Wind of change: Shaping the future of offshore wind

February 2023

Ørsted

CBS CASE COMPETITION

Letter from CEO

The wind of change is blowing throughout the world. Rising temperatures and changing climates are severely impacting the world's environment and biodiversity, and we're in a race against time. At the same time, continued aggressions from Russia in Ukraine pose a threat to energy security.

The good news is that we have the solutions. Accelerating renewable energy build-out at scale will both address climate change and improve energy security. Governments around the world know that offshore wind is among the key enablers for worldwide decarbonisation. The latest projections indicate that by 2030, the capacity of offshore wind built worldwide will increase nearly sevenfold compared to 2020, to reach an astonishing ~170 GW, corresponding to powering ~170 million households! However, industry challenges such as supply chain constraints, slow regulatory processes, and a difficult macroeconomic environment need to be addressed to realise these intentions.

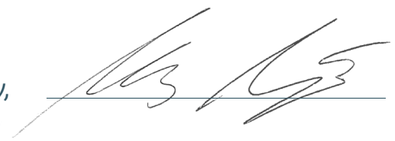
At Ørsted, we work every day to create a world than runs entirely on green energy, and we're ready to take action. As the undisputed leader in offshore wind globally, we're committed to help solve the industry challenges required to realise the massive offshore build-out plans.

Our strategic aspiration is to become the world's leading green energy major by 2030. A key part of this aspiration is to maintain our global offshore leadership and reach 30 GW installed capacity by 2030. We have a strong starting point, but we need to move fast and secure new projects to reach our ambition.

Therefore, we're asking for your help to figure out how Ørsted can best reach our target of 30 GW offshore wind by 2030, while ensuring a healthy financial business and industry.

This is not just about reaching some targets in a business plan – this is about the future of the planet.

Let this be a call to action!



Mads Nipper,
CEO Ørsted

Content

Setting the scene

Never has the world's climate challenges been greater and the message from science clearer: As a global community, societies must act to preserve the planet. In its most recent report, the Intergovernmental Panel on Climate Change under the United Nations concluded that global temperature increases significantly higher than the 1.5 °C threshold will materialise unless concerted action is taken, both in the short and long term. As more than 70 % of the world's carbon emissions are derived from the production and consumption of energy, the transition to a sustainable energy system is central to combatting climate change.

Over the past decades, renewable energy has been substantially industrialised and become mainstream. Today, more than 75 % of all new power capacity commissioned is renewable. To have reached this point is a monumental milestone, yet the world is currently not expected to remain within the 1.5 °C global warming boundary for 2050, as laid out by the Paris accord. Therefore, continued progress in renewable energy is essential.

A key renewable technology is offshore wind, which holds the highest load factor[1] of renewable technologies. Offshore wind has persistently been driven down in cost over the last fifteen years, making it a competitive alternative to other renewables and favourable to fossil fuels. Therefore, the market for offshore wind is accelerating rapidly, with governmental actors presenting ambitious offshore build-out targets.

A dominant force behind the offshore industry, as it is known today, is the Danish company Ørsted. Founded under the name Dansk Naturgas A/S (DONG) in 1972 by the Danish government, Ørsted's initial vision was to create a company capable of exploiting the immense boom of oil and gas in the North Sea. However, after years of expanding this fossil fuel base, the company saw the necessity for change. Led by the then CEO, Anders Eldrup, DONG took the historic decision in 2008 to pivot away from fossil fuels and committed itself towards build-out of renewable energy. These ambitions were reinforced under the leadership of subsequent CEO Henrik Poulsen and the current CEO, Mads Nipper, making Ørsted what it is today.

Due to the combined effort of its nearly 8,000 employees, Ørsted is now the world leader in offshore wind and is in the top five within renewable power generation. Yet, while much has been achieved in the past decade, more can and must be done to limit global warming and mitigate the continued deterioration of global ecosystems and biodiversity. Ørsted is committed to shouldering its share, setting the goal of expanding the company's total installed offshore wind capacity to 30 GW by 2030 from the current base of around 9 GW installed offshore capacity.

"We aspire to be one of the true catalysts of systemic change to a greener society by continuing to prove that there's no long-term trade-off between sustainability and financial value creation."

— Mads Nipper

[1] A glossary of key terms has been included in the appendix.

Policies & legislation

New targets & initiatives in 2022	To be achieved by
REPowerEU	
45% renewable energy	**2030**
Increased renewables investments	
Esbjerg declaration (North Sea)	
65 GW installes offshore wind capacity	**2030**
20 GW green hydrongen production capacity	**2030**
150 GW installed offshore wind capacity	**2050**
Marienborg declaration (Baltic Sea)	
19.6 GW installed offshore wind capacity	**2030**
Pursuing faster permitting processes	
Inflation Reduction Act	
Tax credits to incentivise investment in renewable energy, P2X, and energy storage in the US	
British Energy Security Strategy	
Up to 50 GW installed offshore wind capacity	**2030**
Powering Australia	
82 % renewable energy	**2030**
Selected targets & initiatives in previous years	
OFW capacity build-out target	
20 GW installed offshore wind capacity	**2035**
Green New Deal	
12 GW installed offshore wind capacity	**2030**
OFW capacity build-out target	
30 GW installed offshore wind capacity	**2030**

The growth outlook for offshore wind is enormous. The market is expected to increase by seven times from 2020 to 2030, offering attractive global opportunities. However, with the large opportunity set, more and more actors are interested in entering the market. Ørsted is now facing fierce competition as oil and gas (O&G) majors and large utilities ramp up their efforts to diversify and decarbonise. Moreover, the industry is challenged with severe supply chain constraints and bottlenecks, as suppliers for key components are pressured to rapidly upscale production but also deliver their solutions at competitive price levels.

To overcome these difficulties and to reach its strategic target of reaching 30 GW installed offshore capacity in 2030, Ørsted must now decide how to approach the upcoming offshore wind opportunities and address the challenges in the industry and therefore asks you to solve the following question:

How should Ørsted prioritise its efforts to best reach its 2030 target of 30 GW offshore wind capacity, while helping to ensure a healthy financial business and industry?

You are asked to present a commercial strategy for offshore wind, covering the detailed measures Ørsted should take in the short term until 2026 regarding upcoming auctions and long-term steps to reach its 2030 ambition. Ørsted has already secured 22 GW offshore wind (installed, under construction and awarded) towards its goal of installing 30 GW by 2030, but must capture the remaining 8 GW with your assistance. Your proposed measures should be scalable and enable Ørsted to maintain their leading position within offshore wind for the years to come.

For further guidance, Ørsted asks that you consider the following subquestions carefully when crafting your solutions:

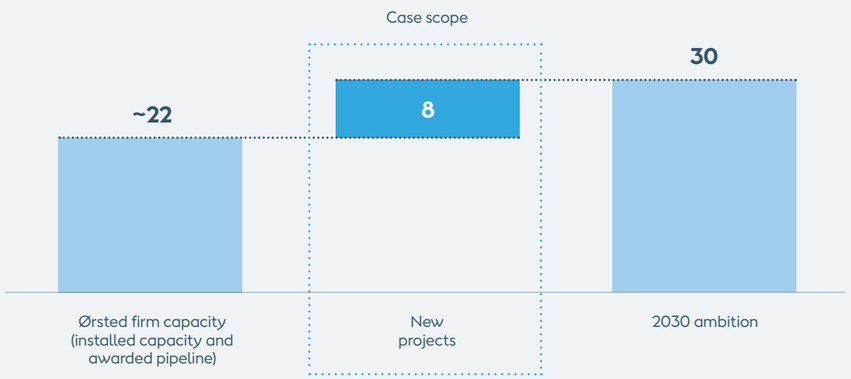
Subquestions

- How should Ørsted prioritise auctions over the next four years (2023-2026) to win 8 GW offshore wind capacity, considering the capital constraint of DKK 200 bn?
- How can Ørsted differentiate its offering from competitors?
- As a market leader, how can Ørsted help improve the general health of the offshore wind sector to enable long-term industry sustainability, both financially and environmentally?

Determining a suitable strategy will require innovative thinking, so creativity in your solutions is strongly encouraged. However, any successful commercial strategy must be aligned with the strengths of Ørsted and provide a strong basis for competitive differentiation in upcoming opportunities. In your submissions you are free to make assumptions where necessary, but please be explicit when doing so.

Happy case solving!

Ørsted's offshore wind capacity and 2030 ambition
GW



Becoming a green energy major

- From DONG Energy to Ørsted
- Creating an industry

1

From DONG Energy to Ørsted

Fossil beginnings

Before becoming the renewable leader that it is today, Ørsted has undergone extensive change. Ørsted was originally founded in 1972 as Danish Oil and Natural Gas (DONG – later DONG Energy), a state-owned company focused on exploring oil and gas in the Danish area of the North Sea. In the first years, DONG quickly became a household name in Denmark and the Nordic energy sector.

In the 1990's, DONG expanded operations to several countries, including Germany, the Netherlands, the UK, Sweden, and Norway, following EU mandates to increase competition by breaking monopolies in the energy sector. Besides selling natural gas and electricity as a utilities company, DONG also engaged in commodity projects such as wind, hydropower, and oil exploration. DONG also constructed distribution assets such as a natural gas pipeline from the Tyra gas field in the North Sea to the Netherlands.

In 2006, DONG merged with five other power generation and distribution companies: Elsam, Energi E2, Nesa, Copenhagen Energy, and Frederiksberg Supply. The emergent company, DONG Energy, was primarily a domestic integrated energy company with business activities across the energy value chain and the majority was owned by the Danish state.

In 2007, DONG Energy had a power and heat production mix comprised of 85 % fossil fuels – mostly coal – as well as oil and gas production and exploration assets in the North Sea. At the time, DONG Energy only had a small renewable energy business, including the world's first offshore wind farm, built in 1991 in Vindeby, Denmark. Earnings were 88 % based in Denmark, with only 12 % from international business.

Becoming a green energy major

Around 2008, the importance of sustainable practices became a central topic of societal discussion. Al Gore published his "Inconvenient Truth", and the EU proposed the 2020 CO_2 reduction goals. Consequently, DONG Energy saw a need for change.

In 2008, CEO Anders Eldrup laid out a ground-breaking vision for the company in a public announcement. DONG Energy was to transform from 85 % black energy (fossil fuels) and 15 % green energy to the opposite by 2040. This ambitious goal marked the first wave in DONG's green energy transformation, and even by today's standards, this was a pioneering decision with monumental implications for future operations.

In the years following the commitment to renewables, DONG Energy made several strategic investments in renewable platforms. This was no small task, as net debt increased from the investment intensity of wind power. Meanwhile, earnings from oil and coal-fired plants and gas-sourcing contracts were plummeting. DONG Energy had to adapt. This led the CEO, Henrik Poulsen, to reduce the business areas from 12 to four: offshore wind, oil and gas production, thermal power, and electricity distribution. Ultimately, offshore wind became the focus of growth efforts.

To finance the continued transformation, DONG Energy raised DKK 11 bn in external capital from Goldman Sachs and Danish pension funds in 2014. The company undertook an initial public offering in 2016 at a market capitalisation of DKK 100 bn, bringing the Danish state's ownership down to 50.1 %. With these funds in hand, DONG energy was able to fulfil the original vision of CEO Anders Eldrup. In 2016, the company divested its oil and gas operations to Ineos and its power distribution to Andel in 2017. These steps marked the completion of Ørsted's transformation and in 2017, DONG Energy changed its name to Ørsted in honour of Danish scientist Hans Christian Ørsted, the father of electromagnetism.

Ørsted now

Today, Ørsted has established itself as a leader in the renewable energy industry and has proven that sustainable operations need not come at the cost of financial performance. Recently, Ørsted has been featured as one of the top ten business transformations of the decade in the Harvard Business Review, and the world's most sustainable energy company from 2019-2022 by Corporate Knights, coming in second among energy companies in the rating of 2023. In 2021 and 2022, Ørsted was named one of the 100 most influential companies in the world by TIME Magazine. These tributes exemplify the monumental impact Ørsted continues to create and show a continued trust in Ørsted's ability to shape the future of renewable energy and offshore wind.

Timeline

1972:
Dansk Olie and Naturgas A/S (DONG) is founded by the Danish state to explore oil and gas deposits in the North Sea

1991:
DONG's first offshore wind pilot project, Vindeby, is undertaken at 5 MW capacity

2001:
Anders Eldrup is appointed as CEO from the position of secretary to the Danish Ministry of Finance

2004:
DONG expands to Germany and the Netherlands and constructs a natural gas pipeline from Tyra in the North Sea to the Netherlands

2008:
CEO Anders Eldrup announces the ambition to go from 85 % black and 15 % green to the reverse in 2040

2009:
DONG makes strategic investments in offshore wind, establishing a base for the emerging industry

2012:
Henrik Poulsen brought in as CEO to restore the financial position and dismantle the fossil fuel business

2014:
DKK 11 bn injected as the state sold a 26 % share to Goldman Sachs, ATP, and PFA. The state ownership share decreases from 81 % to 57 %

2016:
DONG Energy pursues an IPO at a market capitalisation of DKK 100 bn, while the state ownership share drops to 50,1 %. For the first time, the majority of EBITDA comes from offshore wind

2017:
Finalisation of the transformation with the company changing its name to Ørsted, whilst being awarded the largest offshore wind project at the time, Hornsea 2 (1,386 MW)

2019:
Ørsted's transformation is named one of the top ten of the decade by Harvard Business Review

Now:
Ørsted is named as one of the 100 most influential companies by Time Magazine, and the most sustainable energy company in the world by Corporate Knights in 2019-2022, and coming in second in the rating of 2023

Creating an industry

In the early years of the 85/15 strategy, the offshore wind industry was underdeveloped. A space in the market for an energy company dedicated to offshore wind had yet to be established and very few offshore wind projects existed, with projects typically having a moderate capacity of 300 MW in 2009.

Scaling partnerships

A key part of Ørsted's offshore position was built from forming essential partnerships, bringing the industry forward. One example is Ørsted's partnership with Siemens Wind Power in 2009 to deliver up to 500 3.6 MW offshore wind turbines for a total capacity of 1.8 GW. This secured the necessary supply of key components to fulfil Ørsted's offshore ambition at a time when it was very difficult to find suppliers for the offshore industry. Another example was the acquisition of the offshore installation shipping company A2Sea. These partnerships gave Ørsted access to critical components, allowing for delivery of projects at a far larger scale through greater standardisation of processes and decreased costs. When developing projects in each region, synergies are realised throughout the phases of construction, while input costs are kept low through bulk-purchasing. In doing so, Ørsted has created an offshore wind platform second to none, historically allowing for cost leadership.

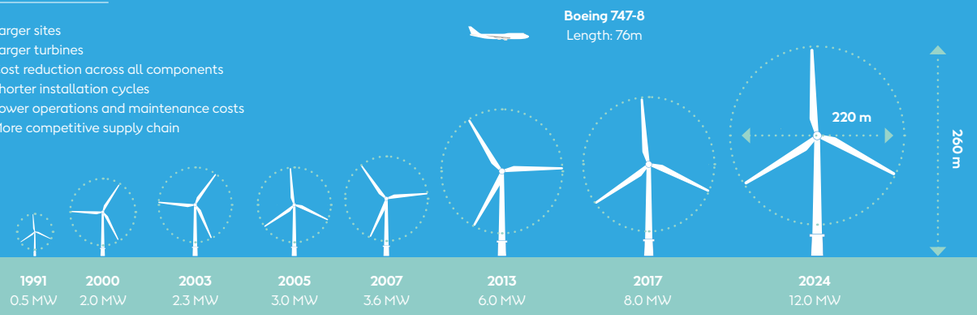
Making offshore wind competitive

Over the last 15 years, wind turbine technology has advanced significantly, partly due to Ørsted's significant contribution to increased adoption of offshore wind. The levelised cost of energy (LCOE) for offshore wind has decreased sharply, from EUR 177/MWh in 2012 to EUR 50-71/MWh in 2022, making offshore wind a competitive and efficient source of energy, cheaper than fossil fuels in selected regions.

Evolution of offshore wind farms

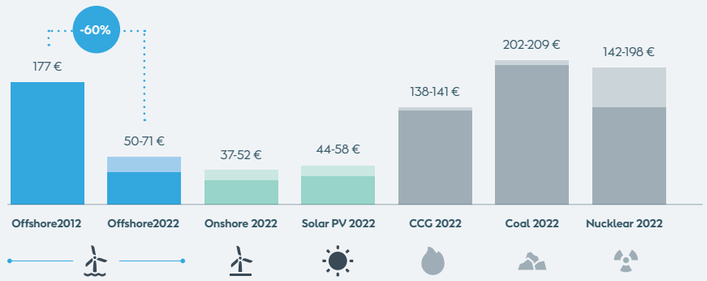
Key cost reduction levers

- Larger sites
- Larger turbines
- Cost reduction across all components
- Shorter installation cycles
- Lower operations and maintenance costs
- More competitive supply chain



Levelised Cost of Electricity (LCoE) [1,2]

EUR/MWh, 2012 and 2022, Northwestern Europe



Source:
Bloomberg New Energy Finance – 2H 2022 LCOE Update.

Notes:
1. The chart illustrates the total span of low and mid scenarios (i.e., lowest national LCOE found in low scenario, highest national LCOE found in mid-scenario) for projects with FID today and construction beginning tomorrow. Nuclear: UK, FI. Coal: PL. Natural gas: UK. Solar PV: DE, UK. ON wind: DE, UK. OF wind: DK, NL, UK. DE OF wind mid scenario omitted as cost of 102 EUR per MWh deemed unrepresentative. OF wind 2012: generic offshore wind, North Western Europe, FID 2012.

2. CCGT and Coal LCOEs in the low and mid scenarios are calculated with BNEF's benchmark fossil fuel and carbon prices. The LCOE span could be much wider if different price scenarios were applied. Nuclear new builds in Europe has been very limited the past decades and there is a high uncertainty in construction costs that is not reflected in the nuclear LCOE span.

Business areas and 2030 strategy

- Ørsted's business areas
- Ørsted's business performance
- Ørsted's global offshore footprint
- Ørsted's 2030 strategy
- Ørsted's differentiation pillars

2

Ørsted's business areas

Ørsted's business model involves developing, building, and operating offshore and onshore wind farms, as well as solar and energy storage projects. Ørsted also operates biomass-fuelled thermal power plants. This varied portfolio of business areas provides a strong growth platform, which for offshore, onshore, and Power-to-X (P2X) is highly scalable to new markets.

Offshore wind:

Ørsted is the global leader in offshore wind, with around 30 installed offshore wind farms across Europe, Asia, and the Americas. The current installed capacity is comprised of fixed foundation turbine generators, but Ørsted aspires to develop floating offshore wind projects in the near term. On the next page you see an overview of Ørsted's business model in offshore wind throughout the phases of development, construction, operation, and ownership.

Onshore wind, solar photovoltaics (PV) and storage:

Ørsted has a significant presence in the onshore wind and solar energy generation markets with a strong pipeline in the US and Europe. Ørsted is also exploring opportunities in the energy storage market with a focus on technologies such as batteries, creating integrated solutions for global markets.

Renewable hydrogen and green fuels (P2X):

Ørsted is developing Power-to-X (P2X) projects, which will help decarbonise hard-to-electrify sectors such as aviation, shipping, heavy road transport, and the chemicals industry through hydrogen and green fuels. Currently the pipeline consists of multiple projects across Europe and the US, including two projects already under construction.

Our offshore business model

We create value by developing, constructing, operating, and owning renewable assets and by providing energy products to our customers.

	Develop	Construct	Operate	Own
	In the development phase, we secure our pipeline	In the construction phase, we either act as general contractor ourselves or partly outsource these activities	When our assets are commissioned, we either operate and maintain them ourselves or partly outsource these activities	We continuously manage and optimize our portfolio of assets and partnerships
Offshore wind activities	• Shape new markets • Secure seabed leases • Bid in auctions • Investigate sites • Explore local content • Secure permits and grid acces	• Select suppliers • Install WTGs, substations and foundations • Install array and export cables • Execute local content	• Operate and maintain offshore wind farms • Balance power to the grid • Sell green certificates to the market	• Raise capital through partnerships and farm-downs
Partnerships	• Form JVs with key local players in new markets • Secure CPPAs	• Farm down ownership shares of assets • Secure tax equity financing (only US)	• Deliver on CPPAs and O&M agreements	

Risk management

Key resources

Financial capital
Natural and human resources
Innovation culture
Relational capital

Value created

For society
Customers
Employees
Shareholders

Ørsted's business performance

Offshore power generation
Ørsted has around 9 GW installed offshore capacity. The latest addition is Hornsea 2 in the UK, the largest operational offshore wind farm in the world at 1.3 GW, equivalent to powering 1.4 million households with low-cost, clean, and secure renewable energy. Furthermore, ~2 GW capacity is under construction in the US, Germany, and Taiwan. Finally, Ørsted has ~11 GW of awarded capacity which has yet to be constructed. Together, these initiatives form the ~22 GW offshore portfolio.

In 2021, Ørsted was awarded 4.5 GW offshore wind capacity in tenders and auctions, corresponding to 25 % of the total awarded capacity in 2021 and 50 % above the strategic ambition of adding 3 GW offshore wind per year. The offshore capacity increases were largely due to successful projects awards across the US, Poland, and the Baltics. In 2022, Ørsted was awarded 2.9 GW of capacity in the UK, corresponding to around 20 % of the auctioned offshore wind capacity globally (excluding lease auctions).

Outside of offshore wind, Ørsted has 4.2 GW installed onshore capacity and 2 GW bioenergy. For this case, you should focus on the offshore segment.

While Ørsted has enjoyed strong performance in auction win rates, these win rates are expected to fluctuate in the coming years due to competitive pressures, which is something you should consider in your case solutions.

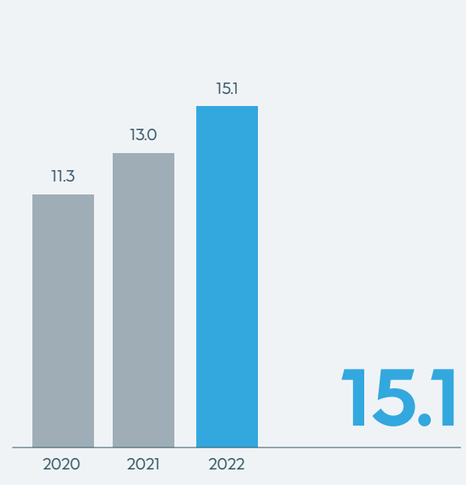
Financial performance
In 2022, the total operating profit (EBITDA), including cash flows from divested projects, amounted to DKK 32.1 bn, a 32 % increase compared to 2021. Operating profit excluding farm-down cash flows amounted to DKK 21.1 bn. Thus, Ørsted delivered strong financial results across business areas despite unforeseen negative impacts in offshore, including lower wind speeds and the continuing European energy crisis.

When reporting financial performance, Ørsted focuses on profitability metrics, not revenue. However, for this case, Ørsted does not require projections of revenue or profitability. Instead, you are to focus on Ørsted's competitive differentiation and how it should be applied to upcoming auction bids to secure the remaining pipeline necessary to reach 30 GW installed offshore wind capacity.

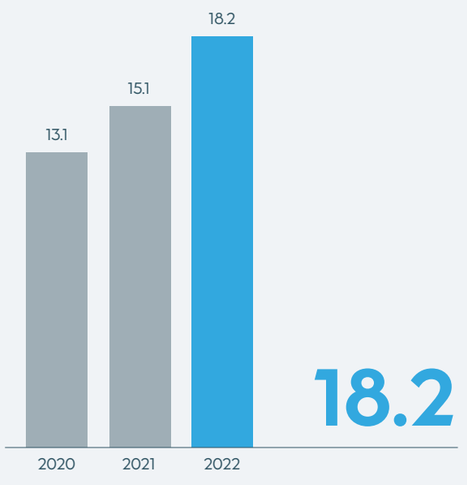
Sustainability performance
In 2021, as the first energy company in the world, Ørsted's 2040 target of reaching net-zero emissions in the entire value chain (scope 1-3 emissions) was validated by the Science Based Targets initiative (SBTi). This sets a new standard for corporate decarbonisation targets globally. Ørsted is on track to become entirely carbon-neutral in scope 1 and 2 by 2025, so the next frontier will be to fully decarbonise the total supply chain by 2040. In 2021, Ørsted also made the strategic commitment to gradually phase out its natural gas portfolio towards 2040, with a clear mid-term target of reducing scope 3 emissions by 50 % in the period from 2018 to 2032. Lastly, Ørsted aspires to have a net positive impact on biodiversity in all new projects from 2030.

Our key performance figures

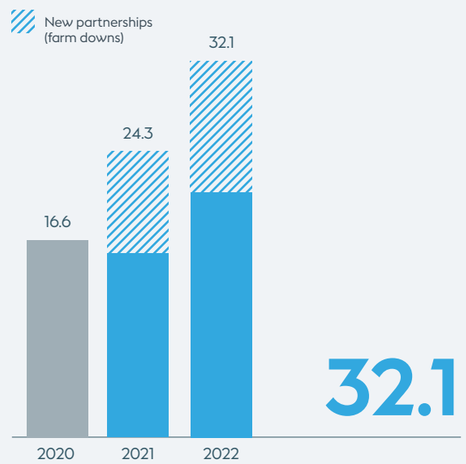
Installed renewable capacity
GW



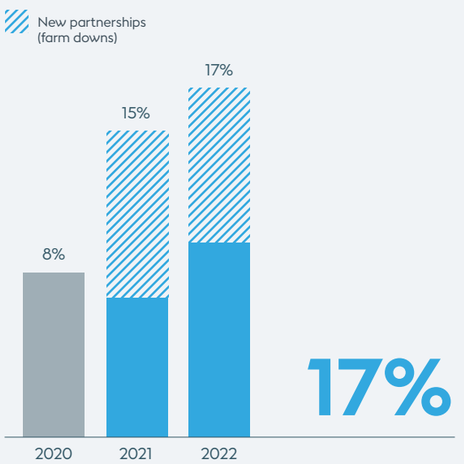
Avoided emissions
Millions tonnes, CO_2e



Operating profit (EBITDA)
DKKbn

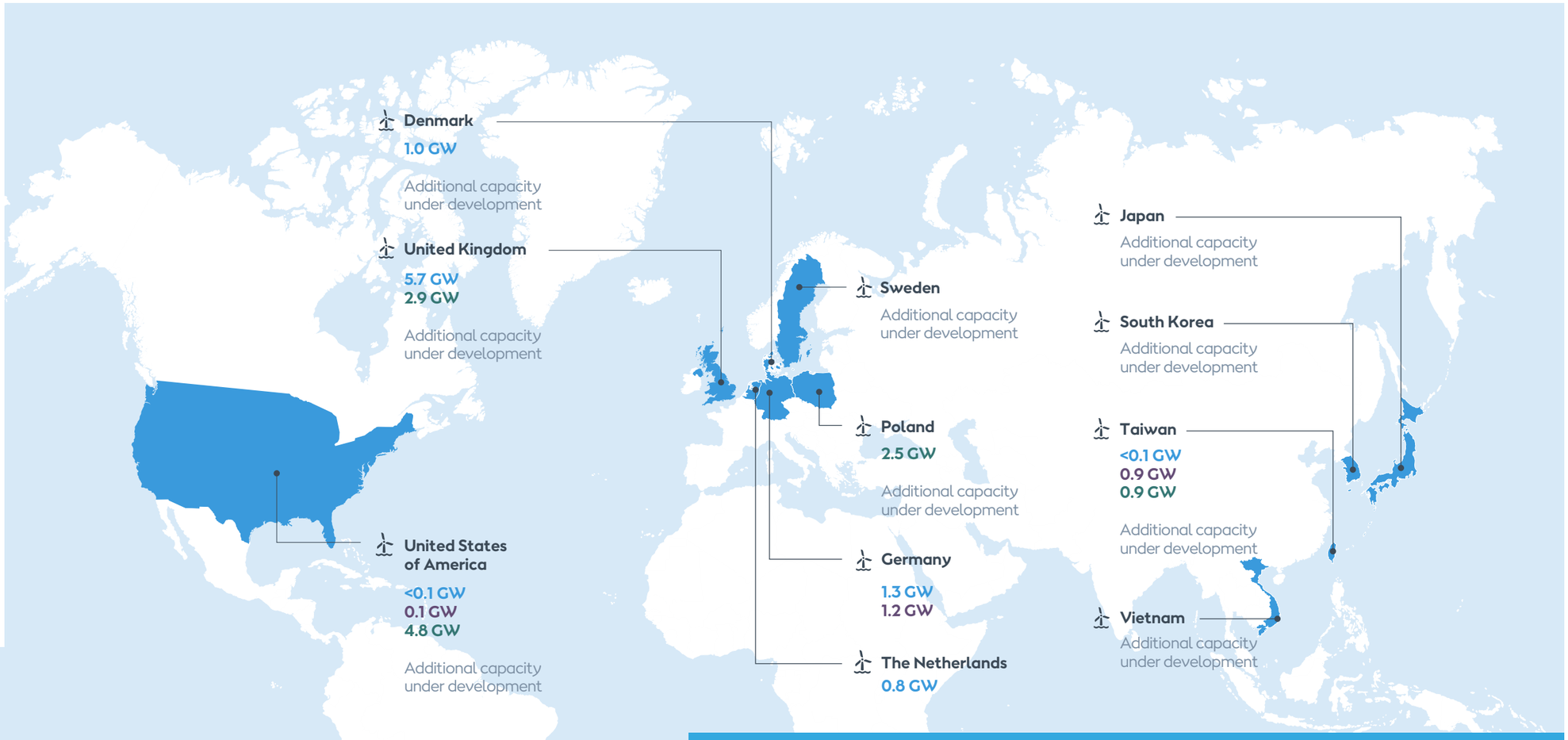


Return on capital employed (ROCE)
%



Ørsted's global offshore footprint

Over the years, Ørsted has established an expansive network of +1,600 installed offshore turbines globally. This is attributed to the concerted effort of Ørsted's more than +3,000 skilled offshore employees at headquarters and local country offices. The illustration on this page shows you an overview of the offshore wind portfolio.



Legend

- Ørsted offshore presence
- Ørsted offshore GW installed
- Ørsted offshore GW under construction
- Ørsted offshore GW awarded
- Additional Ørsted capacity under development

Note:
This map only shows Ørsted's offshore footprint. Ørsted also has significant operations and pipelines in Onshore renewables (solar, onshore wind etc.) and power-to-X (P2X)

Market segmentation
When evaluating offshore auctions, in this case you can distinguish between three market types: core, adjacent, and new.

- **Core markets** are those in which Ørsted already operates offshore wind, such as Denmark or the UK (e.g. has installed capacity).
- **Adjacent markets** are those without current capacity (installed or under construction), but which are close to countries with installed capacity or projects under construction. An example is Norway, as it is proximate to the core DK market.
- **New markets** are those in which Ørsted currently has no installed capacity or projects under construction nearby such as Brazil and Australia.

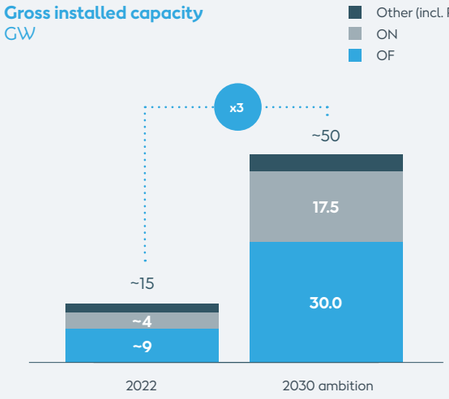
Ørsted does not operate with clear distinction, but evaluates projects on a case basis, and it is therefore up to you to rationalise and estimate the market classifications for your choice of auctions. You should consider Ørsted's operations in each market when forming your solutions.

Ørsted's 2030 Strategy

At the capital markets day in 2021, CEO Mads Nipper presented Ørsted's vision for the next decade. By 2030, Ørsted aspires to become the leader in green energy by operating within a set of strategic dimensions, including:

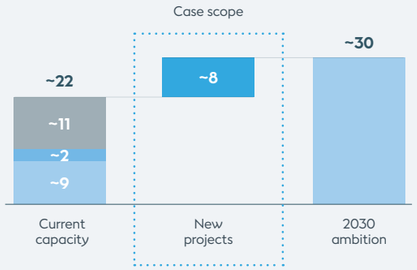
Dimension 1: One of the world's largest generators of green power
The first dimension concerns the green energy build-out. Ørsted has set a bold target, aspiring to reach a total of ~50 GW installed green capacity by 2030. This target will more than triple the current gross installed base of ~15 GW in 2023 and make Ørsted a leading power generator dedicated wholly to green energy. This dimension entails continued emphasis on new and existing platforms, multi-technology deployment in future projects, and importantly, reaching the 30 GW offshore target which is the focus of this case.

Gross installed capacity
GW



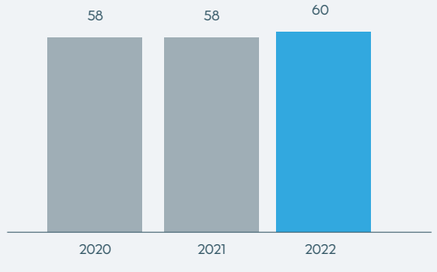
Dimension 2: Remaining the leader in offshore wind
In offshore wind, Ørsted has set an ambition to reach 30 GW installed capacity by 2030. Ørsted will expand its market footprint in high-opportunity markets such as the Baltics, and the Nordics, Asia-Pacific markets such as South Korea and Japan, and other growth regions. Furthermore, Ørsted aims drive the commercialisation of floating offshore wind turbines forward. It will be your task to determine how Ørsted may secure the final 8 GW required to realise the 2030 target.

Total offshore wind capacity
GW

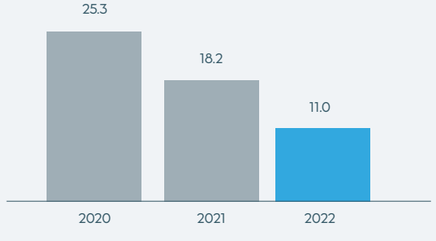


Dimension 3: Maintaining and expanding sustainability leadership
Ørsted aspires to demonstrate that sustainability and value creation are not opposing, but rather mutually reinforcing objectives. Ørsted will achieve this by decarbonising its entire supply chain across all scopes and ensure that all new projects have a net-positive impact on biodiversity by 2030. This dimension will require unprecedented cooperation with key stakeholders across sectors and countries and requires that Ørsted's role as an enabler of decarbonisation is reemphasised to governmental offtakers of projects.

Greenhouse gas emissions intensity (scope 1 and 2)
CO_2e/kWh



Greenhouse gas emissions (scope 3)
Million tonnes CO_2e



Ørsted's differentiation pillars

To realise the 2030 strategic goal of remaining the world leader in offshore wind, Ørsted must establish new sources of competitive advantage. Historically, Ørsted has derived competitive advantage from execution capability and by driving innovation and continuous optimisation, but with the intensified competition more is required. The question is how and where should Ørsted focus to continue the build-out of offshore wind? Below, potential areas for competitive differentiation are described.

While these areas may be of interest to your solutions, you should not constrain yourself to them. Ørsted encourages you to think creatively on the problems they are facing, and your proposed solution may take another form entirely, depending on your reasoning and decisions regarding how Ørsted should position themselves within new competitive factors across varying markets.

Cost leadership (price): In this context, cost translates into the price that offshore wind developers bid in project tender proposals, or the fee they bid in lease auctions[1]. Cost leadership entails winning projects based on delivery at the lowest cost. Ørsted can continue through this avenue, but it will prove increasingly difficult as Ørsted prioritises sustainable procurement, installation, and operation, which must be reflected in the price of project bids.

Project deliverability: Deliverability entails relying on Ørsted's track record of around 30 installed offshore wind farms and more than 1,600 turbines installed – more than anyone else. This has given Ørsted a valuable reputation of delivering on time and on budget. As the leading deployer of offshore wind, Ørsted can credibly refer to previous successful projects delivered on time and on budget, using industry leading standards.

Local content: Local content is the value a project brings to local, regional, or national economies. This refers to jobs and factories servicing the project and initiatives that support creation of local industries, potentially leading to exports in the long term. Many offshore auctions mandate local content, so if Ørsted can establish efficient programmes in local markets, such as producing key components locally, facilitating upskilling of local employees, and creating innovation hubs, it may be a source of differentiation.

Sustainability: Stakeholders not only expect green electricity at competitive prices, but also increasingly demand sustainable solutions. Therefore, one means of competitive differentiation is through decarbonisation initiatives such as using less cement in turbine foundations, sourcing sustainable steel, recycling wind turbine blades, or engaging in other green procurement activities. Depending on the contract, this may be an important lever of success.

Ecological biodiversity: Biodiversity entails limiting the environmental impact of projects and ensuring coexistence with fishing and aquaculture. From 2030, Ørsted intends for all new projects to have a positive biodiversity impact. Ørsted has already delivered initiatives such as artificial reefs to support Atlantic cod in the Netherlands, monitoring crustacean habitats in the UK, and a programme to protect and conserve the North Atlantic right whale.

Integrated solutions (system integration): System integration involves combining offshore wind projects with other technologies to increase the value of offshore wind projects. This may entail a combination of offshore wind energy and possibly related storage technologies such as Power-to-X (renewable hydrogen and green fuels), an emerging method of generating storable hydrogen through electrolysis.

[1] See page 35-38 for an in-depth overview of auction types.

Offshore fundamentals

- The offshore wind market and auction types
- Auction dynamics and parameters
- Industry challenges to overcome

3

The offshore wind market and auction types

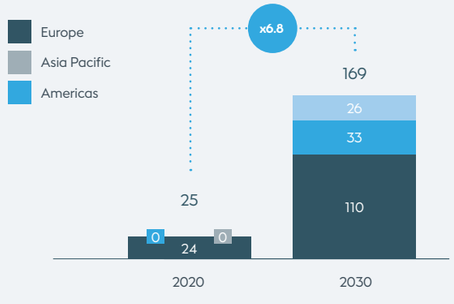
Capital requirements in offshore wind

Offshore wind is a highly capital-intensive industry, and developers have to make significant investments to construct offshore wind farms. The cost of a project can vary substantially based on its location – as an indicative example, a 1 GW offshore wind farm may cost DKK 10 bn to build in one location, whereas a similar project could cost DKK 30 bn in another. As capital is limited, it is important to select wisely how to spend it. For this case, Ørsted has set a capital constraint of DKK 200 bn. You will find further details on the cost assumptions to use for this case in the closing remarks.

Market outlook

At the beginning of this decade, the offshore wind market had a total of around 25 GW installed capacity. The market is expected to grow to around 169 GW in 2030, corresponding to an increase by seven times of the market in only ten years. The key drivers for the growth are the increasingly ambitious decarbonisation targets by countries around the globe, where offshore wind plays a key role in electrifying power production.

Offshore build-out, excluding China
Installed capacity (GW)



Source: BNEF Offshore Wind Market Outlook H2 2022

Fixed-bottom and floating turbines

Offshore wind is typically divided into two categories: fixed and floating. Fixed offshore wind turbines are placed on a foundation that is fixed on the seabed, whereas floating offshore wind turbines are placed on a floating foundation with anchors to keep the wind turbine in place. Fixed technology uses one of three foundation types – monopiles, gravity-base, or jacket – depending on the seabed conditions and water depth. Floating technology is typically used in locations where the water is very deep, which makes it costly or impossible to build foundations on the sea floor. Today, almost 100 % of the market is fixed-bottom, but floating holds vast potential in the future, as it will allow for deployment at much greater depths and thus at more sites around the world. As an example, the Mediterranean Sea is primarily a floating market.

Auction types

Today, offshore wind projects are awarded in auctions which are held by governments or states, such as in the US. In an auction, companies bid on the right to develop an offshore wind farm. Auctions differ by design and by requirements. In general, you can distinguish between two types of auctions.

Central auctions

The first one is a central auction where developers bid on a project that is already shaped and defined by the government, e.g., 1 GW offshore capacity at a specific site. It ends in a "winner takes all" situation, where the developer winning the auction is granted the right to develop the full capacity of the site, whereas other bidders lose out on that opportunity. From the point in time a central auction begins, you can assume that it will take five years to complete the bidding process and construction. For example, if a developer bids in an auction in 2023 and wins, you can assume that the offshore wind farm will be built and fully operational in 2028.

Lease auctions

The second type of auction is a lease auction. In this type of auction, areas of seabed are auctioned, and developers bid against each other to secure a lease. Typically, multiple lease areas are available for bidding in one auction, which generally means that multiple developers win a lease area in an auction, so developers can often expect a higher probability of winning a site in a lease auction than in a central auction. Since there are multiple winners, a developer cannot expect to win the full capacity auctioned in a lease auction.

For the purposes of this case, you should assume that a single developer cannot expect to win more than 20 % of the overall lease capacity in the case of a winning bid. For example, in a lease auction of 7 GW, any single developer can only win 1.4 GW. In practice, it is not certain whether a lease will result in a power contract, but for the purpose of this case, you can assume that once a site of seabed has been won in a lease auction, there is 100 % certainty that the winning developer can build an offshore wind project on that site.

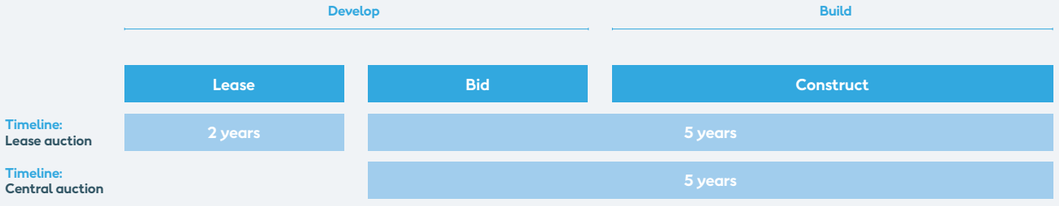
Four main types of wind turbine foundations

	Fixed foundations			Floating foundations
Foundation type	**Monopile**	**Gravity-base**	**Jacket**	**Floating**
Materials/ method	Wind tower is placed into a steel tube, typically 5-12 meters in diameter, and is held in place by drilling the structure into the seabed	Wind tower placed on top of the seabed with a heavy concrete structure at its bottom, held in place through gravity (weight) Especially useful for very hard seabed with stiff soil, where drilling is not feasible	Wind tower is installed onto a wielded steel structure, which is held in place both through gravity (weight) and by drilling the structure into the seabed	Wind turbine is placed into a floating structure, which is attached to the seabed via strong cables and anchors More expensive (due to lack of maturity), but can be used in water depths where no bottom-mounted structures are feasible
Usage worldwide [1] % of total	6%	81%	9%	0%
Used in water depths [2] m	5-40m	10-60m	30-100m	>100m

Notes:
[1] Remaining 4% stem from other foundation types e.g. tripod
[2] Water depth range varies depending on WTG size and soil conditions (e.g. some monopiles are used at 90m water depth due to the softness of the soil)

Source: Ørsted technical specialists, Wind Europe Annual Offshore Statistics 2019

Timeline constraints



Lease auctions are generally more time-consuming and complex to develop than central auctions. As a result, there will be a longer time horizon from the auction until the project becomes fully operational (timeline of two additional years, i.e. around seven years in total). Lease auctions are also more expensive to participate in since developers must pay to secure and develop the lease area.

In the illustration of timeline constraints, the time frame for a bid includes both preparation of the bid, bid submission, and a timeline for receiving bid results (e.g. being awarded a win in the auction). As an example, for a bid in a central auction in 2023, the wind farm can be assumed to be fully installed five years later, i.e. in 2028. A bid in a lease auction in 2023 can be assumed be fully installed in 2030.

An overview of upcoming auctions has been included in the appendix, including both central and lease auctions. You should use this auction overview when deciding on how to attain the 30 GW installed offshore wind capacity. Please note that there is no single optimal combination of auctions, and that it is up to you to determine which auctions to bid in based on a strategic rationale.

Auction dynamics and parameters

Historically, auctions have been determined based on price, but in recent years there has been a trend towards incorporating more non-price factors in auctions. With increasing competition in the industry, developers' rates of winning auctions are under pressure. To improve the probability of winning an auction, developers can differentiate their bids by investing in additional initiatives that strengthen their bid proposals, such as local content initiatives or biodiversity programmes. This development is seen from the following overview of bidding criteria over time.

Auction parameters by market

While non-price criteria are gaining traction, the auction parameters emphasised by regulators vary from country to country. You may use the overview by Wood Mackenzie below as guidance for how to differentiate in various markets, but please note that this is merely indicative. For countries not covered in this overview, you can assume similar auction parameters to adjacent countries, or you can research independently.

To deliver competitive bids and improve win rates, you will need to determine how Ørsted should differentiate in the auctions you decide to pursue. Additionally, you should consider that win rates will depend on both the competitive intensity in a market and Ørsted's existing presence in the market. When you present your solution to this case, you should make sure to report your assumed win rates. You should also not limit yourselves to the stated differentiation criteria, but you may include entirely different initiatives depending on your chosen solutions.

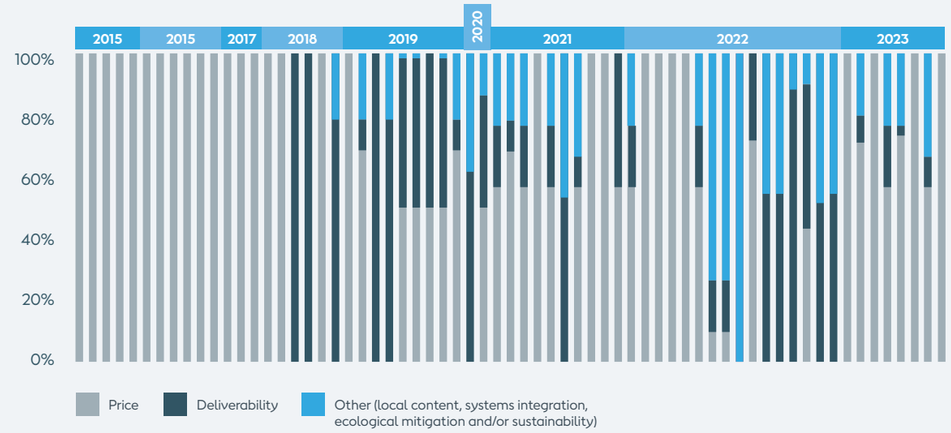
Auction parameters by market

● High value in market
● Medium value in market
● Low value in market

	Denmark	Norway	Sweden	Finland	United Kingdom	Belgium	France	Germany	Netherlands	Italy	Poland	China	Japan	South Korea	Taiwan	Vietnam	East Coast
	Europe											Asia					US
Price	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Local content	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
System integration	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Ecological mitigation	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Sustainability	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Source: Wood Mackenzie (2022)

Announced bidding criteria in global offshore wind tenders and lease auctions



Source: Wood Mackenzie (2022)

Industry challenges to overcome

Despite substantial growth expectations, the offshore wind industry and Ørsted itself faces a number of challenges. It is essential that you consider these in your answer to the case question.

Challenge 1: Regulatory barriers

Despite the ambitious build-out targets for offshore wind around the globe, the industry suffers from regulatory barriers. Today it takes around eight years from the first planning of a wind farm to commercial operation (not to be confused with the timeline of five to seven years provided as an assumption earlier in the document). The consenting process is prolonged by different agencies waiting for each other resulting in a long waiting time for obtaining permits. It will be essential to shorten this time in the future, for example by establishing parallel tracks of approvals instead of a step-by-step approach as is the case today.

As an example, only 3.4 GW offshore capacity was installed in Europe in 2021, but 20 GW must be installed annually by 2030 to reach the ambitions of the EU Green Deal. There is an imminent need for speed![1]

Another challenge is the increased trend of regulators monetising offshore wind through concession payments and even negative bids. As an example, Denmark held an auction for the offshore wind park Thor in 2021 which was not only subsidy-free but also required a payment to the state of DKK 2.8 bn[2]. The up-front monetisation of offshore wind poses two risks. Firstly, it may increase the cost of electricity to the citizens.

Secondly, it may jeopardise the health of the supply chain and its ability to scale operations to meet the extremely ambitious build-out targets and market growth. In response, Ørsted and several other developers favour auctions that focus on broader societal value such as accelerating green electricity production, utilising local content, and lowering the price of the electricity. Recently, Ørsted and fellow competitors have tried to push this argument towards regulators[3].

Challenge 2: Supply chain constraints

The second challenge relates to the supply chain. This challenge has three main elements.

The first element concerns increasing inflation and CAPEX cost. CAPEX has increased significantly over the last 24 months due to rising labour costs, increased prices of raw materials such as steel, and higher logistics costs. These factors stress supply chains, and as an example, one turbine manufacturer raised prices on turbines by 22 % in Q2 2022 from Q2 2021[4]. Still, all the three large turbine manufacturers Siemens Gamesa, Vestas, and General Electric, lost money in 2022[5].

The second element relates to bottlenecks. For example, very few heavy-lift installation vessels capable of installing the sizable offshore turbines exist. This translates into inflated prices for developers when the vessels are contracted. Other examples of bottlenecks are harbour availability, substations etc.

The third element relates to future-proofing the supply chain and ensuring continued scalability and decarbonisation. The offshore wind industry is still an emergent industry, and currently the supply chain is not able to meet the build-out targets. As an example, the current capacity for turbine suppliers in Europe is around 7 GW of turbines per year, with 3 GW additional capacity planned. Yet, the demand in Europe will be 20 GW a year in 2030[6]. With downward price pressure from developers, it is difficult for suppliers to meet demand while investing in capacity for the future.

Moreover, demand for more sustainable offshore wind farms is increasing, which will require more green steel, less concrete, and more electric or e-methanol fuelled service vessels. As an example, steel alone makes up half of the total climate footprint of offshore wind farm projects[7]. All these factors place greater cost pressures on suppliers than before.

Ensuring a robust supply chain will require that developers, suppliers, regulators, and other partners work together to create a healthy and sustainable future industry.

Ørsted's offshore wind position and key competitors

Top 10 offshore wind players globally

Rank	Offshore wind constructor capacity by company[1]	2030 offshore ambition, GW	Location of company HQ
1	Ørsted 7.6 / 3.5 / 11.2 — 22.2	~30	
2	RWE 4.8 / 1.7 / 2.3 — 8.8	~8	
3	VATTENFALL 2.4 / 2 / 11.2 — 6.7	~12	
4	IBERDROLA 1.1 / 0.9 / 4.2 — 6.1	N/A	
5	equinor 0.8 / 0.1 / 5.1 — 6.0	N/A	
6	sse 0.5 / 4.8 — 5.4	N/A	
7	OW[2] 1.1 / 2.3 / 0.0 — 3.3	N/A	
8	EDF 0.6 / 1.4 / 1.2 — 3.1	N/A	
9	NORTLAND POWER 2.1 / 0.9 — 2.9	N/A	
10	0.5 / 1.7 / 0.6 — 2.9	N/A	

Other key competitors

Company	Location	Capacity
CIP		1.9 GW installed, under construction and awarded across 3 regions
TotalEnergies		Small awarded portfolio, but mostly lease rights. Have not build a offshore farm yet
bp		Small awarded portfolio, but mostly lease rights. Have not build a offshore farm yet

Installed
Under construction
Awarded

Notes:
1. Capacity is measured on installed-, under construction- and awarded offshore wine capacity outside of mainland China as of December 2022. The data is capacity where the respective company is (or will be) the constructor, i.e. excluding capacity where the company is solely the developer or owner. The global offshore constructor capacity does not include seabed lease rights, but only awarded capacity. **2:** EDPR & ENGIE JV

Challenge 3: Competition

Ten years ago, there were few offshore wind developers in the world. Today, competition is fierce in every auction. This is essential to consider when you solve your case.

The first group of competitors are the large European utilities such as German RWE, Spanish Iberdrola, Swedish Vattenfall, and Scottish SSE. They have been operating in the offshore sector for many years and have significant offshore capacity installed already. Yet they are becoming more aggressive in their efforts to develop more offshore wind.

A new group of competitors are the European oil and gas majors; Shell, British Petroleum (bp), Total Energies, and Equinor. In efforts to decarbonise their activities and meet investor demands, they are leaning aggressively into offshore wind across the globe. By capitalising on their large cash flows from oil and gas activities, they have shown a high appetite for securing offshore wind capacity. Of these, only Equinor and Shell currently have significant experience in offshore wind. The last group of competitors are the pure developers such as Copenhagen Infrastructure Partners.

With the entry of competition, Ørsted must develop a differentiated offering for the future. Above you find an overview of Ørsted's key competitors in offshore wind, both those with existing pipelines and some of the new entrants in the market. You can use this overview as inspiration when you decide on your auction selection.

Across all three challenges there is an imminent need for Ørsted to work with regulators, suppliers, and other relevant partners to find viable solutions and ensure a healthy offshore wind industry in the long term.

While the primary objective of this case is to increase Ørsted's installed offshore wind capacity and ensure competitive differentiation, these industry challenges are increasingly important in doing so. Therefore, you are free to also consider other creative differentiation approaches beyond those stated previously, which may be targeted towards also alleviating these industry challenges.

1 Squeezed offshore wind sector demands new tender design (energywatch.com) & Ørsted Need for Speed Paper (2022)
2 Lottery process involved in Thor auction comes under heavy fire (energywatch.com)
3 Wind players warn against price competition in offshore wind (energywatch.com)
4 Wind turbine maker Vestas says price power improving, shares jump | Reuters
5 Europe's Wind Industry Is Stumbling When It's Needed Most - The New York Times (nytimes.com)
6 Ørsted White Paper: Need for Speed (2022)
7 Ørsted calls for international cooperation to decarbonise steel sector (climatechangenews.com

Closing remarks

For more than a decade, Ørsted has led the commercialisation and global expansion of offshore wind. Through its dedication to the green transformation, it has created a market for an energy platform which many had disregarded as a figment of wishful thinking with no hold in the real world. In response Ørsted has not only proven that offshore wind is a viable energy platform; it has built a flourishing industry around this technology while playing an instrumental role in driving down the levelised cost of energy (LCOE).

With these historic milestones in mind, it is now your task to consider Ørsted's current situation and determine your proposal for how Ørsted should position itself to establish competitive advantage in future offshore wind projects. The market today is unlike any seen previously, with innumerable challenges and opportunities. Ørsted has already secured ~22 GW of offshore wind capacity (installed, under construction, or awarded) but 8 GW have yet to be secured and built to reach the 30 GW target by 2030. Due to the long lead-time of auction proceedings and project construction, these 8 GW must be secured in the coming years if the associated projects are to be installed by 2030.

You must reflect on how the aspects of the offshore wind industry intersect, both in terms of regulatory environment, competitive intensity, and supply chain challenges. By doing so, you must plan how Ørsted should competitively differentiate and secure the final 8 GW in offshore wind capacity through the enclosed overview of opportunities.

When solving your case, you can use the auction overview in the appendix, information throughout the case book, and finally the overview of key assumptions below for your calculations. This provides the associated DEVEX and CAPEX cost required to develop offshore wind projects. Moreover, it is essential that you consider the capital constraint of DKK 200 bn for winning and constructing the 8 GW through your initiatives.

As this is one of the top priorities of Ørsted, your proposals may play a part in strategic considerations of the following years. Both senior executives from Ørsted, jury members from across Denmark, and the entire organisation behind CBS Case Competition look forward to receiving your solutions.

Capital constraints

You can assume that Ørsted has allocated a total of 200 DKKbn[1] to achieve its 2030 target (both for DEVEX and CAPEX)

DEVEX

Development expenditure (DEVEX) is the cost associated with developing a project, including the bidding process, but excluding the cost of undertaking differentiating initiatives.

For central auctions, DEVEX costs vary depending on how familiar Ørsted is with the regulatory and competitive environment. For central auctions, it is reasonable to assume that it costs approximately …

- **75 DKKm** in DEVEX to develop a bid in a core market for Ørsted
- **100 DKKm** in DEVEX to develop a bid in an adjacent market (with high proximity to a core market, geographically and regulatory-wise)
- **125 DKKm** in DEVEX to develop a bid in a completely new market for Ørsted
- You can assume that 'market familiarity' is unaffected by auction wins that occur after 2022, and that DEVEX is therefore independent across auctions.

For lease auctions, DEVEX is by default significantly larger and thus relatively unaffected by Ørsted's existing familiarity with the regulatory environment, but instead depends greatly on the GW-scale of the auction. For lease auctions, it is reasonable to assume that it costs approximately …

- **1DKKbn** per GW to develop a bid in all markets[2]. This applies only to the GW that can be expected to be won, equal to 20% of the total capacity.

CAPEX

Capital expenditure (CAPEX) is the cost associated with constructing a project during- and after the development phase, including the cost of undertaking differentiating initiatives.

The construction cost depends on the GW scale of the project and consists of several components including the wind turbine generator, foundation, substations, cables and vessels – all of which are necessary for a wind farm to become operational. For all offshore wind projects (regardless of auction type) it is reasonable to assume that it costs approximately …

- **20 DKKbn** per GW to construct a wind farm project (as a baseline, meaning using fixed technology and with no differentiation)
- **5 DKKbn** per GW in additional costs to construct a wind farm project using floating technology (relative to fixed technology)
- **200 DKKm** in additional costs to create a minor (incremental, often construction-based) technological innovation differentiation initiative
- **150 DKKm** in additional costs to create a standard local content differentiation initiative
- **100 DKKm** in additional costs to create a standard sustainability and/or biodiversity differentiation initiative

These figures are indicative, and you may use them to form cost-estimates for entirely new differentiating initiatives or innovations that you propose.

Notes:

1. All CAPEX and DEPEX numbers are illustrative and invented for this case
2. The DEVEX per GW for lease auctions is estimated based on the historical acquisition cost of leases in 2022

The excellent case solution meets the following criteria:

1. Understands Ørsted's market position and actively leverages it to define Ørsted's value proposition and differentiation strategy in auctions
2. Presents a combination of auctions to secure 8 GW capacity to reach 30 GW installed capacity in 2030, while considering the limitations, e.g. timelines and the capital constraint
3. Offers a clear strategic rationale behind the selection of auctions, building on Ørsted's competitive differentiation
4. Lays out the key assumptions clearly and reports the implied auction win rates, i.e. the auctions won as a share of auctions bid in
5. Delivers concrete ideas for how Ørsted can play a role in shaping a financially healthy and environmentally sustainable offshore wind industry

Best of luck!

Appendix

- Glossary
- Upcoming auctions
- Acknowledgements

Glossary

Pipeline: GW of capacity that has been contracted but is not yet installed.

Capacity: The total energy generation potential of owned assets (constructed or awarded).

Farm-down: The partial of total divestment of an energy project before or after finalisation, done with the intention of freeing up capital.

Fixed technology: Offshore wind turbine generator anchored in the seabed.

Floating technology: Offshore wind turbine generator anchored to a floating foundation, allowing deployment at far greater sea depths.

Load factor: The ratio between the actual power generation in each period relative to the potential generation which is possible by continuously exploiting the maximum capacity over the same period.

Central auction: An auction for development of an offshore wind project. In this case, the winning bidder will receive all rights to develop the entire offshore project.

Lease auction: For this case, a lease auction is the auction of a seabed area lease. Only 20 % of the total area in a lease auction can be expected to be won. After winning a lease, the seabed will be developed and construction will commence, with projects typically finalised and fully operational around seven years after the year of the lease auction. For example, winning a lease auction in 2023 will mean that an offshore wind farm will be fully installed in 2030.

Wind turbine generator installation vessel (WTGIV): Specialised seafaring vessel designed to install offshore wind turbine generator towers.

Green energy contracts: Certificate awarded to producers of environment-friendly power as a supplement to the market price of power in the given price area.

Development: In this case, development refers to the process of qualifying and bidding in offshore wind auctions.

Offtaker: In this case, the offtaker is the party acquiring a wind project partly or wholly at any stage of construction in a "farm-down".

Bid price: In the context of the case, "price" refers to the price offshore developers bid in auctions or the fee they bid with in lease auctions, and how important the price is in winning these.

Original equipment manufacturer (OEM): An original equipment manufacturer (OEM) makes systems or components that are used in another company's final product. This could be turbine generators, or wind turbine blades.

Awarded capacity: Offshore capacity that has been awarded in auctions and tenders, but still needs to be constructed.

Capacity under construction: Awarded project that is under construction, i.e. being physically built.

Installed capacity: Installed capacity where the asset has been completed and is operational.

Final investment decision (FID): When the Board of Directors approves larger investments for construction assets.

Upcoming auctions (1/4)

Country	Tender name	Auction format	Technology	Year	Capacity (GW)	Additional comment
Denmark	Bornholm (1/3)	Central	Fixed	2023	1.3	
Denmark	Bornholm (2/3)	Central	Fixed	2023	1.3	
Denmark	Bornholm (3/3)	Central	Fixed	2023	1.3	
Germany	Germany N-11.1	Central	Fixed	2023	2.0	
Germany	Germany N-12.1	Central	Fixed	2023	2.0	
Germany	Germany N-12.2	Central	Fixed	2023	2.0	
Germany	Germany O-2.2	Central	Fixed	2023	1.0	
Germany	Germany N-6.6	Central	Fixed	2023	0.6	
Germany	Germany N-6.7	Central	Fixed	2023	0.3	
Germany	Germany N-3.5	Central	Fixed	2023	0.4	
Germany	Germany N-3.6	Central	Fixed	2023	0.5	
Taiwan	Round Three Centralized Auction 2	Central	Fixed	2023	3.0	
Japan	Round 2.2	Central	Optional[1]	2023	0.9	
Lithuania	Round 1	Central	Fixed	2023	0.7	
France	Round 10	Central	Fixed	2023	1.0	
Netherlands	IJmuiden Ver I	Central	Fixed	2023	1.0	
Netherlands	IJmuiden Ver II	Central	Fixed	2023	1.0	
Netherlands	IJmuiden Ver III	Central	Fixed	2023	1.0	

Source:
Government public announcements, Ørsted overview

Notes: 1.
Optional means that developers are free to choose between fixed and floating

Upcoming auctions (2/4)

Country	Tender name	Auction format	Technology	Year	Capacity (GW)	Additional comment
Netherlands	IJmuiden Ver IV	Central	Fixed	2023	1.0	
Belgium	PEZ	Central	Fixed	2023	1.0	
Portugal	Portugal Tender	Lease	Fixed	2023	7.0	You can assume only 20% of the tendered capacity can be expected to be won by any given developer
United Kingdom	Celtic Sea	Lease	Floating	2023	4.0	You can assume only 20% of the tendered capacity can be expected to be won by any given developer
United States	OR	Lease	Fixed	2023	3.0	You can assume only 20% of the tendered capacity can be expected to be won by any given developer
Norway	Sørlige Nordsjø II	Lease	Fixed	2023	3.0	You can assume only 20% of the tendered capacity can be expected to be won by any given developer
Denmark	Hesselø	Central	Fixed	2024	1.2	
Japan	Round 3	Central	Fixed	2024	1.5	
Germany	Germany N-9.1	Central	Fixed	2024	2.0	
Germany	Germany N-9.2	Central	Fixed	2024	2.0	
Germany	Germany N-9.3	Central	Fixed	2024	1.5	
Taiwan	Round Three Centralized Auction 3	Central	Optional[1]	2024	3.0	
Germany	Germany N-12.3	Central	Fixed	2024	1.0	
Germany	Germany N-11.2	Central	Fixed	2024	1.5	
Japan	Round 4	Central	Optional[1]	2024	1.25	
Norway	Utsira Nord	Lease	Floating	2024	1.5	You can assume only 20% of the tendered capacity can be expected to be won by any given developer

Source:
Government public announcements, Ørsted overview

Notes: 1.
Optional means that developers are free to choose between fixed and floating

Upcoming auctions (3/4)

Country	Tender name	Auction format	Technology	Year	Capacity (GW)	Additional comment
Japan	Round 5	Central	Optional[1]	2025	1.25	
Germany	Germany N-10.2	Central	Fixed	2025	0.5	
Germany	Germany N-10.1	Central	Fixed	2025	2.0	
Netherlands	IJmuiden (Noord) Ver V	Central	Fixed	2025	1.0	
Netherlands	IJmuiden (Noord) Ver VII	Central	Fixed	2025	1.0	
Belgium	Princess Elisabeth 2	Central	Fixed	2025	1.4	
Belgium	Princess Elisabeth 3	Central	Fixed	2025	1.4	
Canada	Lease Auction Nova Scotia	Lease	Fixed	2025	5.0	You can assume only 20% of the tendered capacity can be expected to be won by any given developer
Germany	2025 Auction	Central	Fixed	2025	5.0	
France	Round 11 Mediterranean Extension	Central	Floating	2025	1.0	
France	Round 12	Central	Fixed	2025	1.0	
United Kingdom	CfD 7	Central	Fixed	2025	4.0	
Japan	Round 5	Central	Fixed	2025	2.0	
Lithuania	Round 2	Central	Fixed	2025	0.7	
Netherlands	Nederwiek South I	Central	Fixed	2025	2.0	
Norway	Sørlige Nordsjø II Site 2	Central	Fixed	2025	1.5	
Poland	2nd Price Auction (2nd Wave)	Central	Fixed	2025	2.5	

Source:
Government public announcements, Ørsted overview

Notes: 1.
Optional means that developers are free to choose between fixed and floating

Upcoming auctions (4/4)

Country	Tender name	Auction format	Technology	Year	Capacity (GW)	Additional comment
Germany	2026 Auction	Central	Fixed	2026	1.5	
France	Round 13	Central	Floating	2026	0.5	
France	Round 14	Central	Fixed	2026	1.0	
United Kingdom	CfD 8	Central	Fixed	2026	4.0	
Japan	Round 6	Central	Fixed	2026	2.0	
Netherlands	Nederwiek Nord	Central	Fixed	2026	4.8	
Netherlands	North of the Wadden Islands	Central	Fixed	2026	0.8	

Source:
Government public announcements, Ørsted overview

Acknowledgements

Case developers
Alexander Thomsen Wyne, CBS Case Competition 2023
Matilda Johansdotter, CBS Case Competition 2023
Amanda Dahl Jensen, CBS Case Competition 2023
Oskar Rytter Lund, CBS Case Competition 2023
Julie Rath, CBS Case Competition 2023

Special thanks to
Vilhelm Vig Nielsen, Head of Corporate Strategy, Ørsted
Margrethe Moesgaard Andersen, Senior Strategy Associate, Ørsted
Robin Lunding Sandqvist, Student Assistant, Ørsted
Cathrine Rydal, Senior Project Lead, Employer Branding, Ørsted
Sofie Carl, Senior Project Lead, Employer Branding, Ørsted

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