

Port Opportunities in Offshore Renewable Energy



Energy Ireland Conference
Co. Mayo
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Belfast Harbour

www.belfast-harbour.co.uk

Agenda

- Irish Offshore Energy Market Overview
- The Opportunity for Ports
- An Example - DONG Energy Logistics / Construction Terminal (D1)
- Future Opportunities

Market Overview

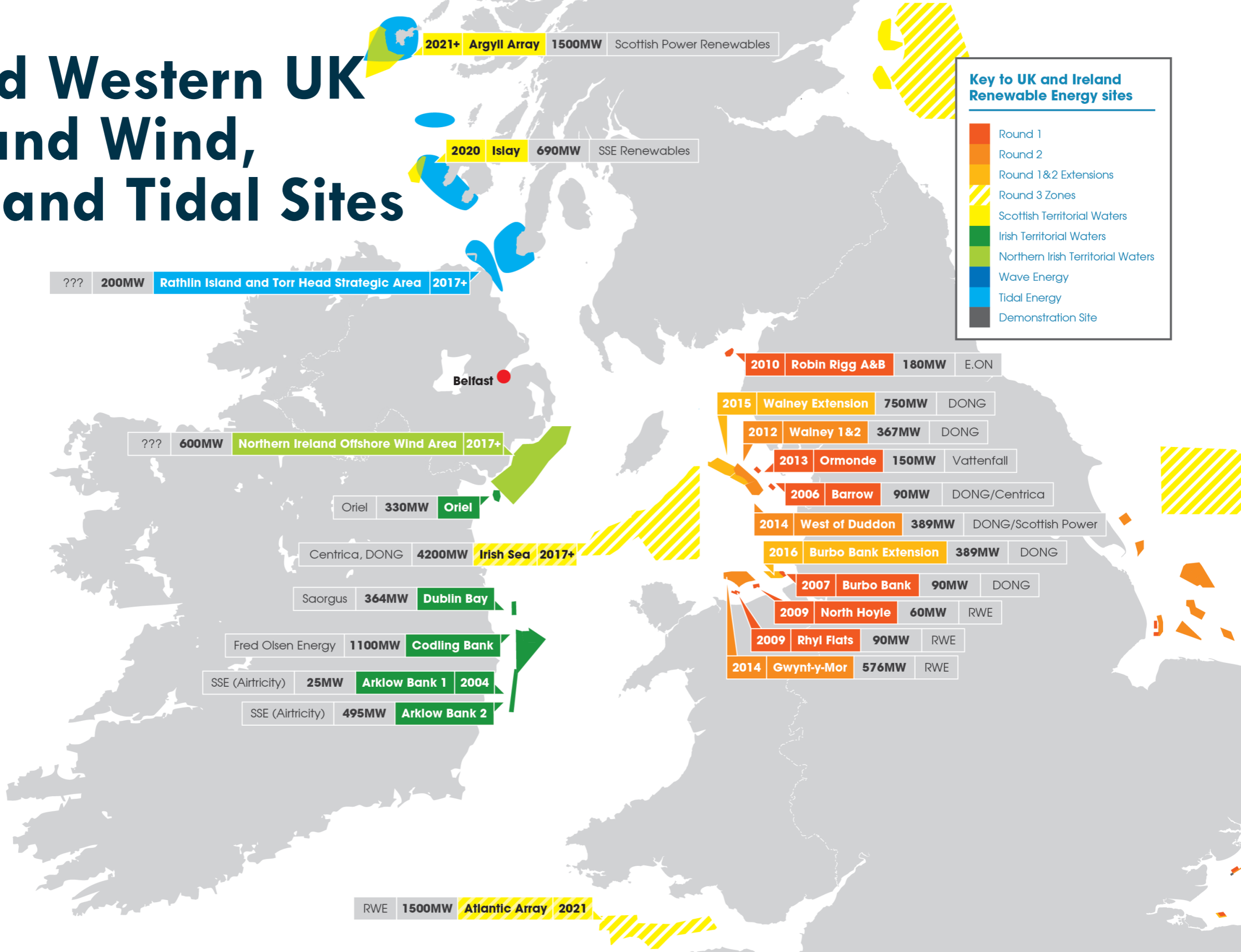
The Known

- Over 13GW of known / defined offshore wind developments in the Irish Sea
- Over 1.6GW of known / defined wave & tidal resources to be developed in the UK Waters

The Potential

- Over 78GW of potential offshore wind in Ireland's territorial waters
 - Over 29GW of potential wave & tidal resources in Ireland's territorial waters
- **A HUGE OPPORTUNITY FOR PORTS**

Named Western UK & Ireland Wind, Wave and Tidal Sites



Port Opportunities

- Logistics/Construction Port Facility
- Manufacturing Facility –
large-scale components
- Operations & Maintenance Port

Port functions

- **Logistics / Construction Port**

Purpose: To receive key windfarm components (turbines/ blades/foundations) from distributed manufacturing sites for consolidation, pre-assembly and load-out to sea for erection

- **Manufacturing Port Facility**

Purpose: Port based site to manufacture major components of an offshore wind turbine which are too large/heavy to transport by road (e.g. turbine nacelles, towers, foundations, cables)

- **Operation & Maintenance (O&M) Port**

Purpose: Operational base throughout lifetime of the windfarm development for monitoring, maintenance and repair

Port requirements summary

- **SIGNIFICANT SCALE** - large land take, heavy duty infrastructure
- **CAPITAL INTENSIVE** – high costs relative to “standard” port infrastructure
- **SPEED OF DELIVERY** - ambitious UK government targets driving the industry at fast pace
- Belfast Harbour was able to deliver on all of these requirements for DONG Energy

DONG Energy in Belfast – A Logistics / Construction Port

- DONG Energy (“DONG”) has the largest portfolio of offshore wind farms of any developer in the Irish Sea with almost 900 turbines to be installed
- DONG’s goal is to industrialise the offshore wind industry resulting in strategic investments such as its Belfast Harbour facility
- Belfast will serve as DONG’s key logistics port for its portfolio of Irish Sea projects over next 10 years

DONG Energy Offshore Wind Terminal

- 480m deepwater quay
- 50 acre storage area
- Heavy Duty infrastructure
- £50m contract
- Completion – Q4 2012

D1 Terminal Construction Overview



- 1,000,000T Stone
- 42,000 cu m concrete

- 750,000 man hours
- €58m contract with local construction firm

What will happen at D1?

- First DONG project confirmed – West of Duddon Sands (WoDS)
- 389MW wind farm using 108 Siemens 3.6MW turbines – est. Project Capex £1.6bn
- Construction due to commence Q1 2013 for 18 months
- DONG operates a multi-contracting procurement strategy with key subcontractors who will occupy D1 under DONG Project Management control

West of Duddon Sands Location

Belfast

approx. 100nm

Walney Ormonde Barrow Morecambe Bay

West of Duddon

- Morecambe
- **Heysham**
- **Fleetwood**
- Blackpool

The inset map shows a red dashed box around the West of Duddon area. A red arrow points from the Belfast location on the main map to this area. The West of Duddon area is highlighted with a red pentagon. Other locations are marked with red dots: Morecambe, Heysham, Fleetwood, and Blackpool. The map also labels Walney, Ormonde, Barrow, and Morecambe Bay.

D1 Installation layout for West of Duddon Sands

Turbine, Tower & Blade Contract Area

Foundation Installation Contract Area

SIEMENS

 **Boskalis**
Dredging & Marine Experts

Future Opportunities in Offshore Wind

- Ports in reactive mode to the sector
- Difficult to invest ahead in high spec facilities, yet market seeks for rapid response upon project green light
- Supply chain opportunities exist in foundation manufacturing, cable manufacturing, blade manufacturing, but....
 - In many cases, the scale of requirements is greater than many Irish Ports can provide
 - In many cases, manufacturers have a North Sea focus due to its greater market size and certainty
- O&M will have long term port requirement when local resource is developed

Future Opportunities in Wave & Tidal

- Perhaps greater future opportunities in wave and tidal sector, given Ireland's strong resource and indigenous sectoral expertise
- Opportunities exist for both construction / logistics activity plus manufacturing activity- smaller scale than offshore wind
- Like offshore wind, catalyst will be awarding of leases for local resources; e.g. NI Territorial Waters (200MW site at Torr Head) in Q4 2012

Renewable Energy in Belfast Harbour - The Future?



Port Opportunities in Offshore Renewable Energy



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