

Global Offshore Windfarms: Comparison with Ireland



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Irish Offshore Wind Farms – Too Big and Too Close to Shore

- The attached spreadsheet compares offshore windfarms (OWF) permitted and proposed in Ireland with OWF permitted and proposed in Europe and other countries
- Irish offshore wind farms, permitted and progressed under outdated legislation (The Foreshore Act 1933) during an era of inadequate regulation and speculation (2002 to 2008) are generally out of line with regard to a combination of the following key parameters:
 - Proximity to shore
 - Number of turbines
 - Turbine Size
 - Total Size of Windfarm (capacity)
- Offshore wind farms are a relatively new technology. At the moment they are largely confined to Europe with 3,800MW installed in 2011.
- The UK accounts for 50% of all offshore wind farms, Denmark 23%, Germany 5%, Netherlands 6%. Belgium 5%.
- Offshore windfarms are controversial when proposed in the near shore zone because of landscape impacts and potential impacts on wildlife, fisheries etc.
- Most of the Irish coastline is designated for its high landscape quality.
- The trend now is for offshore windfarms to be located outside the 12nm zone (22.2km).
- The average distance from shore for offshore wind farms in 2010 was 27.1km according to the European Wind Energy Association. (Trends and Statistics).

Offshore Wind Farms: Comparison Ireland & EU

Offshore wind farms (OWF) are a relatively new technology. Apart from China where some offshore development has taken place, no country outside Europe has yet installed an offshore wind farm.

In European waters, at end 2011, a total of 1371 offshore turbines were installed and grid connected, totalling 3,812MW. Over 50% of this development is in the UK which is relying on offshore wind to meet challenging renewable energy targets.

Most European countries considering offshore wind development have introduced new legislation and regulations to ensure that this new industrial development at sea is appropriately sited. Offshore windfarms proposed inside the 12nm zone (22km) are very controversial because of concerns over impact on landscape, fisheries, marine wildlife and tourism. Many countries are introducing 12nm buffer zones to protect sensitive inshore zones and the trend now is for larger offshore windfarms, far from shore. The average distance from shore of OWFs under construction in 2011 is 37km.

United Kingdom: (50% of total offshore wind power installed)

UK Government has introduced OWFs in a controlled manner in three separate rounds

Round 1: 2001

- OWFs limited to 90MW capacity, 10km², 30 turbines
- Lease 22 years

Round 2: 2003

- Larger OWFs in deeper water in three strategic areas chosen by Government following public consultation and Strategic Environmental Assessment .
- Sites awarded by competitive tender
- Lease 50 years for largest projects

Round 3: 2008

- Government promoting OWFs in deeper water farther from shore.
- SEA carried out to examine potential of UK seabed up to 60m in depth
- Objective
 - to meet challenging EU targets for renewable energy
 - to position UK as leader in offshore technology drawing on experience in offshore oil and gas
- Sites awarded by competitive tender
- Lease 50 years.

Denmark (23% of offshore windpower installed)

- No turbines over 2.3MW have been permitted inside the 12nm zone (22km)
- OWFs are located in areas chosen by the Government and supported as demonstration projects for Danish wind industry
- Note: DK is a leading manufacturer of offshore wind turbines

Germany, (5%); Netherlands (6%); Belgium (5%)

- These countries have introduced a 12 nm buffer zone (22.2km) to preserve the wildlife and scenic amenity of the coastline.
- Apart from a few demonstration projects, OWFs are confined to areas outside 12 nautical mile zone in North Sea and Baltic Sea.
- Large scale projects are planned far from shore with turbines of 5MW plus.
- Note: Germany is a leading manufacturer of offshore wind turbines.

France

- No offshore wind farms approved or installed.
- Early proposals for near-shore development proved very controversial.
- Foreshore legislation was overhauled and Government identified five zones prior to inviting companies to take part in competitive tender (2011).

Spain

- No offshore wind farms approved or installed.
- Offshore wind development in near shore zone is very controversial. Relevant legislation is currently being overhauled.

Ireland (1%)

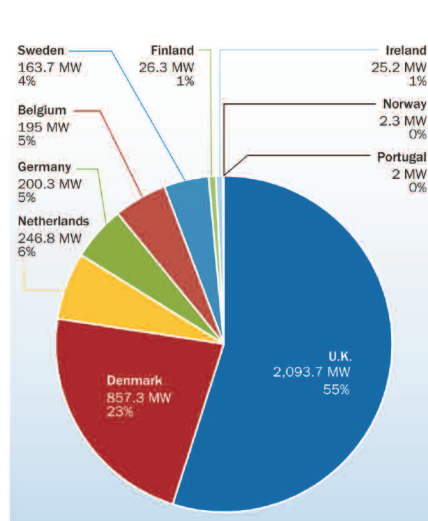
Only one offshore wind farm (25MW) has actually been installed in Ireland. However extensive foreshore leases for construction and licences for exploration were awarded to private developers in the period 2002 to 2008 under inadequate regulation and outdated legislation, drawn up before offshore windfarms were envisaged. In contrast to other EU countries:

- No overhaul of outdated legislation(Foreshore Act 1933) governing construction at sea took place in advance of permitting two of the biggest offshore wind farms in the world (totalling 1620MW) in the nearshore zone (10 to 12km off Wicklow)
- There was no government Plan for offshore renewables energy or selection of strategic zones
- No Strategic Environmental Assessment to assess cumulative impacts
- Developers were allowed to pick out sites on a 'first come first served' basis.
- Foreshore leases (99 year) for construction were awarded on the sole authority of the Minister for the Marine
- No right of appeal against the Minister's decision
- No statutory involvement of local authorities
- No competitive tender process
- No independent, professional assessment of cumulative landscape impact
- No apparent restrictions on size of windfarms, number of turbines or proximity to coastal landscapes designated for protection because of their special landscape qualities
- Developers were permitted to sell on the foreshore leases in advance of construction at a price based on the size of the development permitted.

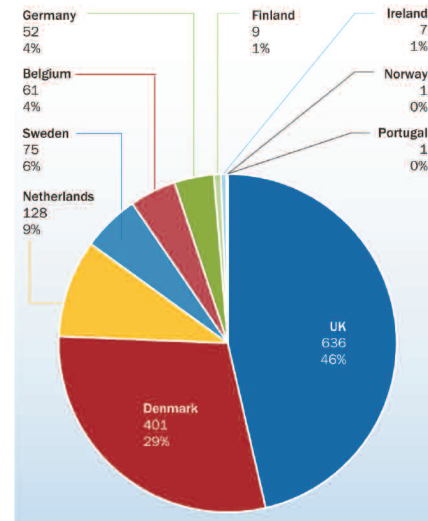
The European Offshore Wind Industry Key 2011 Trends and Statistics

- The average offshore wind farm size in 2011 was almost 200MW up 29% (45MW) on the previous year.
- Average water depth in 2011 reached 22.8m, substantially more than last year.
- Average distance to shore decreased, being 23.4km in 2011 compared to 27.1km the previous year. However, the distance of wind farms under construction is 33.2km (pg. 3).

Installed capacity: cumulative share by country at end 2011 (MW)



Installed turbines: cumulative share by country at end 2011



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Coastal Concern Alliance - Global Offshore Windfarm Comparison							
Country	Name	Distance from coast (Km)	No of Turbines	Turbine Size (MW)	Capacity (MW)	Status of Project	Remarks
IRELAND	Sites(below) for large windfarms, close to shore, were picked out by private developers on a "first come first served basis in the period 2001 to 2008. There was no Government Plan for use of Ireland's coastal waters, no strategic environmental assessment, no size restrictions and no competitive tender. Leases for construction awarded on sole authority of Minister for Marine. There was no right of appeal".						
1	Arklow Bank Wind Park (S.Wicklow)	8	200	>5	520	Approved Jan 2003. Phase 1; 25.MW. Operational 2003. (7 x 3.6MW turbines).	Approved by Frank Fahey (Minister for Marine). Phase 1 : Built, owned and operated by General Electric as a test project for its new 3.6MW turbines.
2	Codling Wind Park 1 (N. Wicklow)	13	220	5	1100	Approved Nov 2005	Approved by Noel Dempsey (Minister for Marine)
3	Oriel Wind Park (Dundalk Bay)	5	55	6	330	Application Feb 2007	Environmental Impact Statement (EIS) submitted. Consultation finished. Awaiting decision
4	Dublin Array/Kish Bank (Dublin Bay /Killiney Bay/North Wicklow)	10	145		500	Application 2006	EIS submitted. Application on hold. Full details not announced
5	Skerd Rocks (Galway Bay)	5	20	5	100	Application Jan 2009	EIS submitted. Consultation finished. Awaiting decision
6	Codling Wind Park 2 (North Wicklow)	13	200	5	1000	Application March 2009	EIS submitted. Full details not announced.
N. IRELAND	No offshore wind farms permitted .Potential site off County Down for 600MW offshore wind farm development was chosen by Government following Strategic Environmental Assessment in 2010. Leasing round launched to select developers on this site by competitive tender (2011).						
1	Tunes Plateau	5	50	5	250	Refused 2003	Opposed by Coleraine, Moyle and Donegal Councils due primarily to landscape impact.
DENMARK	Offshore windfarms are located in areas chosen by DK Gov and supported as Demonstration Projects for DK wind industry						
1	Middlegrunden	3	20	2	40	Operational 2001	Owned by local co-op. Pilot project.
2	Horns Rev 1	15	80	2	160	Operational 2002	
3	Nysted 1	10	72	2.3	165	Operational 2004	
4	Horns Rev 2	30	92	2.3	215	Operational 2009	Extension to Horns Rev 1
5	Nysted/Rodsand 2	8.8	91	2.3	209	Under construction	Extension to Nysted 1
6	Anholt	21	111	3.6	400	Under construction	

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Country	Name	Distance from coast (Km)	No of Turbines	Turbine Size (MW)	Capacity (MW)	Status of Project	Remarks
BELGIUM	Offshore windfarms restricted to area outside 12 nautical mile zone (22.2km) (apart from one demonstration project)						
1	Vlakte van de Raan	15	50	2	100	License cancelled by Belgian Government 2005	Flagship project approved (2002) and subsequently cancelled by Belgian Government because of visual and environmental concerns Following this controversy, the Belgian government designated a dedicated area for OWFs outside 12 nautical mile zone(22.2km)
2	Thornton Bank - Phase 1	30	6	5	30	Operational 2009	Belgium's first OWF. Test site for 5MW machines
3	Thornton Bank - Phase 2 & 3	27	60	6	300		
4	Northwind	37	72	3	216	Approved	
5	Belwind 1	46	55	3	165	Operational 2010	
5	Belwind	46	66	5	330	Approved 2008	
NETHERLANDS	Offshore windfarms restricted to area outside 12 nautical mile zone (22.2km). (Apart from one demonstration project)						
1	Near Shore Wind Park(NSW) Egmond ann Zee	11	36	3	108	Operational	Demonstration Project .This will be the only OWF allowed within the 12 mile zone(22km)
2	Q7/Princess Amelia	25	60	2	120	Operational 2008	Lease for 20 yrs only(.then demolition)
Others	Approximately 20 applications have been lodged for far shore wind farms in the North Sea .Each restricted to 300-500MW , maximum area 50km ²				300/500	20 applications lodged	

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Country	Name	Distance from coast (Km)	No of Turbines	Turbine Size (MW)	Capacity (MW)	Status of Project	Remarks
GERMANY	Offshore windfarms restricted to area outside 12 nautical mile zone (22.2km). (Apart from demonstration project)						
1	Alpha Ventus Test Site.	43 km off island of Borkum	12	5	60	Operational 2010	Germany's first OWF.Public/ private partnership to provide test facilities for 5MW turbines in deep water
2	Baltic 1	16	21	2.3	48	Operational 2011	Germany's first commercial OWF
3	Bard 1	100	80	5	400	Under construction 2012	
Others	Over 30 applications have been lodged for far shore wind projects in German Exclusive Economic Zone (EEZ) area of North/Baltic Sea	30 - 120				26 projects approved (23 in North Sea, 3 in Baltic)	
SWEDEN	Limited installation to date due to environmental concerns and local opposition						
1	Lillgrund	7km south of Oresund Bridge connecting DK and SW	48	2.3	110	.Operational 2007	Very controversial project because of proximity to shore. Held up for over 10 years because of concerns about turbine height etc.
2	Utgrunden 2	6	24	3.6	86	Approved 2005	Project postponed
3	Skottarev	8	30	5	150	Application declined 2009	Strong local opposition. Consented in 2005 but Consent overturned in 2009 by high court due to possible impact on cod spawning ground
4	Ostersund	12	48		144		
5	Kriegers Flak 2	32	128	5	640	Approved.Project postponed	Swedish Transmission System Operator (TSO) pulled out of project
6	S. East Baltic	100	na	na	700	Plans announced 2012	

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Country	Name	Distance from coast (Km)	No of Turbines	Turbine Size (MW)	Capacity (MW)	Status of Project	Remarks
NORWAY	No offshore windfarms installed. Norwegian Government carried out Strategic Environmental Assessment (2011) prior to opening areas for OWF projects						
1	Havsul 1	6km from island	78		350	Approved 2008	
2	Havsul 2	2	178		800	Refused 2008	Refused on environmental grounds
3	Havsul 3				350	Application dropped	Dropped because of opposition in popular tourist area.
4	Havsul 4	130	200	5	1000	Refused 2008	Refused on environmental grounds
5	Hywind (floating)	10	1	2.3	2	In operation 2010	World's first full scale floating turbine
FINLAND	No offshore wind farms approved or installed *						
1	Korsnas	15	160	5	800	On hold 2008	Environmental study on hold 2008
SPAIN	No offshore wind farms approved or installed. Strict environmental regulations in operation						
1	Cape Trafalgar	15		3	1000		Controversial (due to tourism and fisheries). Project reduced from 2000MW proposed in 1999.
2	Valencia				384		Controversial. National Coastal Directorate has announced that project will be rejected on visual impact and environmental grounds
FRANCE	No offshore wind farms installed *. Government identified 5 suitable zones for offshore windfarms (following local consultation) prior to inviting companies to tender in 2011 for total 3,000 MW capacity (max 600 turbines)						
1	Cote D'Albatre	7	21	5	105	Application	Controversial. Objections from fishery and tourist industries
2	Dunkerque	14			120	Refused	
3	Deux Cotes	18	140	5	700	Refused	Controversial. Appeal lodged (see www.debatpublic-eolien-en-mer.org)
4	Winflo (floating)	na	1	3	3	Approved 2008	Floating lightweight offshore turbine

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Country	Name	Distance from coast (Km)	No of Turbines	Turbine Size (MW)	Capacity (MW)	Status of Project	Remarks
UK							
The UK government has controlled offshore wind farm development by holding leasing rounds for specific locations and competitive tender							
Round One (2001) : Sites restricted to 10km² with permission to develop up to 30 Turbines on each (max output of 90 mw)							
1	Blyth	1	2	4			UK's first OWF
2	Scroby Sands	2	30	2	60	Operational 2004	Very controversial
3	North Hoyle	8	30	2	60	Operational 2003	
4	Barrow	10	30	3	90	Operational 2006	
5	Kentish Flats	8	30	3	90	Operational	Extension of 17 turbines proposed 2011
6	Burbo Bank	7	30	3	90	Operational	
7	Rhyl Flats	8	25	3.6	90	Operational 2009	
8	Robin Rigg Solway Firth	10	60	3	180	Operational 2010	Controversial.Opposed by Scottish National Heritage
9	Lynn	5	30	3	90	Operational 2008	
10	Inner Dowsing	5	30	3.6		Operational 2008	
11	Gunfleet Sands 1	6	30	3.6	108	Operational	
12	Cromer	7.5	30		108	Authorised	Application withdrawn after approval
13	Shell Flats1	7	30		324	Application	Rejected because of concerns re birds,etc
14	Scarweather Sands (S.Wales)	5	30	3.6	108	Approved & Subsequently cancelled	Very controversial .opposed by tourist and wild life interests . Cancelled in 2009 following public inquiry
15	Teeside/Redcar	1.5	27	2.3	62		Very controversial. High Court
16	Ormonde	10	30	5	150	Under construction 2011	
17	Beatrice Demonstrator Project (Moray Firth)	25	2	5	10	Operational <i>Distant Offshore Wind Farm with no Visual Intrusion in Deepwater Programme (DOWNVInD)</i>	Demonstration Project for deepwater turbines far offshore Financed by EU

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Country	Name	Distance from coast (Km)	No of Turbines	Turbine Size (MW)	Capacity (MW)	Status of Project	Remarks
UK Round 2 (2003) Substantially larger OWFs in deeper water (3 strategic areas nominated by UK Government following consultation)							
Thames Estuary							
1	London Array (Phase 1)	21	175	3.6	630	Under construction	Shell withdrew 2008
2	Greater Gabbard	26	140	3.6	500	Under construction	First OWF to be built outside UK territorial waters. Problems with defective foundations (2011)
3	Galloper	27	140	3.6	504	Application	Extension to Greater Gabbard
4	Gunfleet Sands 2	9	18	3.6	64	Operational 2010	Extension to Gunfleet Sands 1
5	Thanet	11	100	3	300	Operational 2010	World's largest offshore windfarm
NorthWest (Solway) to North Welsh Coast							
1	Gwynt Y Mor (Wales)	18	160	3.6	576	Approved in last days of Labour Administration (Dec 2008)	Very controversial. Welsh Assembly called for Public Inquiry. Size of project reduced by 20% due to concern over visual impact / tourism (www.saveourscenery.com)
2	Walney Windfarm	15	102	3.6	389	Phase 2 under construction 2011	Phase 1 (183 MW) operational 2011
3	West of Duddon Sands (N. Irish Sea)	14	108	3.6	389	Application	Refused planning permission for onshore substation 2010
The Greater Wash							
1	Sherringham Shoal	17	88	3.6	315	Under construction	
2	Shell Flats 2	7	90	5		Application 2003	Opposed by RSPB, English Nature, MOD, etc. Project was reduced in size and resubmitted as Cirrus Shell flat below.
3	Cirrus Shell Flats	7	90	3	270	Application 2007	
4	Humber Gateway	8	73	3	230	Approved 2011	

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