 UK and Ireland offshore wind knowledge base

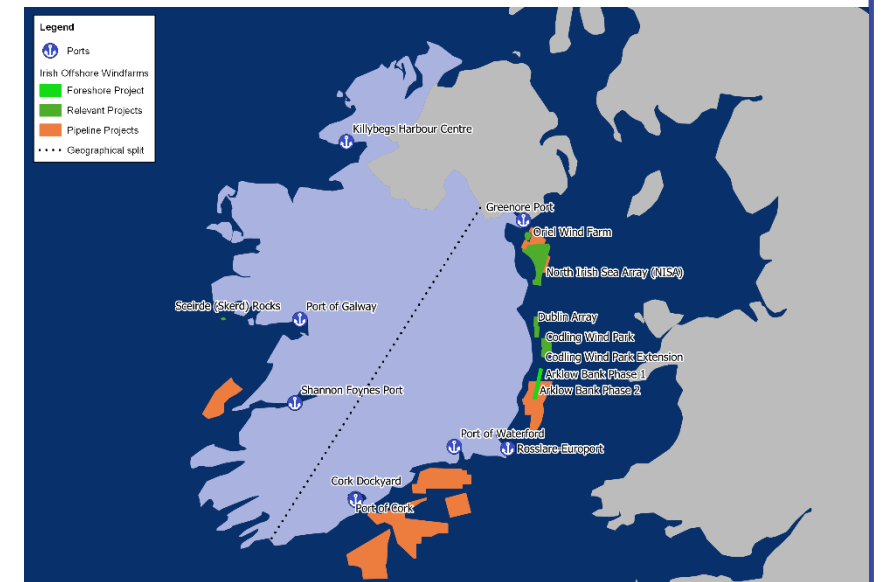
Strong knowledge base from bottom-fixed offshore wind

Developers

- RenewableUK has over 400 members
- Project developers
- Marine contractors
- Some manufacturing of turbines, foundations and cabling
- Services:
 - Consultancy
 - Surveyors
 - Financiers
 - Legals

Ports and supply chain

- Hull
- Lowestoft
- Belfast
- Barrow
- Great Yarmouth
- Ramsgate
- Grimsby
- Blyth
- Nigg
- Mostyn
- Aberdeen
- Methill
- Harwich
- Wick
- Liverpool
- Teesside
- Cromarty
- Rosslare



4.2 UK and Ireland floating offshore wind knowledge base

BEIS building on innovation in floating offshore wind

BEIS innovation support

- Energy Innovation support has included floating offshore wind since 2015
- Will be using a new LCOE assessment for innovators (which I know because I've been working on it this week)

Floating offshore wind demonstration programme

- The Floating Offshore Wind Demonstration programme competition will be an open call that will likely be issued at the end of March 2021.
- <https://www.gov.uk/government/publications/floating-offshore-wind-fow-demonstration-programme>
- BEIS will be awarding grants to fund demonstration projects for new Floating Offshore Wind technologies.
- You can pre-register your interest in this competition: <https://www.smartsurvey.co.uk/s/BEISFOW/> – this is more for BEIS benefit and you will not be limited by the info you submit but does help them understand industry. They will then inform you direct when the application form and the application guidance are available. They will also use the pre-registration mailing list to provide further updates.

4.3 UK and Ireland floating offshore wind knowledge base

Strong knowledge base from bottom-fixed offshore wind

Developers

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- Services:
 - Consultancy
 - Surveyors
 - Financiers
 - Legals

All moving into floating offshore wind

Ports and supply chain

- Cromaty
- Nigg
- Peterhead

And more names to add soon...

Contact us



kff@bvgassociates.com



UK: +44 (0) 1793 799 064; USA: +1 (804) 591 1602



www.bvgassociates.com

BVG Associates Ltd
The Blackthorn Centre
Purton Road
Cricklade, Swindon
SN6 6HY UK
tel +44 (0) 1793 752 308

BVG Associates Ltd
Inovo
121 George Street
Glasgow
G1 1RD UK
tel +44 (0) 44 212 0800

BVG Associates LLC
7400 Beaufont Springs Drive,
Suite 300
Richmond
Virginia
23225 USA
tel +1 (804) 591 1602

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