

Targets today. Turbines tomorrow.

Seven-point plan to overcome the storm facing the offshore wind industry.

The five-minute version:

The global offshore wind industry is in a new and unknown situation. On the cusp of an unprecedented expansion set to quadruple annual installation rates, the industry instead finds itself locked in place, by a combination of cost inflation, rising interest rates, supply chain bottlenecks, and regulatory uncertainty.

Yet, offshore wind remains an attractive and important part of the global energy transition. Not least following the recent global fossil fuel supply shock. It is therefore crucial for governments and industry to work together to weather the current storm and facilitate future offshore wind deployment.

This document outlines the situation and how the industry has so far reacted. It proposes a seven-point plan that can break the current hiatus and unlock offshore wind's transformative potential to economies and energy systems. The seven points are:

1. **Acknowledge the challenges and mobilise political commitment to overcome them**, to instil market confidence and attract capital.
2. **Build a bridge from development to operation for existing projects**, to enable the all-important 'next wave' of projects to drive industry investment.
3. **Bring volumes to market and create foresight for demand**, to unlock supply chain growth.
4. **Design tenders for sustainable industry growth**, to de-risk the buildout for both developers and energy consumers.
5. **Introduce strong non-price criteria to ensure delivery and value creation**, while addressing long term structural barriers to offshore wind buildout.
6. **Ensure predictable, transparent, and fast permitting**, without compromising on environmental or social sustainability.
7. **Enable and empower a global and sustainable industry**, by carefully balancing domestic industrial policies with the needs for a level playing field and potential synergies of global supply chains.

Introduction: The current offshore wind paradox

Offshore wind is a historic success. The offshore wind industry has presented impressive engineering feats and created a mature, competitive, and scalable global industry. At the same time, **offshore wind is sorely needed.** Not only to help mitigate rising costs of energy, diversify supply, and increase energy security and resilience. But also, offshore wind is needed to accelerate a green and just transition by providing the green energy needed to decarbonise the economy while creating and maintaining domestic jobs in the process.

For all these benefits, offshore wind is recognised politically as a keystone of the green energy transition, and over the past two years, policy ambitions and build-out targets have grown larger than ever.

Yet, right now, the industry is struggling. Inflationary pressures and higher interest rates have increased the costs of offshore wind and negatively impacted the investment case of projects, whose offtake prices were locked in a long time in advance, in an environment of historic low cost. At the same time, regulatory, permitting, and market uncertainty further stress projects. This detrimental cocktail constitutes a double whammy for the build-out and for the industry. It has forced developers to absorb impairment losses and renegotiate terms. Contracts and offtake agreements – even whole projects – have been cancelled, with more GW-scale projects being challenged. Secondly, it comes with knock-on impacts on the broader industry, holding back investments, potentially causing supply chain bottlenecks. In the US, for instance, the all-important ‘first wave’ projects, crucial to establish and grow the supply chain needed for future build-out, have been cast into doubt.

Offshore wind remains a fundamentally strong value proposition for societies – especially following recent price increases in fossil fuels. It offers a clean and reliable complement to today's energy systems and is a cost-efficient way of reducing carbon emissions from our economies. And it can drive economic activity, lasting investments, and high-quality jobs, not least in coastal communities.

Close and collaborative interaction between industry and governments is what got us this far. Offshore wind matured in the positive interplay between government ambition and support, with the industry investing and innovating to deliver lasting value to both rate payers and the community of which it's part. With offshore wind projects being multibillion-dollar strategic investments in energy infrastructure, the public has always had – and still has – an interest and role to play in de-risking projects and seeing them delivered.

Regaining momentum for offshore wind is a mutual interest and obligation. It is easy to think of the current impasse as a problem mainly for the private sector. However, if not properly addressed, including at political and regulatory levels, all of society will lose out. Climate targets and economic growth opportunities will be missed – and the deflationary effects on energy prices will not materialise. Policies and regulation must be aligned with and support the industry's efforts to sustainably scale and create long-lasting value.

We here present a seven point plan as a way forward. It contains both immediate remedies and longer-term initiatives for how governments and the industry can jointly help ensure a viable and scalable offshore wind industry in the future.

How has the industry reacted?

Historically, offshore wind has matured through an industry push-policy pull dynamic. The success and growth of the offshore wind industry are owed to a positive interplay between policy ambitions and government support, creating long-term visibility and investment certainty in turn allowing innovation, spurring supply chain investments, and economies of scale – in turn enabling higher policy ambitions and eventually spurring a mature and commercially viable industry.

So far, the industry has delivered. The offshore wind sector has demonstrated it can deliver ever larger projects on predictable timescales, at ever lower costs while creating skilled, fulfilling, well-paid jobs in communities often outside the economic centres. Continuous innovation, larger scale in components, projects, and installed volumes, and increasing executional excellence have delivered further cost reductions, meaning that in mature markets with established supply chains, offshore wind is developed at GW scale while committing to very high seabed lease payments or other means of revenue sharing.

Today, the dynamic of long-term investment certainty has changed. The industry reached the world's first subsidy-free offshore wind tender result, won by Ørsted in Germany in 2017. In some mature markets, offshore wind is increasingly developed either on merchant terms with payments to the state on top, or with fixed contracts for difference at very low price levels, creating revenue sharing, and making offshore wind projects a source of revenue for states or contributing to lowering costs to consumers.

Following the recent macroeconomic shocks, projects' economic outlooks have changed detrimentally, to an extent no one could have imagined only 18 months ago. Especially when there are long lead times from a project is awarded and remuneration fixed and to final investment decision (FID) can be taken, projects are sensitive to the impacts of inflation fluctuations. Developers have sought to shore up finances by turning to supply chains, negotiating or re-negotiating contracts to reduce costs, and taking impairments. However, a set of projects under development, including very large scale 'flagships', some exceeding 1 GW each, are looking increasingly difficult. Some have had to cancel power purchase agreements (PPAs) or renegotiate offtake contracts. Others have been outright cancelled, with the developer and industry having to absorb the sunk cost – a possibility which remains for several keystone projects both in the US and in Europe.

Market-specific challenges

While increasing commodity costs and rising interest rates impact the offshore wind industry globally and in a similar and somewhat predictable way, each region and market are also faced with a unique set of challenges, which must be addressed to unlock the potential of offshore wind.

In the United States, the current macroeconomic shock hits the industry at the worst possible time. The US government has put a market-wide target of 30 GW offshore wind by 2030 in place. A pipeline of more than 15 GW has been procured by states, and developers and suppliers have responded by investing more than USD 10 billion¹ in building local value chains, including production lines for blades, monopiles, nacelles, offshore substations, and securing Jones Act-compliant vessels.

However, establishing a multibillion-dollar industry inherently comes with growing pains. The US industry is still faced with supply chain bottlenecks on top of previous permitting delays. Already, this has introduced risks of delays and cost overruns for projects, whose timelines were already ambitious to make them cost-competitive. More structurally, rising interest, cost inflation, and risks of unfavourable allocation of federal investment tax credits (ITCs) has introduced new uncertainty to the entire industry, leading to developers cancelling PPA offtake contracts, take impairments, and jeopardising 'first wave' projects, sending ripples through the nascent and growing supply chain. Of the significant US pipeline, to date, less than 1 GW has begun construction.²

In Europe, long home to the most matured supply chains, European suppliers and developers are similarly challenged. Following the recent spike in energy prices, in large part caused by Russia's invasion of Ukraine, cumulative policy targets for offshore wind in Europe has more than doubled, to almost 150 GW by 2030. However, while these targets are now steadily being put to market in tenders, several more steps remain before targets can fuel investment decisions. And so far, the industrial investment needed, both to realise these targets and to accommodate the latest generations of offshore wind turbines, has so far fallen short.

Two recent tenders, each in their own way, also exhibit the challenge of creating the clarity needed to spur investment. In Germany, two developers secured the rights to install 7 GW offshore wind across four sites, with concession payments totalling EUR 12.6 billion. However, the German tender design enables developers to walk away from the project by only paying a relatively small portion of this amount, making the tender outcome more of an 'option' than an actual commitment to build. In the UK, the administrative ceiling of GBP 44 per MWh (2012 prices), in the recent CfD Allocation Round 5 auction, failed to attract a single project.

In Asia Pacific, markets including Taiwan, Japan, Korea, and Australia are all seeking to make offshore wind a substantial part of their energy mix. At the same time, governments are pursuing policies to facilitate and incentivise or mandate supply chain investments and localisation. Thus, developers and supply chains must respond to increasing costs, as they try to push forward projects towards FID while navigating local content requirements in projects at the same time. There is a careful balance to be struck on how governments nurture their domestic suppliers and allowing the flexibility required to optimise and speed up construction and providing value to both energy consumers and society.

¹ Business Network for Offshore Wind, U.S. Offshore Wind Market Report 2023.

² 4COffshore.

A seven-point plan for offshore wind

1. Acknowledge the challenges and mobilise commitment to overcoming them.

Offshore wind is in a 'perfect storm' of detrimental market conditions, most of which are outside of the industry's control. In this sense, offshore wind is not unique. Other generation technologies, renewables, and non-renewables alike, have become more costly to deliver. Yet, the long lead times, higher capex requirements, and the immense need for scaling supply chains make offshore wind uniquely impacted.

On top of this, high uncertainty and waning market confidence are contributing to the investment impasse. Faced with the very real risk of future capacity being delayed or not materialising – whether it's due to changing project economics, undersubscribed tenders, permitting delays, or even just developers deciding to utilise an escape clause – developers and suppliers are delaying investment decisions as much as possible³.

Yet, despite all these challenges, offshore wind remains an important and attractive part of a future sustainable, reliable, and decarbonised energy system.

Any journey starts with a decision. Right now, stakeholders – public and private – should reiterate their firm commitment to the long-term offshore wind build-out and invest both political and financial capital in making it happen. We need to solve the present deadlock. And we need to adjust the market conditions, to avoid the same thing happening in the future. This requires forward looking policy action, and an industry which is up for the challenge.

2. Build a bridge from development to operation for existing projects

A significant project volume across markets and actors are caught between having secured building rights and a route to market – and taking the final investment decision. In Europe, about 10 GW capacity is awarded and about to make it to FID, with an additional app. 30GW in various early development stages. In the US, more than 20GW capacity is in various development stages. In total, this amounts to more than USD 180 billion worth of projects, a significant share of which will meet difficulties clearing its investment hurdle.

Recognising the importance of these projects, for energy diversification and for creating a firm demand signal for supply chains, governments and developers must make all possible efforts to underpin this 'first' or 'next' wave. This can be done, for instance, by means of:

- **inflation indexing** or renegotiating terms of existing offtake contracts for projects whose remuneration was locked in before recent inflation and interest rate hikes
- **increasing efforts to facilitating interconnection** of offshore wind projects
- **committing the full investment tax credit (ITC) in the US** towards making offshore wind projects investable, also recognising the importance of 'first wave' projects in creating a strong American supply chain for offshore wind
- **acknowledging that local supply chains need establishing** in new markets, which also requires policy and regulatory support and will entail a cost premium on the first projects.

³ For instance, the recent UK CfD Allocation Round 5, in which no offshore wind projects were awarded, led Vestas to postpone investment decision on a new UK-based nacelle factory. Recently, OFW developer Vattenfall stopped developing the Norfolk Boreas project from the UK CfD round 4.

3. Bring volumes to market and create foresight for demand

Governments and policymakers have delivered a first key step in meeting future green energy demands, by significantly raising ambitions for offshore wind and putting very high targets in place. To meet this future demand, supply chains must scale massively, approximately by a factor of four, before 2029-30. However, rather than investing to scale, suppliers, vessel owners, and OEMs, responding to market uncertainty and outlooks, are scaling back investment outlooks.

Ultimately, the basis for a healthy renewable energy sector including supply chain is foresight for the need of the product. For offshore wind, this means that only when targets are converted into tenders, when sites and building rights are allocated, orders can be placed, and suppliers can make investments and scale to meet the demand. More generally, it also means policy to accelerate renewable energy buildout must be complemented by policy to facilitate uptake. This entails:

- **speeding up tender timelines**, front loading the planned build-out as much as possible and tendering larger volumes at the time
- **expanding the scope of industry's role** in site investigations, where relevant, to leverage industry competences and expand the competitive scope of the industry
- **dedicating the administrative and regulatory resources** to avoid the potential risk of authorities' workload overly inflating permitting and approval times
- **building the institutional competences**, experience, and inter-institutional links (including between federal, state, and local governments) needed to efficiently oversee tenders and execute permitting
- **matching tendered volumes with demand side measures and grid investment**, converting decarbonisation targets into credible measures for electrification and off-take.

4. Design tenders for sustainable industry growth

The current tender regimes in many markets, based on site lease auctions and upfront payments, have resulted in a handful of developers committing to very high concession payments. While at face value a sign of the significant value creation from offshore wind, such payments are also symptomatic of a tender regime which might lead to a vicious circle of uncertainty draining the industry for capital. This is misaligned with the policy ambitions for the offshore wind industry and is detrimental to its long-term viability.

Following the announcement of the 7 GW German tender in July, it was understood that at least one of the two winning developers saw the site exclusivity more as an 'option', to be compared with an oil and gas exploration license, hinting that non-deliverance was an open possibility. Such 'optionality' both entails a risk to supply chain investments, and it introduces a downside to consumers, as the projects will only be economic in a future high power price scenario, thus creating a 'loose - loose' scenario.

Instead, states should focus on de-risking build-out, both from an industry and a consumer point of view. Future tenders should be designed around the principle that since bids are ultimately based on future power prices, which are also largely dependent on political interventions, concession payments should be settled on an ongoing, not up-front, basis and should reflect the value of the energy generation in any given time period. To these ends, tenders should:

- **build on principles of long-term risk and reward sharing.** Revenue stabilisation models, such as inflation-indexed contracts for difference or power purchasing agreements, play a significant role in de-risking projects, thereby reducing the long-term costs to society

- **be value-reflective**, where concession payments are introduced, by replacing upfront payments with revenue sharing models
- **ensure and enforce real commitment in bids**. Non-delivery and delays need to be addressed via pre-qualification and minimum requirements as well as sanctions like penalties, or potentially loss of concession, to create more certainty for execution and deliverability
- **introduce win limits in tenders** to diversify the industry, thereby ensuring a competitive sector and minimizing the risk of delays or non-delivery by individual actors. This also puts the supply chains in a better negotiation position, increasing the likelihood of long-term profitability.

5. Introduce strong non-price criteria to ensure delivery and value creation

The scale and speed needed for offshore wind to play its part in the green transition and in addressing the energy crisis will be unprecedented. To avoid environmental impacts and mitigate risks of local opposition, which can effectively become a structural barrier to the long-term build-out, it's important to address potential externalities of offshore wind. At the same time, tenders should include strict criteria, aimed at maximising the chance of project delivery and creating a level playing field. Hence, tenders should be combined with or supplemented by non-price criteria which:

- **introduce strict minimum criteria** to ensure project delivery and create a level playing field for the industry
- **governs relevant non-price touchpoints with society and nature**, forces offshore wind developers to carefully consider the environment, biodiversity, local communities, and energy systems, and promotes innovation and co-existence with other sea users.

6. Ensure predictable, transparent, and fast permitting

Permitting any infrastructure project is complex, time-consuming, and comes with many possibilities of setbacks and obstacles. For offshore wind, this goes for the generation asset itself, with further specific permitting risks associated with the interconnection and transmission. And in newer markets, where the inter-institutional interfaces between local, national, and potentially federal authorities are still evolving, this adds yet another layer of complexity. All of which introduces risk to projects and hold back investments and build-out. While permitting procedures vary greatly across jurisdictions, and whereas some governments have come a long way towards efficient permitting process, analysis suggest applying best practices and principles may reduce planning and permitting times for offshore wind with up to half, Without compromising on good outcomes for environment, communities and other stakeholders. Such principles include:

- **adopting best practices for planning and permitting**, and policymakers committing to making offshore wind projects a success, can significantly reduce development risks, lead times, and costs of projects. Especially high-level policymakers have a key role to play in instructing and empowering institutions to work pragmatically and collaboratively together
- **introducing a one-stop-shop approach** can help shorten time frames, if matched with the right organisational resources on the authority side
- **implementing silence procedures at institutional level**, meaning lack of reply is taken as tacit approval.

7. Enable and empower a global and sustainable industry

The current environment of inflationary pressure, interest rates, and regulatory and supply chain uncertainty, has been equated to a 'perfect storm' for the industry. Its global ramifications impact all parts of the offshore wind value chain. OEMs and component manufacturers are hit by the same woes as developers and investors. Many have seen margins dwindle. Some are loss making.

At the same time, there's an immediate investment need. Reaching government targets for 2030 will require more than USD 100 billion investments in supply chains alone towards 2030, and even a more conservative 'base case' of 30 GW annual installations by 2030 will require unlocking USD 27 billion investments by 2026⁴.

Furthermore, political focus on renewable energy supply chains has recently increased, not least in the offshore wind industry. Governments have long recognised the strong job-creating potential of the industry, but they are now also concerned with future strategic autonomy and avoiding geopolitical concentration of critical supply chains. This means balancing both consideration for competition and cost while also focusing on industrial policy and job creation. While ultimately a political prioritisation, governments can inform their choices from guiding principles, such as:

- **Supply chains are first and foremost built on a foundation of predictable and firm demand.** Hence, any first step to incentivise or attract supply chain investments must begin by addressing the current investment climate and unlock projects. Policymakers should also be mindful of this, if approached by industry or developers asking to renegotiate previously awarded contracts.
- **Local content requirements** can be used as a way of forcing domestic supply chain investments. However, their introduction and use should be carefully weighed against both their potential impact on project cost and the industry's ability to scale and grow globally.
- **Non-price factors**, both as qualification criteria and selection criteria in tenders, are an effective way to help level the playing field, without unintentionally cutting off the potential synergies of global supply chains. Such factors, which can include social accountability, environmental sustainability, or cybersecurity, can also be supplemented by other policy tools.

⁴ Wood Mackenzie, 2023 - Cross currents: Charting a sustainable course for offshore wind.