WWEA
世界风能协会
Всемирная Ассоциация по Ветроэнергетике

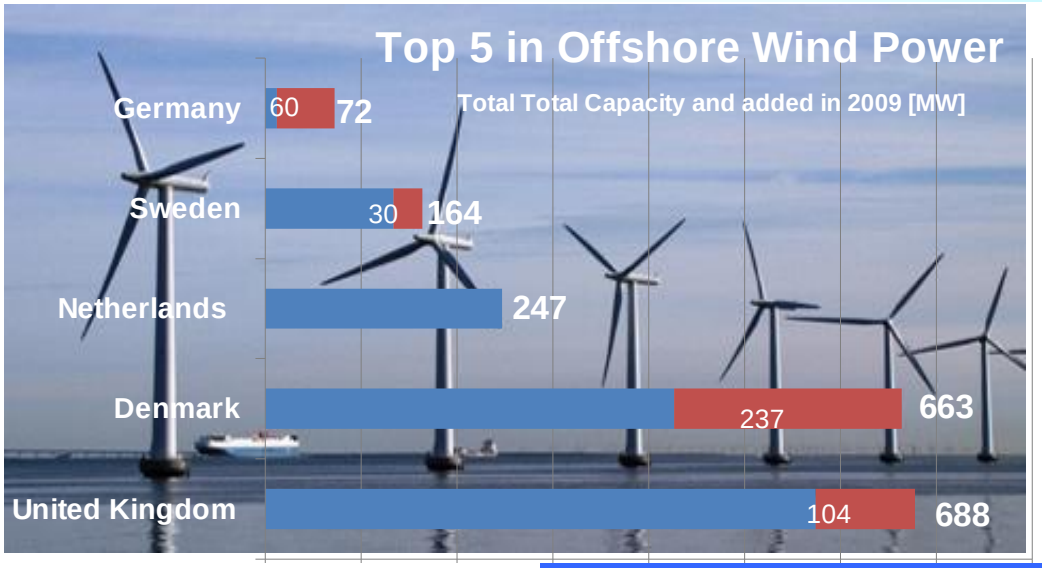
The Worldwide Prospects of Wind Power Offshore

28 October 2010

Wind energy offshore

Offshore capacity worldwide and share in total installed capacity:

2007:	1141 Megawatt	1,55 %
2008:	1491 Megawatt	1,23 %
2009:	**1956 Megawatt**	**1,22 %**



Position 2009	Country	Total Offshore Capacity [MW] end 2009	New Offshore Capacity [MW] installed in 2009	Total Offshore Capacity [MW] end 2008	Rate of Growth [%]
1	**United Kingdom**	**688,0**	104,0	574,0	18,1
2	**Denmark**	**663,6**	237,0	426,6	55,6
3	**Netherlands**	**247,0**	0,0	247,0	0,0
4	**Sweden**	**164,0**	30,0	134,0	22,4
5	**Germany**	**72,0**	60,0	12,0	500,0
6	**Belgium**	**30,0**	0,0	30,0	0,0
7	**Finland**	**30,0**	0,0	30,0	0,0
8	**Ireland**	**25,0**	0,0	25,0	0,0
9	**China**	**23,0**	21,0	2,0	1050,0
10	**Spain**	**10,0**	0,0	10,0	0,0
11	**Norway**	**2,3**	2,3	0,0	/
12	**Japan**	**1,0**	0,0	1,0	0,0
	TOTAL	**1955,9**	**454,3**	**1491,6**	**30,5**

Projects expected to be online (currently under construction):

in 2010: 938 MW added	2894 MW total	(~1,4 % of total)
In 2011: 1300 MW added	4192 MW total	
In 2020:	40‘000 MW total?	(~2 % of total)

Projects planned in
Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Norway, Poland, Portugal, Sweden, The Netherlands, United Kingdom

Outside Europe:
Canada, China, India, Japan, South Korea, Taiwan, USA

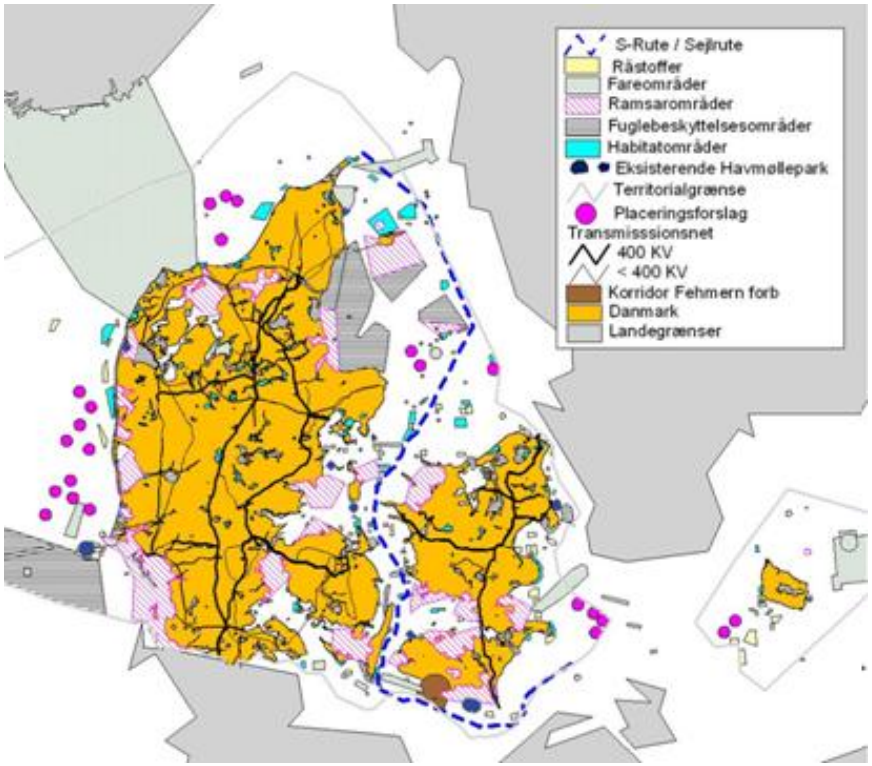
Source:
WWEA/Wind ServiceHolland: http://home.kpn.nl/windsh/offshoreplans.html

Denmark:

Possible in 2025: 4600 Megawatt

Tender for Anholt closed yesterday

Source: Danish Energy Agency



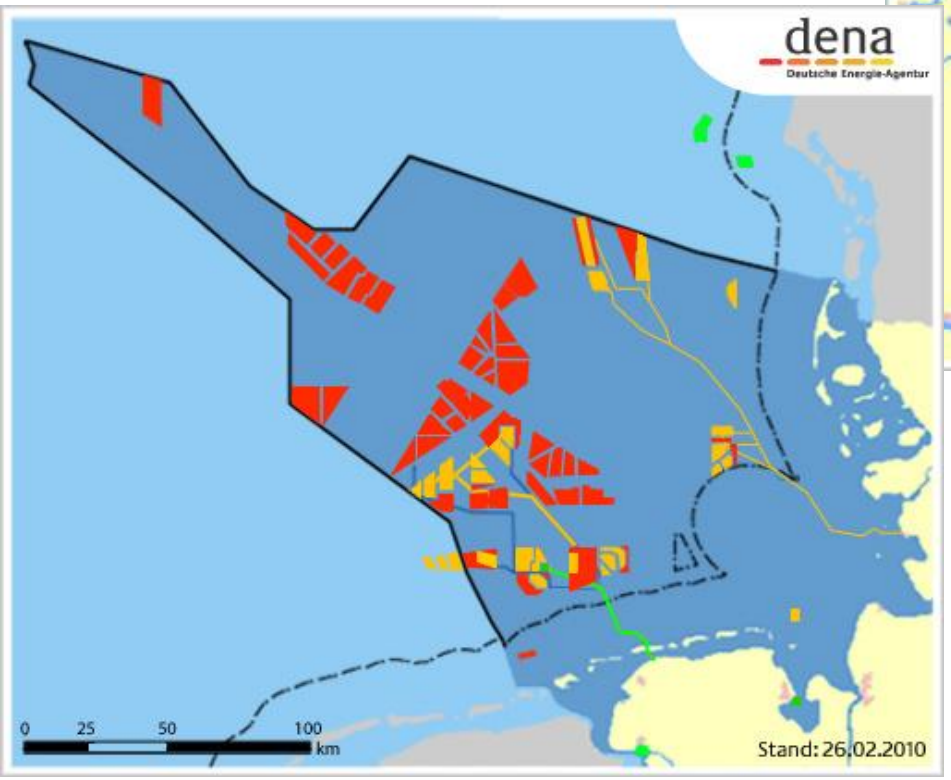
Current parks

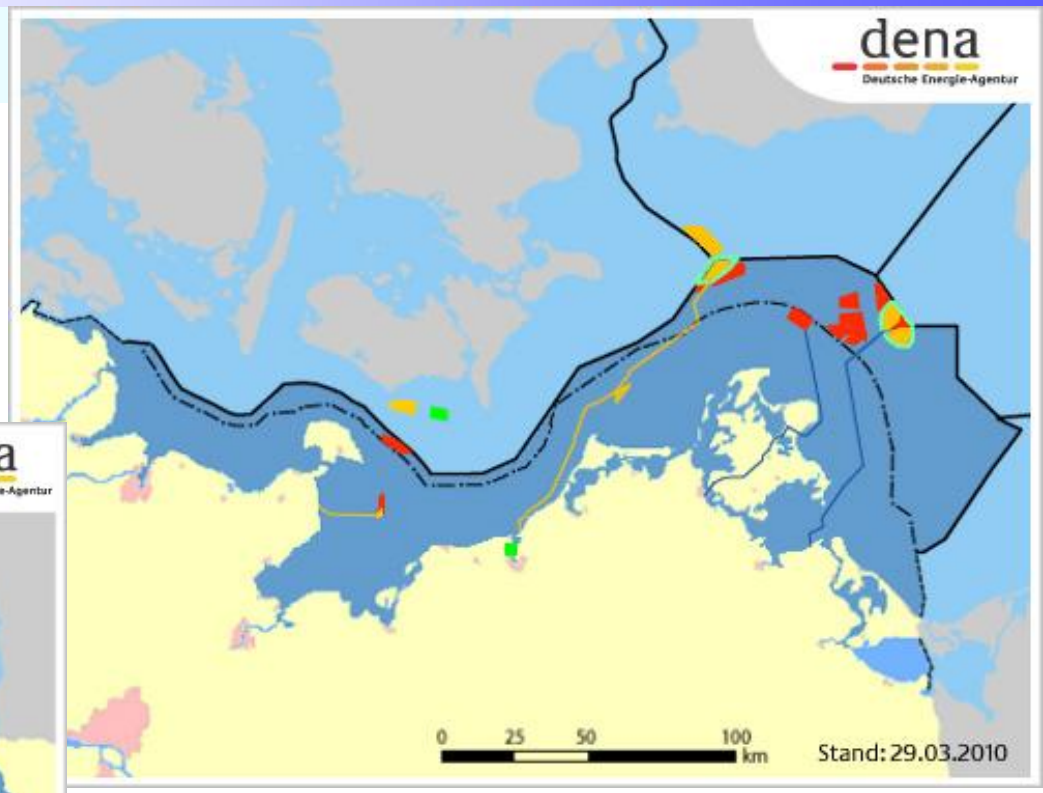
1. Vindeby (1991)	11 turbines, 5 MW
2. Tunø Knob (1995)	10 turbines, 5 MW
3. Middelgrunden (2000)	20 turbines, 40 MW
4. Horns Rev I (2002)	80 turbines, 160 MW
5. Rønland (2003)	8 turbines, 17 MW
6. Nysted (2003)	72 turbines, 165 MW
7. Samsø (2003)	10 turbines, 23 MW
8. Frederikshavn (2003)	3 turbines, 7 MW
9. Horns Rev II (2009)	91 turbines, 209 MW
10. Avedøre Holme (2009/10)	3 turbines, 10-13 MW
11. Sprogø (2009)	7 turbines, 21 MW

Planned offshore wind parks

12. Rødsand II (2010)	90 turbines, 207 MW
13. Anholt (2012)	400 MW

Germany:
20-25.000 MW possible in 2030 (BMU)
Main driver: FIT - EEG





Online	Continental Shelf / EEZ
Approved	12 nm zone
Under consideration	National borders
	Deep water roads
	High voltage cable (approved)
	High voltage cable (pending)
	High voltage cable (in use)

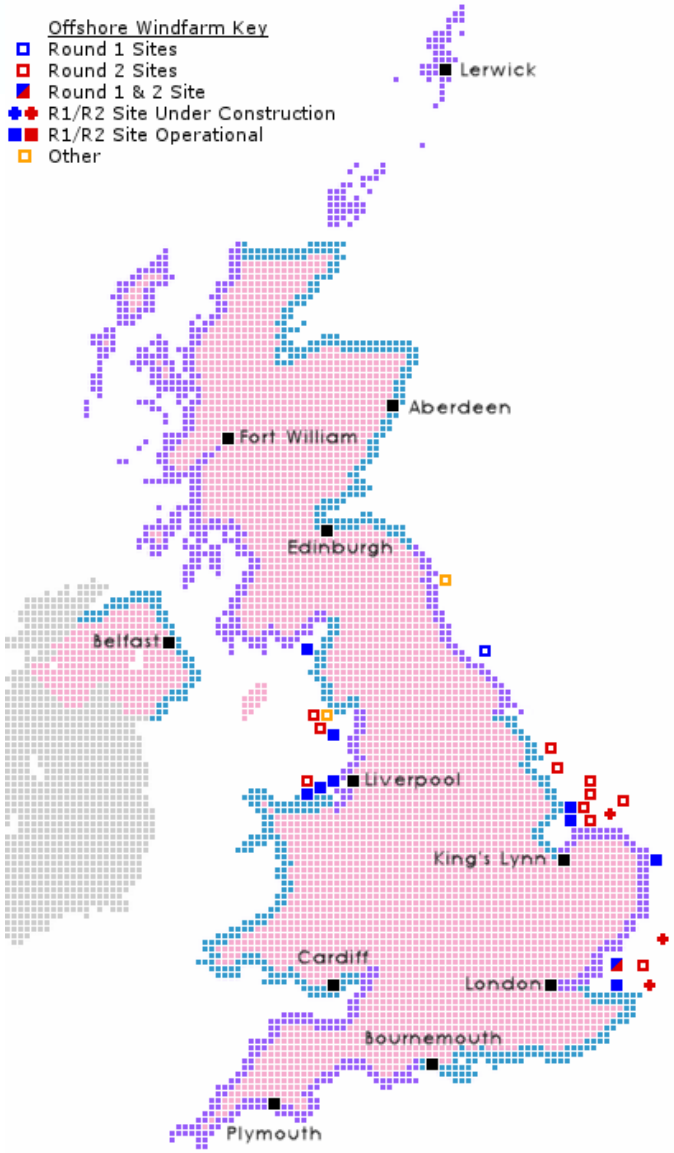
Source: www.offshore-wind.de

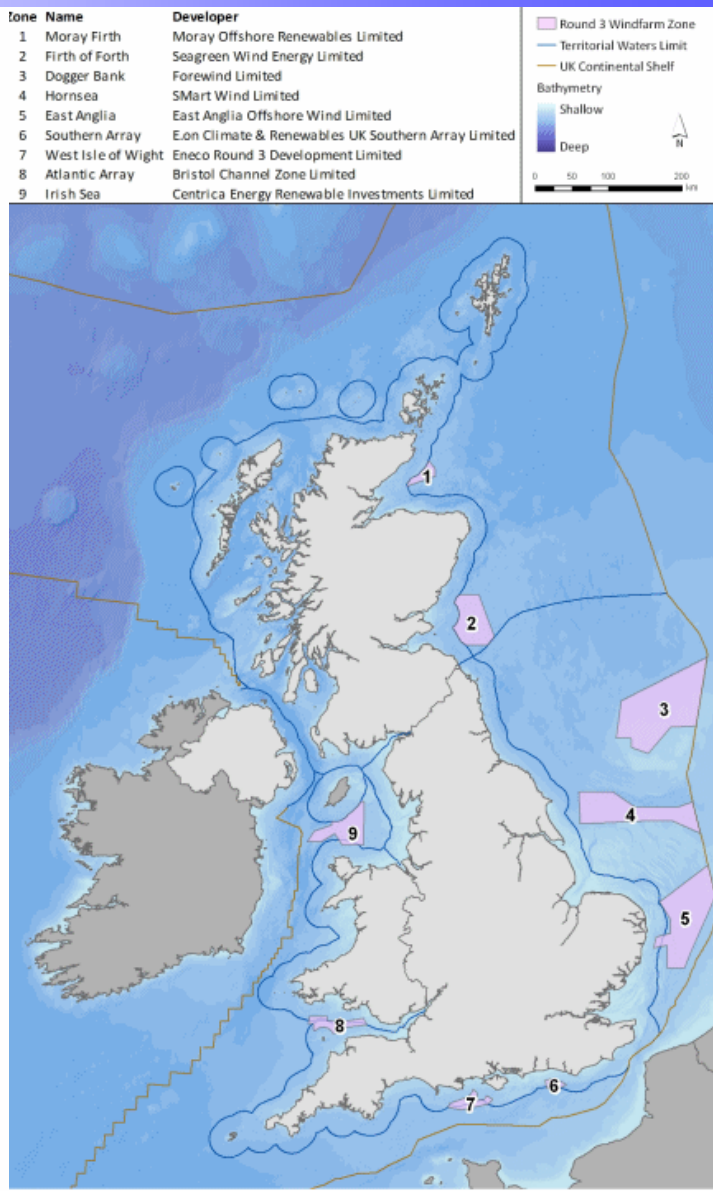
United Kingdom:

33 Gigawatt
25 % electricity
by 2020

Support: ROCs

Source: The Crown Estate





Planned projects in further countries/regions

Belgium:	2,0 GW
China	1,3 GW
Finland	1,2 GW
France	1,6 GW
Ireland	2,5 GW
Italy	1,3 GW
Norway	0,2 GW
Sweden	5,6 GW
Taiwan	0,6 GW
The Netherlands	1,0 GW
Total:	**~ 80 GW**

Source:
WWEA/Wind ServiceHolland: http://home.kpn.nl/windsh/offshoreplans.html

Well-known challenges for offshore wind:

Technology

Financing

Grid connection and integration

Environment

Ownership structures

Social as well as political acceptance