



# Building a broad North Sea energy hub

Equinor's North Sea renewable energy vision



## Equinor in the North Sea

Our purpose as a company is to turn natural resources into energy for people and progress for society. Equinor's strategic direction is very clear. We are developing as a broad energy company, and we are becoming a global industry leader in offshore wind.

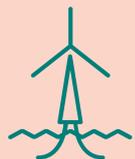
For close to five decades Equinor has been developing the North Sea's oil and gas resources, which has allowed us to become a global leader in offshore technology. The North Sea is also where we began our transformation into a broad energy company, developing carbon capture and storage projects for over two decades and offshore wind farms over the past decade.



Over **50**  
years offshore  
experience



**1 million**  
European homes  
powered through  
offshore wind



**Pioneer**  
in floating wind  
technology



**Biggest**  
O&G operator  
in the North Sea

## The North Sea: a growing offshore wind cluster

We know that the world's energy system must decarbonise, and this will require a profound transformation. We are proud to be taking a leading role in the greatest transition of energy systems the world has ever seen.

Equinor has set a clear target that by 2035 we will increase our renewables capacity installed by around 30 times what it is today, to between 12-16GW (equity share).

To become a global offshore wind major we have a value-driven strategy, underpinned by creating scale in regional clusters. Equinor is building material offshore wind clusters in the North Sea, the US East Coast and in the Baltic Sea and is pursuing new offshore wind opportunities in Europe as well as in other regions such as Asia and the Americas.

## Our three offshore wind clusters



The North Sea region will play a key contribution in our global ambition of 12-16GW installed renewables capacity by 2035.

Our decades of 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

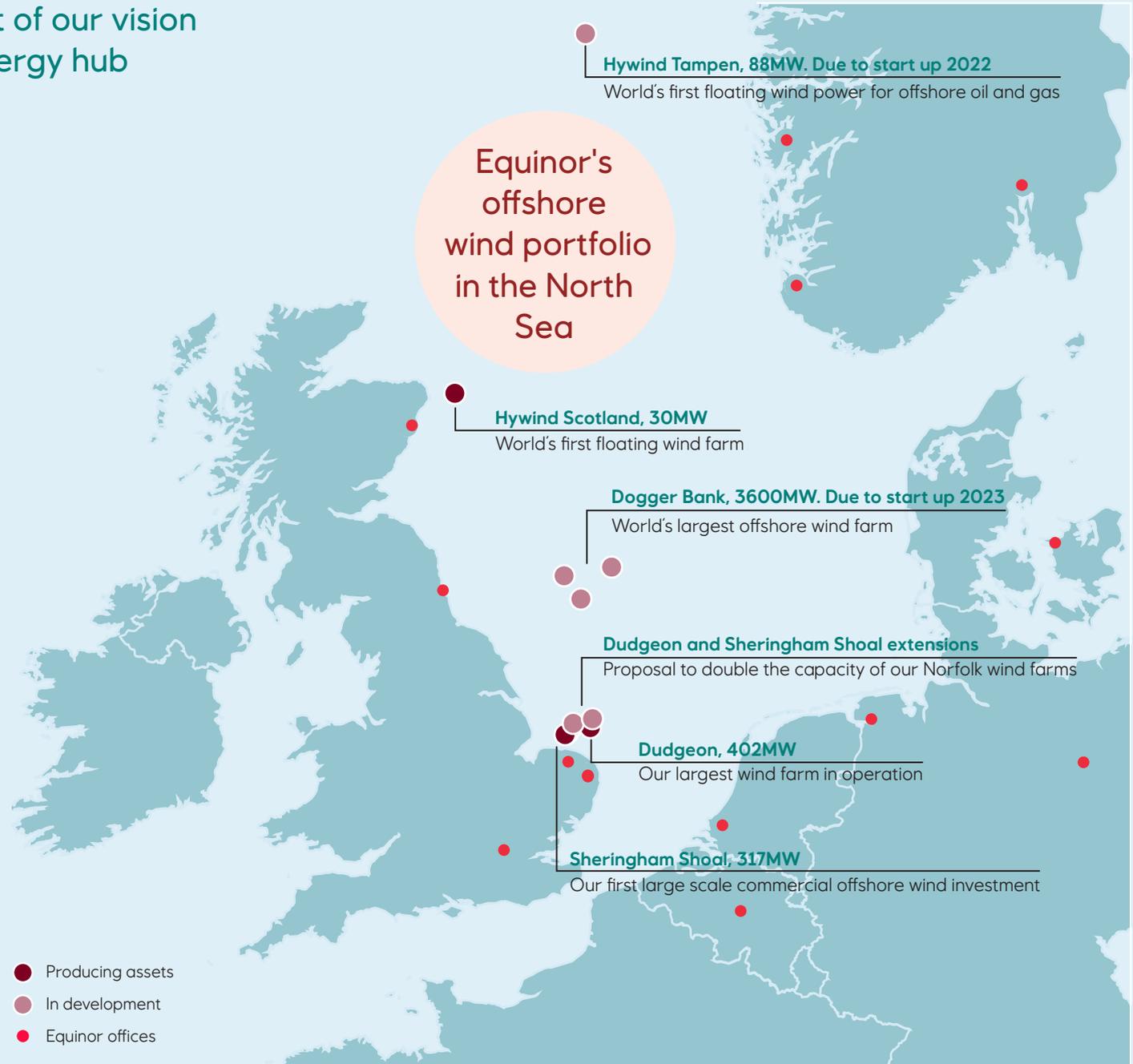
## Our Strategy

**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

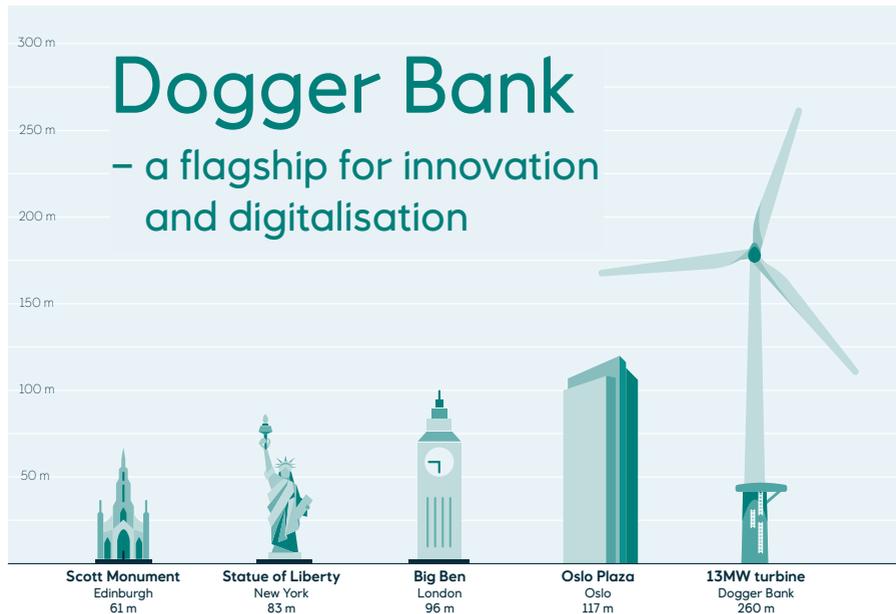
**Shape a broad energy hub** by connecting offshore wind with other energy and low carbon solutions



## Pioneering innovation in the North Sea

We are explorationists at heart and we are using the same spirit to develop new offshore wind concepts.

We are building the biggest offshore wind farm in the world here in the North Sea and have introduced new technologies and operating models to the UK.



First project in the world to use GE's 13MW Haliade-X

...installed by the largest turbine installation vessel of its kind, the Voltaire, currently under construction by Jan De Nul

Using an HVDC system, a UK offshore wind first

Translating Equinor's success in digitalisation in O&G to Offshore Wind....

...through process digitalisation, data science and analytics, robotics and remote control

## 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.

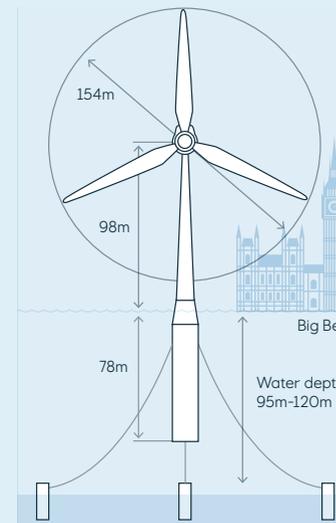
Up to 80% of the world's wind resources will likely require floating solutions to be commercialised. Our offshore experience from the North Sea enabled us to pioneer this technology with our first pilot project Hywind Demo in 2009.

Between the pilot and first commercial project, Hywind Scotland, we reduced cost per MW by 70%. With our latest and larger project Hywind Tampen (due to start up in 2022) we expect the costs to reduce by a further 40%.

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.

## Benefits of floating offshore wind

A 6MW floating turbine at Hywind Scotland



<p><b>Resources</b></p> <ul style="list-style-type: none"> <li>Steadier wind speed</li> <li>Deeper, farther from shore</li> <li>Site flexibility</li> <li>Space availability</li> </ul>
<p><b>Jobs</b></p> <ul style="list-style-type: none"> <li>Domestic and export industrial opportunities</li> <li>Regional developments</li> <li>Build on Oil and Gas</li> </ul>
<p><b>Economics</b></p> <ul style="list-style-type: none"> <li>High capacity factor</li> <li>Higher scalability</li> <li>Standardisation potential</li> </ul>
<p><b>New applications</b></p> <ul style="list-style-type: none"> <li>Renewable electricity to populated coastlines</li> <li>Decarbonising Oil and Gas</li> <li>Recycle marine spaces</li> </ul>

The technology was born in the North Sea and we believe the North Sea will continue to be the perfect place to deploy floating at scale.

## Beyond Offshore Wind – 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.

We believe in the future offshore wind, together with energy storage and hydrogen production, will be a key component of such a broad North Sea energy hub.

At Equinor, we are already turning this vision into reality – our pilot **Batwind** solution, connected to the Hywind Scotland wind farm is the world's first

battery for offshore wind and a major step towards a scalable renewables energy storage system.

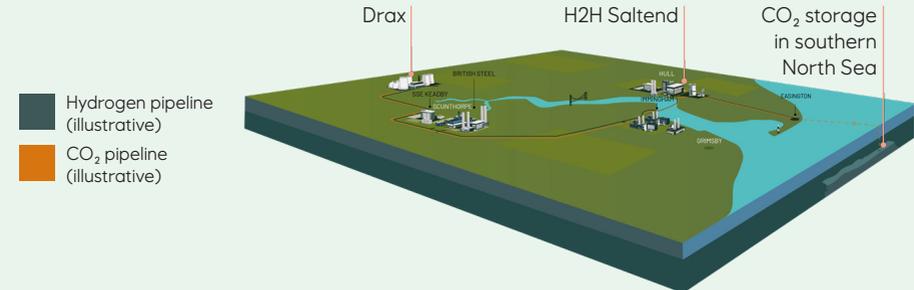
Offshore wind can also be used to decarbonise the production of other energy sources. Equinor has been pioneering low carbon solutions in the North Sea - from our first carbon capture and storage project at the Sleipner gas field in 1996, to the ongoing hydrogen and CCUS initiatives such as **Zero Carbon Humber** in the UK and **Northern Lights** in Norway.

When our **Hywind Tampen** project comes into operation in 2022, it will add a valuable component to our decarbonisation toolbox, by becoming the world's first offshore wind farm to power oil and gas facilities.

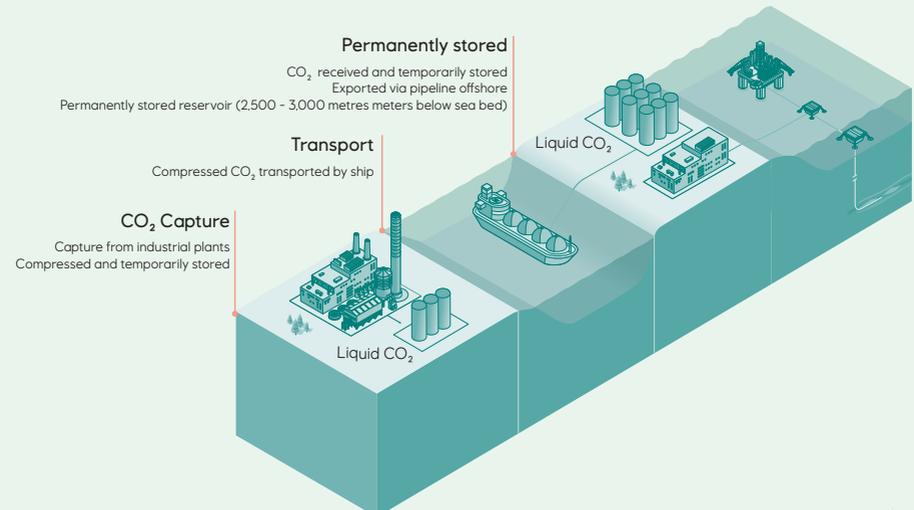
### Hywind Tampen - the world's first floating wind farm to power oil and gas facilities



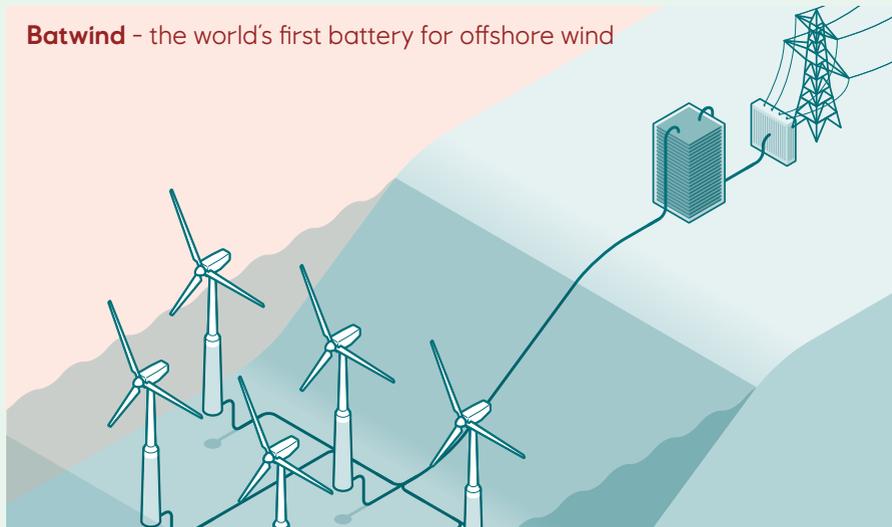
### Zero Carbon Humber - a partnership to build the world's first net zero industrial cluster and decarbonise the North of England



### Northern Lights - a European CO<sub>2</sub> transport and storage network



### Batwind - the world's first battery for offshore wind



# Collaboration is key

We have big ambitions. In the next 15 years we aim to grow our renewable capacity by over 30 times what it is now. 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
- 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



## 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 both new and existing supply chain companies, to help increase UK content
- 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 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
- We work with UK universities on research modelling, analysis and sharing data to improve global knowledge of wind farms in operation

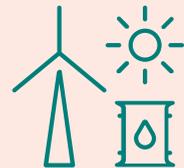
### The energy partner of choice



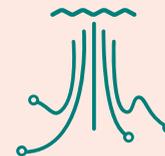
A strong safety culture



Diverse, values-driven & highly competent organisation



Capabilities to deliver large and complex projects



Experience from marine operations & maintenance



Focus on technology & innovation





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