

Wind in our sails: Expanding our North Sea offshore wind cluster

Equinor's renewable ambitions

Our purpose is to turn natural resources into energy for people and progress for society.

We are proud to be taking a leading role in the greatest transition of energy systems the world has ever seen.

By 2030 we plan to reach an installed net renewables capacity of 12-16GW (equity share). We have a value-driven strategy, underpinned by a focused growth approach. Around two-thirds of our renewables capacity will come from offshore wind, in which we are already a major player.

Globally, we are expanding, and building material offshore wind clusters in the UK, the US East Coast and in the Baltic Sea, and we are positioned for future floating wind options in the UK, Norway and Asia.



The North Sea region will play a key contribution in our global ambition of 12 - 16GW installed renewables capacity by 2030

The North Sea is our largest and most mature offshore wind cluster, where we are developing a high quality project portfolio. We will continue to leverage our extensive offshore competence including our knowledge of the North Sea and capability to execute and operate offshore projects at scale.

The North Sea: a broad energy hub

Today, the North Sea serves as the home to our broad energy portfolio, including oil and gas, offshore wind, floating offshore wind and carbon capture and storage.

For close to five decades Equinor has been developing the North Sea's oil and gas resources, which has allowed us to become a leading offshore energy company. Our operating experience in the demanding conditions here has given us unparalleled insight and knowledge that is transferable to offshore wind projects.



Offshore wind is an integral part of our vision to create a North Sea broad energy hub

OUR STRATEGY

Maximise the value of our offshore wind assets by driving continuous improvements, standardising and utilising scale synergies in operations and projects

Develop new offshore wind projects to enable North Sea countries to reach their low carbon ambitions

Scale up floating wind and use the North Sea to demonstrate the global potential of floating offshore wind

Shape a broad energy hub by connecting offshore wind with other energy and low carbon solutions

Producing assets

In development

Equinor offices

Hywind Tampen, 88MW. Due to start up 2022

World's first floating wind power for offshore oil and gas

Equinor's offshore wind portfolio in the North Sea



Hywind Scotland, 30MW

World's first floating wind farm

Dogger Bank, 3600MW. Due to start up 2023

World's largest offshore wind farm

Dudgeon and Sheringham Shoal extensions

Proposal to double the capacity of our Norfolk wind farms

Dudgeon, 402MW

Our largest wind farm in operation

Sheringham Shoal, 317MW

Our first large scale commercial offshore wind investment

Dogger Bank – innovation at the world's largest offshore wind farm

With our JV partners, SSE Renewables and Eni, we are building Dogger Bank, the world's largest wind farm, introducing new technologies and operating models to the UK.



The Dogger Bank Operations & Maintenance base

Located at the Port of Tyne, it will be the hub of operational activity throughout the life of the wind farm. Around 200 new jobs will be created in the area working directly on the project, with thousands more people contributing through contractor and suppliers.



The facility has been designed to the UK Green Building Council's (UKGBC) Net Zero Carbon Buildings Framework so it is environmentally friendly with a low carbon impact.

Service Operations Vessels

During operations technicians will spend two weeks at a time at the wind farm, staying more than 130km offshore on Service Operations Vessels (SOVs). Aberdeen headquartered North Star Renewables will supply and operate the SOVs, creating 130 new jobs in the UK. The contract award was a renewables-first for North Star showing how projects like Dogger Bank are supporting the growth of UK companies in the energy transition.

The vessels are at the leading-edge of operability and sustainability to reduce fuel consumption and emissions. Innovations include digital decision support technology, advanced propulsion systems, hybrid power management and a waste heat recovery system. UK-built daughter crafts will move technicians around the wind farm.



Community Fund:

With our JV partners, Dogger Bank Wind Farm is investing £1 million in our community fund during the construction phase. This includes STEM education for primary and secondary school children, scholarships for university students and an operators fund to support local community groups close to our construction and operation sites.

Deploying floating wind at scale

The initial floating wind concept idea came from two of our oil and gas employees and now we are scaling up the technology.

Equinor has more than a decade of operating experience from floating offshore wind and is the world's leading floating offshore wind developer.

Up to 80% of the world's wind resources are in waters too deep for fixed bottom turbines. Floating offshore wind will enable new markets to access renewable energy, and allow offshore wind further out to sea, where wind speeds are stronger and more consistent.

- Our offshore experience from the North Sea enabled us to pioneer this global technology with our first pilot project Hywind Demo in 2009.
- We operate the world's first floating wind farm, Hywind Scotland. Since it started operations in 2017, the pioneering wind farm has achieved the highest capacity factor of all UK offshore wind farms, proving the true potential of applying floating wind technology to access the best wind sources.
- We are building the world's biggest floating offshore wind farm, Hywind Tampen. This ground-breaking project will be the first wind farm to power oil and gas, demonstrating new applications for floating wind.

Benefits of floating offshore wind

A 6MW floating turbine at Hywind Scotland

Resources Steadier wind speed Deeper, farther from shore Site flexibility Space availability

Jobs

Domestic and export industrial opportunities Regional developments Build on Oil and Gas

Economics

High capacity factor Higher scalability Standardisation potential

New applications

Renewable electricity to populated coastlines Decarbonising Oil and Gas Recycle marine spaces

Scaling up floating offshore wind

Increasing the scale of projects will enable further cost reduction to make floating offshore wind competitive with other renewable technologies and fully realise its potential.



Collecting and sharing data

In order to progress the development of floating offshore wind, Equinor is gathering all kinds of information from the original floating wind farm, Hywind Scotland to understand more around how floating offshore wind interacts with marine life. These include a safe fishing trial with Marine Scotland, a novel autonomous Sailbuoy mapping fish presence and biomass quantity and an eDNA study in collaboration with NORCE Research.

Keep Clear!

Offshore Wind is a key piece of a broad North Sea energy hub

No single energy source is sufficient to power our societies for the coming decades in a reliable, affordable and sustainable way.

With its vast resources and extensive infrastructure, the North Sea offers the ideal backdrop for building a broad hub that combines different types of energy in an optimal way and where offshore wind will be a key component. Offshore wind can also be used to decarbonise the production of other energy sources. When our Hywind Tampen project comes into operation in 2022, it will add a valuable component to our decarbonisation toolbox, becoming the world's first offshore wind farm to power oil and gas facilities



NortH2 -

developing a low carbon hydrogen value chain powered by offshore wind



In addition, the rapid growth in offshore wind is well suited to developing a low carbon hydrogen value chain. Equinor actively maturing opportunities is in this space, such as through the NortH2 consortium in the Netherlands that aims to develop Europe's biggest hydrogen project powered by offshore wind. In the UK we are also exploring between offshore synergies wind assets and our low carbon portfolio to further enhance future low carbon hydrogen production opportunities.

Our recent investment in Noriker Power and planned strategic collaboration will enable Equinor to access top tier capabilities and add a material energy storage pipeline to our renewables portfolio. It will also allow us to develop storage solutions in proximity of our offshore wind assets, a concept which we have been testing with our pilot Batwind solution, connected to the Hywind Scotland windfarm – the world's first battery for offshore wind.



Collaboration is key

We have big ambitions. Our production of renewable energy will increase tenfold over the next five years. We also want to play a leading role in shaping the energy transition, and with our experience, we are well placed to do so.

But no company or industry can do this on its own

Through collaboration...

- across industry and with government bodies we can ensure the right policies are in place to enable rapid but sustainable growth

- with suppliers and academia we can drive supply chain development and foster innovation in the offshore wind clusters where we operate and across the UK

- with other industries we can deliver the integrated technology solutions that a broad energy hub requires

- with communities we can ensure that the value we create goes to the places it's needed most



The energy partner of choice



A strong safety culture



Diverse, values-driven & highly competent organisation



Capabilities to deliver large and complex projects

More than an energy transition - a UK case study

We've been operating in the UK for over 35 years, and our impact here is much wider than investing billions of pounds in crucial energy infrastructure. Here are just a few examples:

- We employ 650 people in the UK and our new Dogger Bank operational base at Port of Tyne will create over 200 jobs in the North East
- We work with over 700 suppliers across the country, and are supporting the growth of the UK offshore wind supply chain through our work in the Sector Deal
- Through the Offshore Wind Growth Partnership we lend expertise to help increase UK content in domestic and global offshore wind projects
- We support innovation, for example by partnering with ORE Catapult, the North of Tyne Combined Authority and others on a ± 3.5 million offshore renewables innovation programme for businesses in North East England
- We work with UK universities on research modelling, analysis and sharing data to improve global knowledge of wind farms in operation
- We invest in talent, working together with our peers to identify current and future skills needs and driving forward the sector's commitment to becoming more diverse and inclusive
- We engage and inspire young people into STEM subjects through our partnership with the Science Museum and Young Imagineers programme, and the Aberdeen Science Centre
- Our existing wind farms donate millions of pounds to local projects through community funds



Experience from marine operations & maintenance



Focus on technology & innovation



