



**Crown Estate
Scotland**

Oighreachd a' Chrùin Alba

Offshore wind: sector profile

May 2024





Kincardine Floating Offshore Wind Farm
Credit: KOWL

Introduction

Crown Estate Scotland manages property – including buildings, land, coastline and seabed – on behalf of the Scottish people.

We play a central role in the development of offshore wind, primarily by awarding and managing seabed leases. We also work with developers and a wide range of industry stakeholders to enable a sustainable and successful offshore wind sector in Scotland.

Offshore wind is already Scotland's second largest source of renewable energy, and this capacity is set to increase dramatically over the coming decade.

There are currently four commercial fixed bottom (Robin Rigg, Beatrice, Moray East and Seagreen) and four Test and Demonstration (T&D) offshore wind farms in operation, two of which are floating (Hywind Scotland and Kincardine). These are generating significant amounts of clean electricity and creating lasting jobs around our coastline. Seagreen is Scotland's largest and the deepest fixed bottom project in the world which is now fully operational. Two further wind farms are under construction, Neart na Gaoithe (NNG) and Moray West.

Offshore wind in Scottish waters

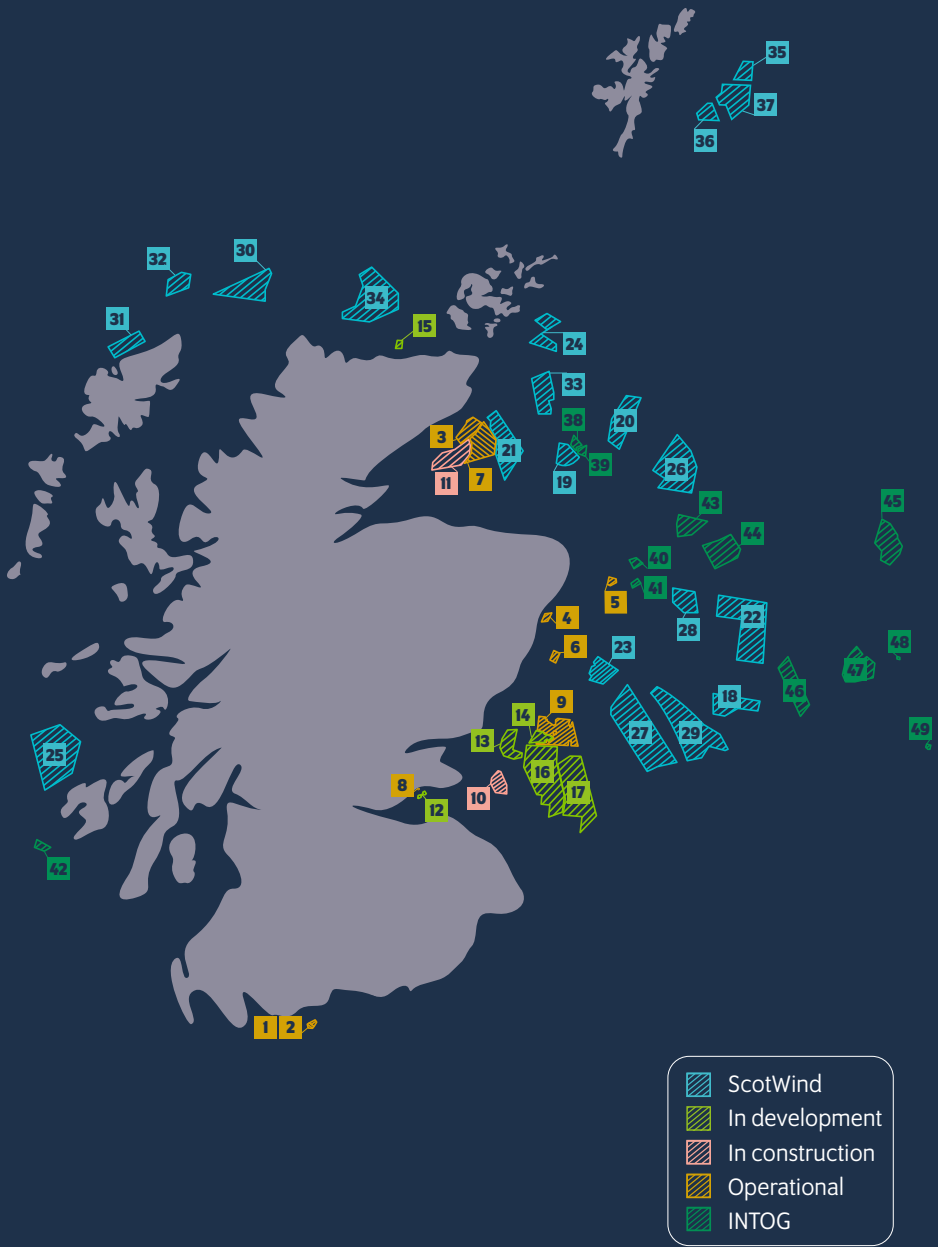


Table – Project details

Ref no	Project Name	Capacity (MW)	Foundation	No of turbines	Project owner(s)
Operational					
1 2	Robin Rigg (East and West)	174	Monopile	58	RWE
3	Beatrice	588	Jacket	84	SSE Renewables, Red Rock Power Ltd, TRIG, Equitix
4	European Offshore Wind Deployment Centre (Aberdeen)	96.8	Jacket	11	Vattenfall
5	Hywind Scotland	30	Floating – Spar	5	Equinor, Masdar
6	Kincardine	49.5	Floating – semi-submersible	6	Cobra, Pilot Renewables
7	Moray East	952.5	Jacket	100	Ocean Winds, Diamond Generating Europe, China Three Gorges
8	Levenmouth Demonstration	7	Jacket	1	ORE Catapult
9	Seagreen Phase 1	1,075*	Jacket	114	SSE Renewables, TotalEnergies
In construction					
10	Neart na Gaoithe	450	Jacket	54	EDF, ESB
11	Moray West	882	Monopile	60	Ocean Winds, Ignitis
In development					
12	Forthwind	12	Jacket		Cierco Ltd
13	Inch Cape	1,080	Monopile		Red Rock Power Ltd, ESB
14	Seagreen Phase 1a	500	Jacket		SSE Renewables, TotalEnergies
15	Pentland	100	Floating		Copenhagen Infrastructure Partners, Hexicon AB
16 17	Berwick Bank (including Marr Bank)	4,100	Jacket		SSE Renewables
ScotWind					
18	Bellrock	1,200	Floating		BlueFloat Energy, Renantis
19	Broadshore	500 (900)**	Floating		BlueFloat Energy, Renantis
20	Buchan	960	Floating		BayWa, Ideol, Elicio
21	Caledonia	2,000	Mixed		Ocean Winds

22	CampionWind	2,000	Floating	ScottishPower Renewables, Shell UK
23	Bowdun	1,008	Fixed	Thistle Wind Partners
24	Ayre	1,008	Floating	Thistle Wind Partners
25	MachairWind	2,000	Fixed	ScottishPower Renewables
26	MarramWind	3,000	Floating	ScottishPower Renewables, Shell UK
27	Morven	2,907	Fixed	BP, EnBW
28	Muir Mhor	798	Floating	Fred. Olsen Seawind, Vattenfall
29	Ossian	2,610 (3,600)**	Floating	SSE Renewables, Marubeni, Copenhagen Infrastructure Partners
30	Havbredey	1,500	Floating	Northland Power, ESB
31	Spiorad na Mara	840	Fixed	Northland Power, ESB
32	Talisk	495	Floating	Magnora, TechnipFMC
33	Stromar	1,000	Floating	Orsted, BlueFloat Energy, Renantis
34	West of Orkney Windfarm	2,000	Fixed	RIDG, Total Energies, Corio, Maxio Development Partners
35	Stoura	500	Floating	ESB
36	Arven South	500	Floating	Mainstream Renewable Power, Ocean Winds
37	Arven	1,800	Floating	Mainstream Renewable Power, Ocean Winds

INTOG

38	Sinclair	99.45	Floating	BlueFloat Energy, Renantis
39	Scaraben	99.45	Floating	BlueFloat Energy, Renantis
40	Salamander	100	Floating	Orsted, Simply Blue Group, Subsea 7
41	Flora	50	Floating	BP Alternative Energy Investments
42	Malin Sea Wind	100	Floating	ESB
43	Green Volt	560	Floating	Flotation Energy, Vårgrønn
44	Aspen	1,008	Floating	Cerulean Winds, Frontier Power International
45	Beech	1,008	Floating	Cerulean Winds, Frontier Power International
46	Cedar	1,008	Floating	Cerulean Winds, Frontier Power International
47	Cenos	1,350	Floating	Flotation Energy, Vårgrønn
48	Culzean Floating Wind	3	Floating	TotalEnergies
49	Judy	15	Floating	Harbour Energy

*Max capacity in Lease 1,140MW; now fully installed.

**Currently planning to develop the higher capacity.

Our role in offshore wind

As well as awarding and managing seabed leases, we contribute to the success of offshore wind in Scotland by:

- Supporting developers through the various stages of project development, construction and operation.
- Collaborating on efforts to address environmental and technical challenges.
- Working with industry to reduce costs and build investor confidence.
- Supporting supply chain development and industry collaboration.

Offshore wind has a big role to play in helping Scotland meet its key climate targets:



Generating 50% of the country's overall energy consumption from renewable sources by 2030.



Reaching net zero emissions by 2045.

Scotland is at the forefront of offshore wind:

- Home to the first operational floating wind farm in the world.
- Largest pipeline in the world of seabed agreements for commercial scale floating wind.
- Seagreen is the deepest fixed-bottom project in the world.
- Berwick Bank is the largest project in the UK.
- INTOG is the first leasing round of its kind.
- The diversity of ScotWind projects around the coast gives us the potential to host a wide range of technologies and solutions.

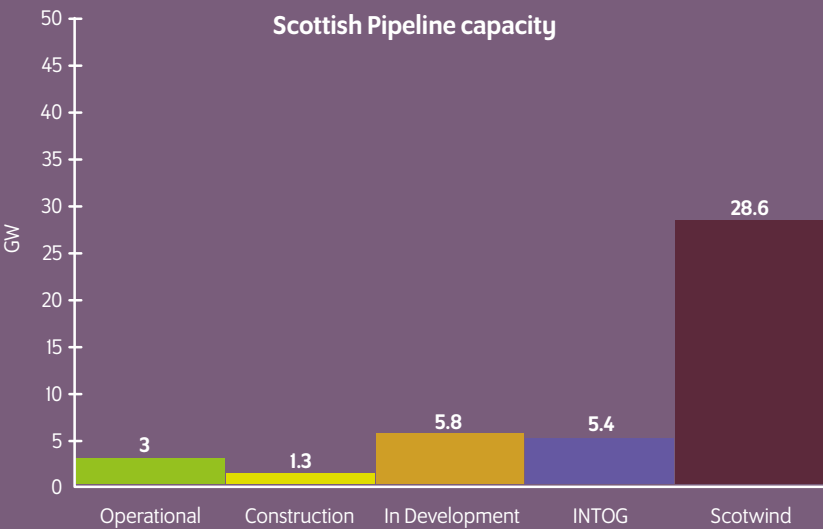
Scottish Offshore Wind Profile

As of April 2024, there are 49 offshore wind projects in Scotland, nine of which are fully operational with 379 turbines and total installed capacity of 2,973MW and with a further 1,332MW in construction. 2023 saw the Scottish fleet generate in excess of 6,200 GWh electricity.

20 projects with a combined intended installed capacity of 28.6GW hold option agreements awarded via the ScotWind leasing process. A key part of ScotWind was the supply chain commitments made by applicants

which show an average initial commitment of £1.5bn per project of investment in Scotland. Full seabed leases come at a later stage after consents, offtake agreements and financing are in place.

The remaining 5.8GW of pre-ScotWind sites include Test and Demonstration, Scottish Territorial Waters (STW) and Round 3 projects at various stages of development.



NB: the graph is not a linear timeline.

INTOG

- INTOG is a leasing opportunity for offshore wind farms to help maximise value from commercial scale deployment and to reduce the carbon emissions associated with North Sea oil and gas production.
- It will help stimulate Scotland's offshore renewables innovation and associated supply chain, help new companies enter the renewable energy sector and progress the 'just transition'.
- It has two distinct elements
 - Innovation (IN) which is for small scale innovation projects of 100MW or less which will demonstrate new technologies and processes, and
 - Targeted Oil and Gas (TOG) specifically designed for offshore wind farms which target the electrification of oil and gas installations.
- Five innovation projects (IN) and 6 TOG projects are currently in the Exclusivity stage which enables them to start development work while the Sectoral Marine Plan for Offshore Wind Energy (SMP-OWE) is completed.
- Those projects which are part of the adopted SMP or consented in advance of its adoption, will be offered Option Agreements. One project already reached this stage.
- The proposed projects are for up to 449 MW of capacity for IN and just under 5GW for TOG projects, representing a total seabed area of around 1,665km².
- The level of interest from industry demonstrates significant support for this exciting new opportunity.
- All 12 projects will utilise floating offshore wind technology.



Supply Chain Development

- The Supply Chain Development Statement process introduced for ScotWind and INTOG ensures early-stage and continued engagement with the supply chain to better understand and communicate expectations and opportunities.
- Through detailed engagement with industry and stakeholders, we support the development of the supply chain required to ensure the timely delivery of the projects.
- We support the strategic infrastructural planning and socio-economic development necessary to enable Scotland to maximise the benefits of offshore wind development.
- The collaborative approach to supply chain investment is evidenced by our role in the Scottish Offshore Wind Energy Council (SOWEC) and partnership working including the Strategic Investment Model (SIM) and wider engagement. Our investment priorities in energy ports remain a key focus.

Enabling the Offshore Wind Sector

- Crown Estate Scotland works with the sector and its many stakeholders to enable successful projects and a thriving industry in Scotland.
- Our top priorities for the years ahead have been identified as:
 - Grid and hydrogen development for power export.
 - Delivering floating wind at gigawatt scale.
 - Solutions for the busy blue economy.
- Pioneering models for supply chain collaboration.
- Supporting Scotland's projects to be world-leading examples.
- We also provide core support and funding to SOWEC.



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