



Ireland's Export Opportunity

**Offshore wind: Exploring
the supply chain opportunities**

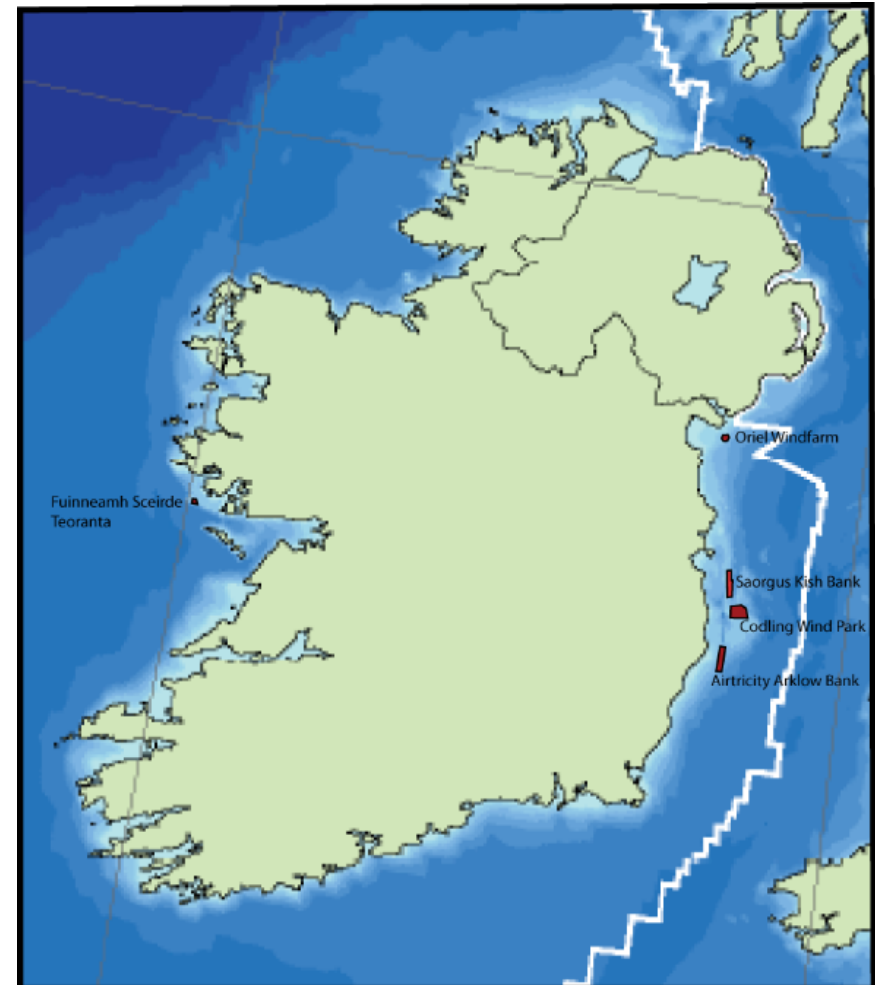
**Brian Britton Secretary NOW Ireland
24th NOVEMBER 2011**

NOW Ireland

The National Offshore Wind Energy Association of Ireland was established in 2007 to promote the development of Ireland's substantial offshore wind resource and to ensure that our island leads the way in building a sustainable, green economy.

Set up by Ireland's five largest operators

- Oriel Windfarm Limited
 - SSE Renewables
 - Codling Wind Park
 - Saorgus Energy Limited
 - Fuinneamh Sceirde Teo
- Capacity of over 2680 MW from existing project areas with potential for a further 5000 MW in the Irish Sea Zone.
 - Potential investment of over €8bn from existing projects.
 - This equates to 20,000 jobs for existing projects and over 50,000 jobs, if full potential were to be built out.





SIEMENS



MURRAY CONSULTANTS
Strategic Communications & Issues Management

centrica



ORIEL
WINDFARM LTD

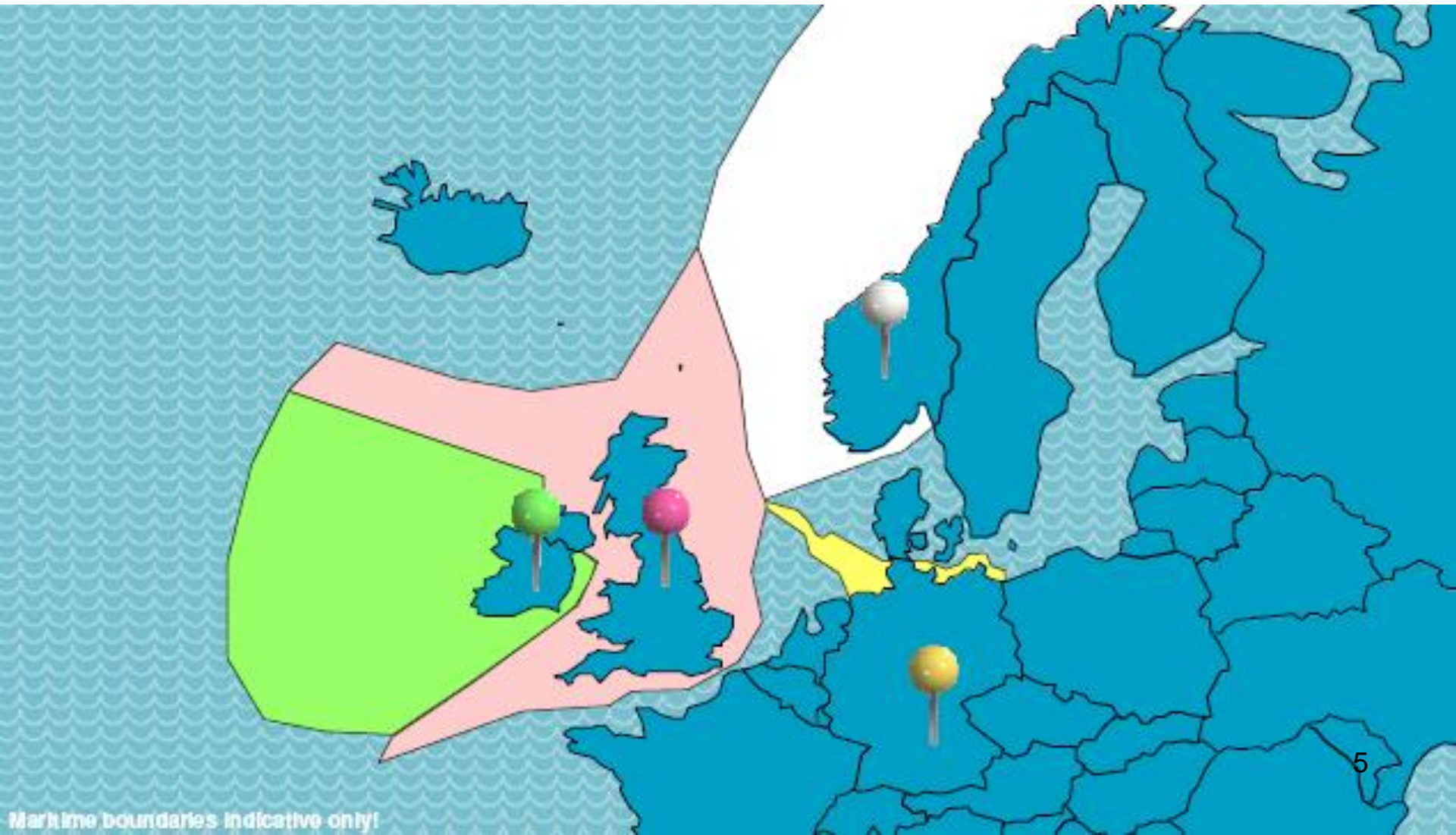


Ireland's Offshore Opportunity

- Ireland has a number of opportunities from Offshore Wind
 - To meet and exceed our renewable energy targets.
 - To export high value green electricity to Europe.
 - To create jobs building and operating Irish Offshore wind farms.
 - To stimulate the €60bn Supply Chain Opportunity afforded by the development programmes for offshore wind in the Irish Sea and over €300bn in the rest of Europe.
 - The European Commission expects the creation of 2.8m jobs by 2020 from renewable energy industry in Europe.

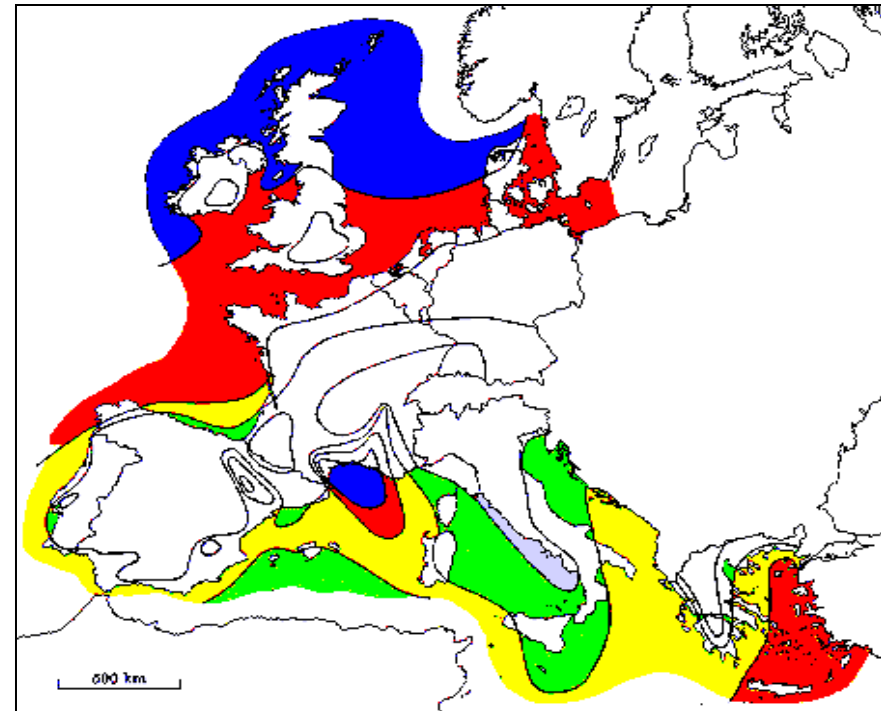


Ireland's National Territory – 8 x Land Mass



Ireland's Offshore Wind Resource

- Ireland potentially has the best offshore wind resource in the world.
- Offshore offers the capacity and greatest potential for substantial increase in indigenous sources of power generation thereby increasing "Security of Supply."
- The only form of renewable energy which offers the scale to meet Ireland's renewable energy targets.
- 2680 MW in planning, a further 5000 MW feasible within Irish Sea Zone, including 1000 MW in Northern Ireland water.
- A further potential 5000 MW in shallow Atlantic waters off the South and West Coast when turbine technology advances - eg floating turbines, co-location.



Average Wind Speeds at 100m above Sea Level in European Waters

*Blue >10 m/sec, Red 8.5 – 10 m/sec,
 yellow 7.5 – 8.5 m/sec , Green 6.0 – 7.5 m/sec*

Renewable Energy Targets

- Both the NI Executive and the Irish government have set ambitious targets for renewable energy deployment by 2020. NI 40% RoI 42.3%.
- Under the EU Renewable Energy Directive, Directive 2009/28/EC, Ireland has a Mandatory target of 16% of all energy consumption to come from Renewables by 2020.
- DCENR estimate in the NREAP that to meet the 42.3% will require **between 4,600 and 5,800 MWT**.
- Industry sources are already predicting that the targets for onshore wind will be difficult if not impossible to reach given the current planning environment and grid issues.
- The NREAP states that 550 MW of offshore wind will be required to meet Ireland's targets.
- Ireland also stated in its NREAP that it is working towards creating the conditions to enable Ireland to become a significant exporter of Renewable Energy over the coming decades.
- The EU Commission are clear, targets will rise and not fall.

Revenue and Employment – Delivering the Green Economy

Gate 3 Projects	Consented Projects Outside Gate 3	Shovel Ready Projects	Developing Irish Sea Zone to Full Potential
• 795 MW	• 1885 MW	• 2670 MW	• 5000 MW
• 215 Turbines	• 420 Turbines	• 635 Turbines	• 600 – 1000 Turbines
• Cap Ex: € 2.4Bn	• Cap Ex: ~ €5.6Bn	• Cap Ex: ~ €8Bn	• Cap Ex: ~ €15Bn
• 6000* jobs	• 14,000 jobs	• 20,000* jobs	• 37,500* jobs

Indecon Cost Benefit Analysis

- Independent study commissioned by NOW Ireland in March 2008 resulting in “Economic Analysis of the Potential for Offshore Wind Energy Generation in Ireland” published by Indecon in September 2008.
- Report Objective 1: Estimate net cost/benefit for enhanced offshore wind development in Ireland.
- Report Objective 2: Estimate other benefits including Non-GHG emissions abatement, Kyoto compliance, tax and employment, fuel-price risk reduction, etc.
- A Financial model based on a 1000 MW wind farm for a 15 year period starting in 2012 was used.
- Conservative cost base used, i.e. €3.5 million per megawatt capital cost – Approximately €1m higher than costs used by EWEA.
- Conservative fuel price forecasts used.

Cost Benefit Analysis Conclusions

- Shows primary net direct benefit for Ireland Inc. of up to €1.7 billion 2012 – 2027.
- Extra quantifiable indirect benefits €2.1 billion including Merit Order Effect, employment, carbon fines saved, reduced emissions, etc.
- In virtually all scenarios there is a direct net benefit, in all scenarios there is an economic benefit when indirect benefits are included.
- 2680 MW in the consenting process for NOW Ireland Members and an estimated further 5000 MW possible in Irish Sea Zone.
- Although this report was written in 2008 when oil prices and electricity demand were higher than they are today, due to the delays experienced in rolling out offshore projects to date, it is likely that demand and fuel prices will be back to where they were and more by the time projects are up and running from 2015.

Ireland Open for Business

- Ireland has the resources to make it an attractive venue for investment in renewables.
- In addition to resources, investors require market signals
 - REFIT
 - Export Market Mechanism
- Offshore REFIT was announced by the Irish Government in 2008 and has yet to be implemented.
- The vast majority of EU States have REFIT or other support mechanisms in place.
- This is regarded by potential investors as being the most critical investment signal.
- The majority of Irish Offshore energy will be exported.
- Export needs to be facilitated through investment in infrastructure and development of market mechanisms.

Ireland – UK – Europe – A Route to Export Markets



Export Opportunity – Energy

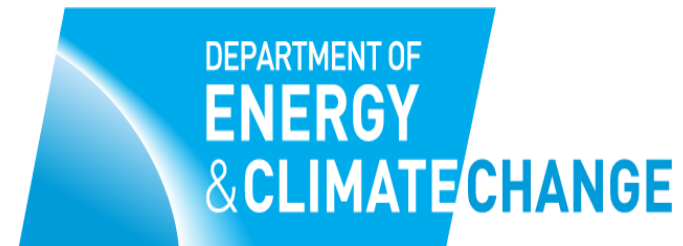
- EU Renewables Directive issued June 2009:
 - Allows EU inter state trading
 - Required individual member states to publish RE targets and the manner in which they would be achieved
- Affords a country like Ireland with its massive offshore wind and ocean resource the opportunity to export.
- How would export of energy work
 - Interconnection
 - Direct connection of wind farms
 - Statistical transfer / market mechanism
- Critical path analysis / timeline review for the industry 20/30 years out with coordinated forward planning required.
- Mechanism for export then needs to be developed by stakeholders in Ireland with objective of:
 - Protecting the consumer
 - Encouraging export development



Ireland can become an *energy secure* and *exporting* country, replacing almost €6bn in imports with up to €10bn in renewable energy exports.

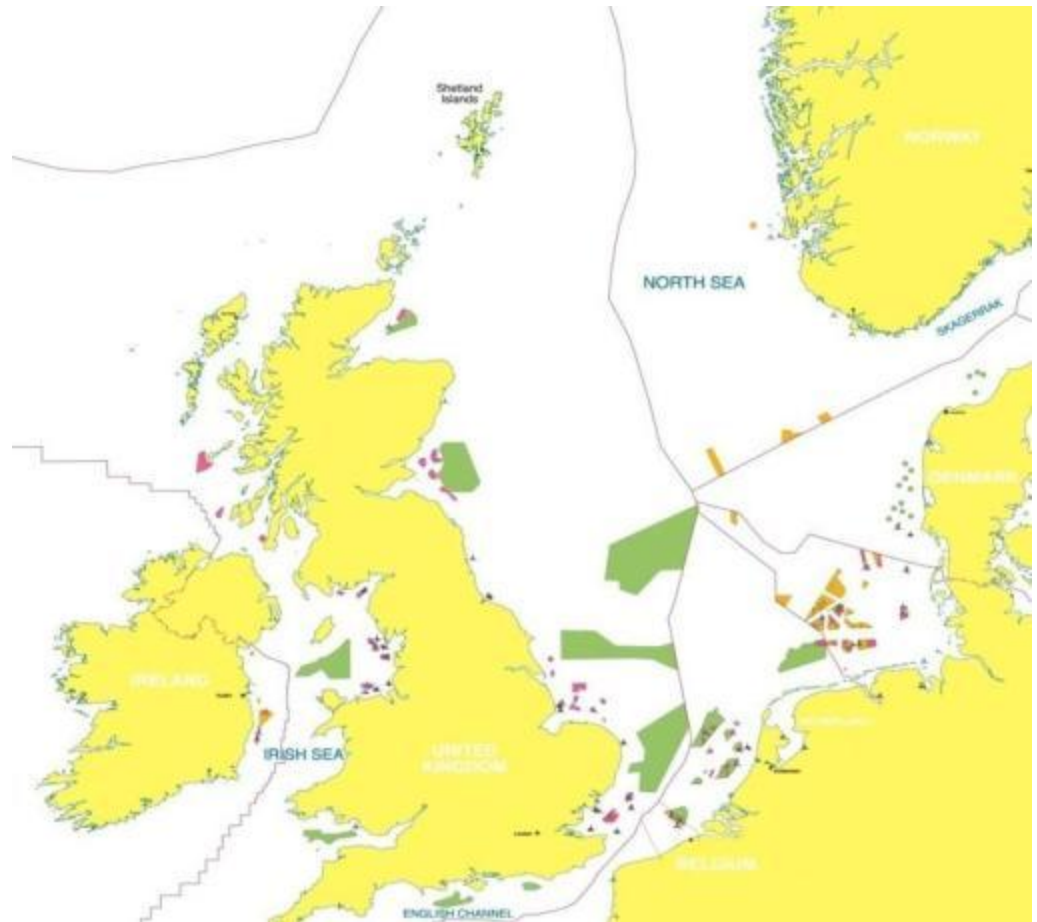
British Irish Council – An All Islands Approach to Energy

- British Irish Council announcement , 20th June 2011. UK White Paper on Energy Market Reform and Renewables Roadmap, 12th July 2011.
- Acknowledges Ireland’s substantial renewable energy resources.
- Indicates that import of Irish renewable energy is a policy which the UK sees as beneficial.
- Calls for an All Islands Approach to energy development.
- Commitment to working towards developing a market mechanism to allow energy to be traded between nations.
- The backdrop is UK security of supply and renewable energy targets.
- Policy Commitments from the UK have already increased investor certainty in Irish renewable energy.

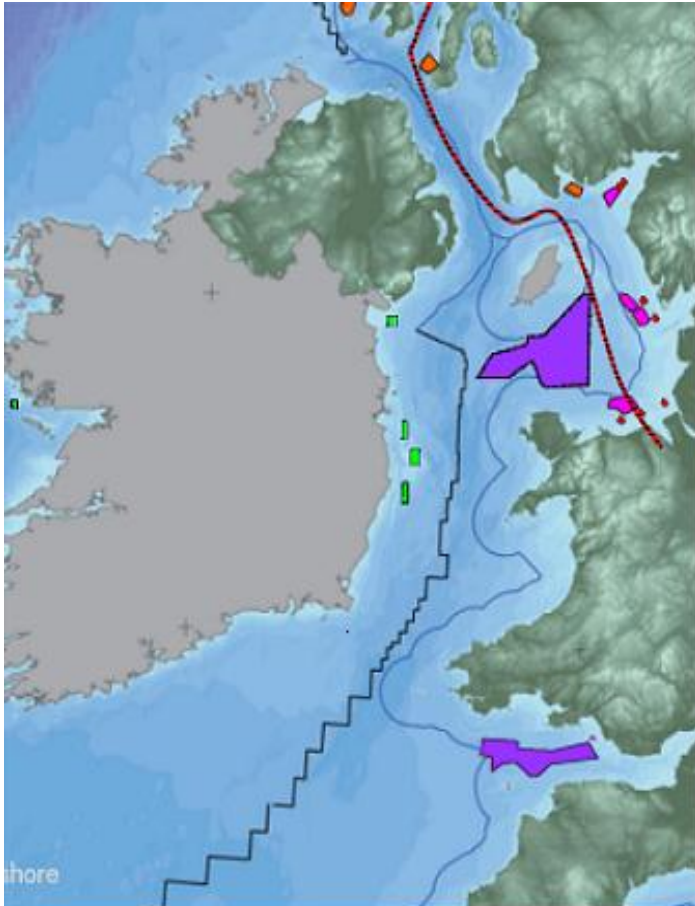


Export Opportunity - Supply Chain

- There is currently over 100,000MW of offshore wind capacity under development or planned in European waters.
- The European Commission expects the creation of 2.8m jobs by 2020 from renewable energy industry in Europe.
- Siemens have predicted that there will be €300bn invested in the offshore wind industry alone in the next 20 years.
- The UK is planning the installation of 33,000 MW of offshore wind generation capacity over the next 10 years.
- An Open for Business approach yields supply chain jobs, eg GB & NI



Export Opportunity - Supply Chain €60bn



Offshore Windfarm Developments in the Irish Sea					
	Location/Name	Status	Capacity MW's	No. of Turbines	Developer
Round 1			660		
1	North Hoyle	Operating (Dec 2003)	60	30	RWE-npower renewables
2	Barrow	Operating (Sept 2006)	90	30	Centrica/DONG Energy
3	Rhyl Flats	Operating (Dec 2009)	90	25	RWE-npower renewables
4	Burbo Bank	Operational (Oct 2007)	90	25	DONG Energy
5	Ormonde	Approved	150	30	Vattenfall
6	Robin Rigg	Under Construction	180	60	E.ON UK Renewables
Round 2			1620		
7	Walney	Construction 2010-2012	370	102	DONG Energy
8	Gwynt y Mor	Approved	750	250	RWE-npower renewables
9	West Duddon	Approved	500	139	ScottishPower / DONG Energy
Round 1&2 Extensions			984		
10	Burbo Bank	Pre application investigations	234	65	DONG Energy
11	Walney	Pre application investigations	750	150	DONG Energy
Round 3			5500		
12	Irish Sea Zone	Pre application investigations	4000	800	Centrica/RES Group
13	Bristol Channel	Pre application investigations	1500	300	RWE-Npower Renewables
Western Scottish Territorial Waters			3138		
14	Solway Firth	Pre application investigations	300	60	E.ON Renewables UK
15	Wigtown Bay	Pre application investigations	280	56	Dong Wind (UK) Ltd
16	Kintyre	Pre application investigations	378	76	SSE Renewables
17	Islay	Pre application investigations	680	136	SSE Renewables
18	Argyll Array	Pre application investigations	1500	300	Scottish Power Renewables
NI Territorial Waters 600 to 900 MW expected to be developed on completion of SEA					
19	TBC	TBC	750	150	TBC
Irish Territorial Waters			2680		
20	Oriel Windfarm	Approval Pending - Gate 3	330	55	Oriel Windfarm
21	Dublin Array	Application submitted - Gate 3	725	175	Saorgus Energy
22	Codling Wind Park 1	Approved - non Gate 3	1100	220	Fred Olsen /Treasury Holdings
23	Arklow Bank	Approved - non Gate 3	525	200	SSE Renewables
Further Irish sea Capacity			4000		
			800		
			TBC		
Irish Sea totals			19,368 MW	4200 turbines	Circa €60bn

- The biggest supply chain market for offshore wind in the world is on our backdoor in the Irish Sea Zone, a supply chain opportunity of over €60bn

Ireland is Already Involved in Offshore Wind Supply Chain

- Development Companies
- Project Delivery Management
- Port Facilities
- Marine Services
 - Diving Companies
 - Work Boats
 - Forecasting
 - Engineering and Environmental services



Other supply chain gaps can be filled by Irish companies

Delivering on our Opportunity

- Develop a positive mindset – our resources are unparalleled .
- Look beyond our shores for the opportunity which exists.
- Ensure our national policies support our industry objectives.
- Create the necessary market mechanism
 - Ireland / UK / Europe.
- Be the leaders of the change Ireland wants and needs.



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