

A wind of change: some questions about the allocation of offshore windfarm permits

Offshore wind is now a major contributor to generating capacity, especially in coastal countries.¹ Even though interest in developing new capacity has somewhat cooled recently in the face of higher long-term interest rates and potential supply chains concerns, offshore wind is expected to grow strongly.

Permits to develop offshore wind farms are often allocated through competitive tenders and auctions. But how should these process be best organised? There is great variation in the approach that different countries have taken² and little similarity to allocation methods used for other scarce public resources.

In this paper, we look at whether these differences in approach are justified and whether processes might be improved.

A wide variety of allocation models

Building an offshore wind farm is a complex multi-phase project. Operators require the right location with constant wind speeds, suitable water depths and a stable seabed, sufficiently close to the shore. The impact on the marine environment and bird migration needs consideration, as well as potential conflicts with commercial fishing or shipping lanes. Port access is a key requirement during construction. A connection to the grid is needed.

Changing market conditions

Historically, administratively-set tariffs to promote renewable energy sources have given way to subsidy auctions where successful bidders were selected to minimise the support required to build and operate offshore wind farms (e.g. in the form of guaranteed feed-in tariffs or CfDs shielding investors from the uncertainty over future electricity prices). Over time, these subsidy requirements have decreased, eventually leading to some awards where bidders did not require any support at all. Rather than having to pay developers to invest in offshore wind generation, governments found themselves able to charge for access to the seabed,

Hollandse Kust Zuid, in the Netherlands, became the first subsidy-free offshore wind farm in the world in 2017. In the following year, Germany saw zero subsidy bidding in their offshore wind farm tender for the first time. The German auctions in 2023 and 2024 for not centrally pre-investigated sites, which used a dynamic bidding process,³ generated substantial revenues.

However, these heady days seem to be coming to an end. Revenues from the 2025 dynamic bidding process in Germany were a fraction of those achieved in earlier years; the 1 GW site offered in the 2025 auction went for a price of only €180 million, compared with payments of more than €1 billion per GW in the previous years. The recent German tender for centrally pre-investigated sites failed to attract any bids.

This comes on the heels of a failed Danish tender in 2024, and the Dutch decision to delay the upcoming IJmuiden Ver Gamma-A and Gamma-B tenders in response to the deteriorating market conditions, leaving only the Nederwiek I-A site with capacity of 1 GW to be tendered later this year.

In response to the failed tenders in Denmark and Germany, the industry has called for a return to support measures such as (two-way) CfDs and power purchase agreements (PPAs).

¹ In 2024, 8 GW of new offshore wind installation brought global offshore wind installed capacity [to 83.2 GW](#), powering 73 million households and creating thousands of jobs. For data see [U.S. Energy Information Administration](#) (EIA).

² For a detailed overview of the evolution of allocation processes and a comparison of the different models used see M Jansen, P Beiter, I Riepin, F Müsgens, V J Guajardo-Fajardo, I Staffell, B Bulder and L Kitzing, 'Policy choices and outcomes for offshore wind auctions globally', *Energy Policy* 167 (2022).

³ The process for assigning permits in Germany differs between sites that have been centrally pre-investigated and those that have not. For the former, a competitive tender with a financial bid component is used. For the latter, bidders are initially invited to specify their support requirements and if two or more bidders indicate that they do not need support, a dynamic bidding process is run.

Operators may have to contribute to the cost of maintaining system stability in the face of potentially highly variable generation. Initial investments are substantial and there is a long payback period with uncertain returns dependent on future electricity prices.

Yet, while the challenges facing developers investing in offshore wind are similar across jurisdictions, allocation processes for sites differ radically.

- There are differences in the form of support: Contracts for Differences (CfDs), which can be one- or two-sided; market premiums or feed-in tariffs; mandated PPAs and contracts for renewable energy certificates. There are differences in whether support payments are indexed for inflation or how the market reference price is established.
- There are differences in terms of who bears site development costs and grid connection costs. For example, in the Netherlands, the government performs site assessment (e.g. in relation to wind resources and seabed conditions) and an initial environmental impact assessment, providing this information free of charge to all bidders (though winning bidders will eventually have to reimburse the cost). The Dutch transmission system operator TenneT is responsible for developing, financing, building and operating substations and grid connections. In Germany, a preliminary assessment is undertaken by the Federal Maritime and Hydrographic Agency (BSH, covering the marine environment, seabed characteristics and wind and oceanographic conditions for some sites, whilst for others bidders are responsible for carrying out their own site assessments. Different processes are used for assigning the different types (see footnote 3).
- There are differences in the way in which bids are made and evaluated. Most commonly, the processes involve sealed bids, with open bidding procedures being the exception. In zero-support auctions, bid evaluation typically includes qualitative criteria in addition to a financial component. These may include experience of the developer, capacity bid for,

quality of submitted proposals in terms of likelihood of delivery, environmental and sustainability criteria or contributions to system stability. By contrast, in open processes, such as in the German dynamic bidding process and in many support auctions, only the financial bid matters and other aspects are covered through pre-qualification criteria.

- With few exceptions (notably the UK and the US), seabed access is granted as part of the overall auction and permit allocation process, either 'for free', reducing the level of support required, or for payment of a specified fee. In the UK and the US, separate seabed leases must be acquired from The Crown Estate or the Federal Bureau of Ocean Energy Management prior to being able to take part in a bid for support payments.

Two key questions

Whilst market conditions have changed over time and countries may have somewhat different policy objectives, this does not explain the vast variety of approaches adopted. It is natural, therefore, to ask whether some arrangements may be suboptimal. There are two main questions:

- What is the reason for splitting the allocation of access to the seabed and competition for support payments, as is the case in the UK and the US? Are there advantages or disadvantages compared with including seabed access into the overall licensing process (where payments made by successful bidders can simply be seen as including a lease charge for access to this public resource)?
- Given that the construction and operation of an offshore windfarm is subject to many uncertainties that affect different developers and their valuation of the project in the same way (so-called 'common value uncertainty'), why are we not observing a wider use of open auction formats (which have the advantage of price discovery and mitigate bidders' uncertainty about the project value)?

UK history

The UK has a long history in offshore wind, with the first demonstration offshore wind farm installed in 2000. Initially, there was a Renewables Obligation Scheme to encourage renewable sources, requiring energy suppliers to present a certain number of RO certificates or make payments into a fund for each obligation period. In 2015, the Contracts for Differences scheme was introduced, and the RO scheme was phased out by 2017.

Notably, seabed leasing and state support are decoupled in the UK. Developers first secure the right to operate in seabed leasing rounds, and then they can enter the competition for government subsidy.

In seabed leasing rounds, developers bid option fees which become payable once the Habitats Regulations Assessment has been successfully completed, and the lease agreement has been signed. They pay these fees for each year while they carry out surveys and further preparation. Once the project goes into construction and during the generation phase, the developers pay annual rent to The Crown Estate. The rent is calculated based on the option fee, estimated output and/or annual turnover.

Offshore Wind Leasing Round 4 concluded in 2023. In this round, qualified bidders made sealed bids over a sequence of bidding cycles. Six Project Development Areas (PDAs) were allocated in Round 4, five with a capacity of 1.5 GW each and one with a capacity of 480 MW. The winning option fee bids for the 1.5 GW sites ranged from £113.35 million per annum to £231 million per year and the 480 MW site was awarded at £44.75 million per year.

The most recently concluded Offshore Wind Leasing Round 5 offered three PDAs for the construction of floating windfarms, each with capacity of 1.5 GW. An ascending clock auction was used to determine the option fee. Two of the three PDAs were allocated, both at the price of £525,000 per year.

When a wind farm is about to go into the construction phase, the developer may participate in the national support competition, known as the CfD Allocation Rounds. Offshore wind farm subsidies are allocated together with those for other types of renewable energy. The technologies are classified into different 'pots', each pot having a pre-specified budget. The competition determines the strike price of the CfD, which is adjusted over time for inflation.

The most recently completed tender was CfD Allocation Round 6, or AR6, conducted in 2024 where one floating and two new fixed offshore windfarm projects were awarded CfDs. The previous allocation round AR5 did not attract any offshore wind farm bids.

Integrated or separated?

The UK stands out among European countries for maintaining separate procedures for seabed allocation and subsidy competitions. Developers in the UK receive government support on the one

hand but must pay to operate the wind farms on the other. They must bid for access to the seabed without knowing at that point how much support they might be able to obtain (if any), even though support may be critical for their willingness to pay for seabed access.

This splitting of the two awards creates additional risks that could discourage smaller developers, lead to inefficient outcomes and potentially higher costs than under a one-stop-shop approach as taken, for example, in the Netherlands, Germany, and Denmark.

One possible explanation is that this setup is driven by institutional factors. Ownership of the seabed up to 12 NM from the shoreline rests with the Crown Estate, whilst government support for green energy is handled by the Department for Energy Security and Net Zero. In the US, access to the seabed is handled by the federal Bureau of Ocean Energy Management (BOEM), whereas the procurement of the energy is conducted by individual states who have set clean energy procurement goals.

There may however be other reasons for splitting the award of support and access to the seabed.

The upfront financial commitments involved in first having to acquire seabed access may act as a form of financial pre-qualification and provide an enforcement mechanism to encourage completion, resulting in overall better project realisation rates.

Another advantage from this separation is that support auctions can be open to a range of technologies, not just offshore wind. This allows different types of renewable energy generation to compete to identify the least costly way of achieving a given decarbonisation target. This is to some extent the case in the UK, although the use of separate pots for different technologies in CfD auctions, each with its maximum budget, sets a limit on the extent to which such competition can take place between different technologies. For example, there are even separate pots for fixed-bottom offshore wind and floating offshore wind. Whilst these measures are helpful to promote diversity in emerging technologies, at some point resources should be focussed on best-value technologies.

Any decision for separating support and seabed lease awards ought to be based on a clear understanding of benefits and costs and a clear rationale. Norway held its first offshore wind farm tender in 2024 using an English auction to determine the contract price of a two-way CfD for the Sørilige Nordsjø II project, with the bidder with the lowest subsidy requirement winning the right to develop the site. Norway is now planning to separate the assignment of three project development areas and the determination of support payments for the forthcoming Utsira Nord tender:

- An initial competition based on qualitative criteria will determine the assignment of time-limited, exclusive rights to carry out a project-specific impact assessment and apply for a licence.
- Only those applicants that have been awarded a project area will then be able to participate in a competition for support in the form of an investment aid for only one of these project areas, which will be granted to the bidder that asks for the lowest level of support (the other two bidders will be able to apply for an extension of the exclusive right to the project area).

The benefits from this approach are not immediately obvious. If the objective is to avoid duplication of impact assessment costs, other solutions (like the central pre-investigation in Germany or the Netherlands) would seem to be more suitable and allowing bidders to compete for sites through support requirements would likely better match the most efficient developer with the most suitable site.

Why not more open auctions?

The value that developers place on obtaining access to the seabed or their requirement for support depends on many complex factors. Whilst some of these may be specific to each developer (such as complementarity of the developers' other projects, existing port contracts, the developers' private seabed knowledge and so on), many are common to all bidders (such as wind yields, seabed conditions, environmental protection costs and future energy prices). These common

value uncertainties affect every potential developer in the same manner.

Open, multi-round auction processes are typically recommended for settings with substantial common value uncertainty. In a progressive auction, being able to observe the decisions of others, even if only in the aggregate, provides a valuable cross-check of a bidder's own valuation estimates. This mitigates the risk of winner's curse – winning by over-estimating value – and improves efficiency. Indeed, where it is important that auction winners take projects through to completion to obtain the decarbonisation benefits, it is not attractive if winners make unrealistic bids that later become unviable and lead to renegotiation of terms.

A possible reason why the awarding bodies may shy away from using open auctions is that they work best with a single criterion for evaluating bids (typically the bid amount). This may fail to recognise a host of policy objectives. While pre-qualification criteria can ensure bidders meet minimum requirements (e.g. in terms of environmental criteria, likelihood of project completion, system integration), an auction process in which only the financial bid counts cannot leverage competition to encourage bidders to exceed these minimum requirements. As setting pre-qualification thresholds too high can discourage participation, some authorities may conclude that their complex, multifactorial objectives can be better met in a comparative assessment than a price-only auction.

However, a comparative assessment where applications are scored based on pre-defined criteria and the highest-scoring applicant wins can be viewed as a single-round sealed-bid auction where the 'currency' is the total score derived from individual commitments, potentially including a financial component along with other criteria. With multi-dimensional bids, bidders can compete not just in money terms, but over a wider set of criteria. This does not necessarily preclude the use of an open, multi-round process.

For example, in the United States, the BOEM uses an auction format in which bidding credits based on commitments towards various other objectives are applied. These credits are calculated based on the bidder's application and

then applied to its cash bid. This provides incentives for bidders to offer other commitments instead of cash. However, competition in the open auction does not extend to offering improvements on other criteria, as the bidding credits are fixed during the bidding.

Our perspective

The heavy capital costs and long planning horizons involved in offshore wind farm development call for a careful consideration of the allocation design. Uncertainty for bidders should be reduced as much as possible.

Separation of the processes for seabed leasing and determining support raises questions. Sequential bidding, where bidders need to anticipate the likely level of support they might obtain when bidding for seabed access, creates additional uncertainty, risks inefficiency and may result in price distortions. There may be benefits from such separation, but they would need to be clearly identified and demonstrated to outweigh the obvious costs of splitting linked decisions into separate processes.

The prevalence of sealed bid designs also is surprising. There is little to preclude the use of open multi-round auctions, which have material advantages given the prevalent common value uncertainty. There are many design options to allow pursuit of complex policy objectives. Appropriate designs can permit the process to move from a support auction to a seabed leasing auction without having to decide *ex ante* whether money needs to be paid to or should be collected from developers. An ascending auction could be run starting with negative bids (decreasing support requirements) potentially moving through zero to positive bids (payments for access to the seabed), even if the denomination of bids may change when crossing zero (from £/MWh to £/MW).

Perhaps the current lull in the interest in the development of further offshore wind capacity provides an opportunity to re-think these design issues, offering the prospect of better ways to allocate scarce public resources.

We have advised both public sector bodies and bidders in offshore wind site auctions and have implemented dynamic bidding processes using our WebBidder™ auction platform.