Measuring Wind of Change: A Call to Action

Introducing a KPI-Based Monitoring Framework for Offshore Wind Expansion in the North Seas

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Executive Summary and Results

Offshore wind expansion in the North Seas needs to gather more speed

Offshore wind expansion needs to accelerate sevenfold to achieve the targets set for 2030. In April 2023, nine countries declared the ambition for 120 GW offshore wind in the North Seas by 2030 and 300 GW by 2050. To achieve the 2030 target, an average addition of offshore wind of 17.2 GW p.a. will be required for the years 2026 to 2030. This exceeds the current speed of expansion, which has been stagnant at 2.4 GW p.a. capacity additions over the last five years, by a factor of seven. Another 9.0 GW p.a. additions will be needed to achieve the 2050 target of 300 GW installed.

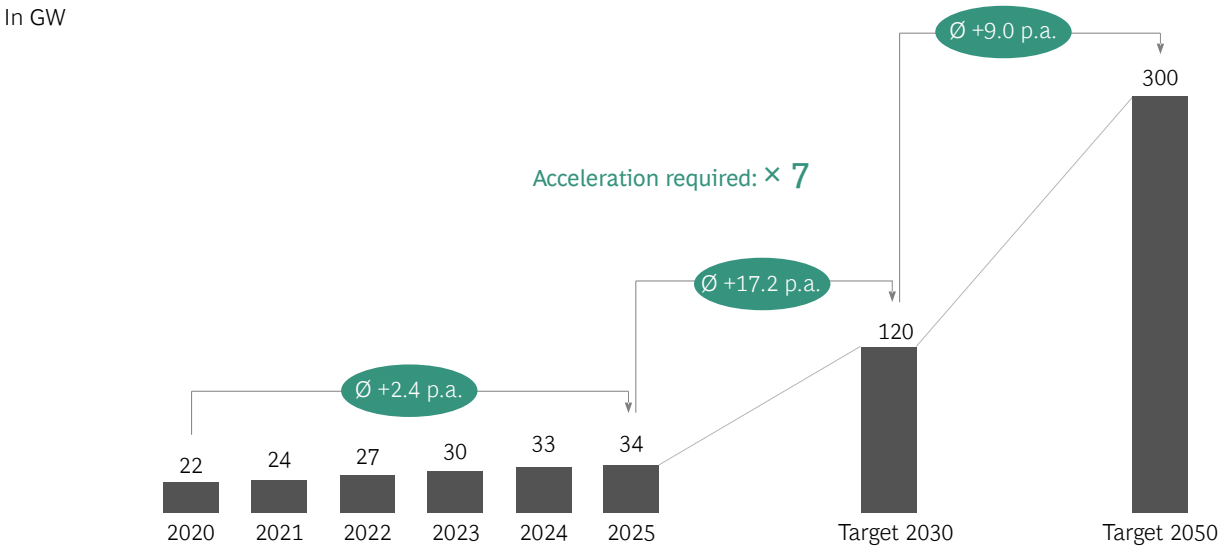
With lagging Final Investment Decisions (FID) and auctions failing to secure sufficient volumes, determined counteraction will be required — otherwise offshore wind targets for 2030 and 2050 are at risk. All members of the sector, including regulators and industry actors, need to take action quickly. Reaching the 120 GW target by 2030 will require projects to secure FID by 2027, reflecting average construction times of 2.5–3.5 years. By 2025, projects totaling ~54 GW were installed or reached FID. We see a maximum possible installed capacity of ~98 GW by 2030, given current project pipelines, but more likely ~60–80 GW, leaving a gap to 2030 target of ~40-60 GW. In parallel, failed or undersubscribed auctions in the UK (2023), Denmark (2024), and most recently Germany, France, and the Netherlands (2025) underline structural weaknesses. As both FID volumes and auction outcomes are early indicators of offshore wind expansion also beyond 2030, such results temper expectations for a sustainable change in expansion speed in the North Seas.

The Hamburg North Sea Summit in January 2026 presents an action plan for the much-needed solutions. In parallel to the publication of this report, policy and decision makers will discuss solutions and plan to initialize implementation through a dedicated plan of relevant milestones.

EXHIBIT 01

Current offshore wind additions need to accelerate sevenfold to achieve 2030 targets

Cumulative offshore wind capacity in the North Seas



Source: 4C; Ostend declaration; BCG analysis
Note: North Seas means countries DE (excl. Baltic Sea), FR (excl. Mediterranean), BE, NL, LU, DK (excl. Baltic Sea), IE, UK, NO

[1] TGS 4C Offshore Ltd, BCG analysis

Progress and early indicators should be monitored more closely

Important KPIs at the foundation of the offshore wind expansion lack necessary visibility today. While retrospective achievements of capacity additions or recent auction results for offshore wind sites typically receive public attention, other indicators and developments miss this awareness. Therefore, complementing the North Sea Summit action plan, the initiation of offshore wind KPI tracking is planned to address this gap and allow for closer monitoring.

Better tracking of relevant leading indicators can enable a tailored and timely reaction. Choosing KPIs of a forward- rather than backward-looking nature across the most important dimensions can provide a good indication for future acceleration of offshore wind expansion. Regular updates of such KPIs in structured monitoring made available to policy-makers and industry stakeholders can provide valuable and timely information, initiate necessary steering and keep the focus on critical elements.

First assessment of 10 KPIs urges action to close gaps

As a starting point, 10 KPIs were selected to measure the status and progress across key dimensions of offshore wind expansion. To demonstrate the concept of the KPI tracking and enable first insights into current fields for attention, 10 KPIs were selected for analysis that cover key dimensions of offshore wind expansion. For the analysis, the German Federal Ministry for Economic Affairs and Energy (BMWE) has been consulted as organizers of the Hamburg North Sea Summit (NSS) 2026. The selected KPIs relate to key agenda items of the summit.

We see significant gaps for 7 KPIs and some gaps for the other 3, while none of the 10 KPIs assessed is currently on track to support the targeted offshore wind expansion. In more detail:

INSUFFICIENT AWARDS OF NEW PROJECTS AND TOO SLOW PROGRESS WITH ONGOING PROJECTS ...

KPI 1—Auction success rate: 2025 saw the seabed auction volume success rate drop to 64%: Only 8.9 GW were auctioned successfully, while 5.1 GW did not find any bidders—including two auctions totaling 2.5 GW in Germany with no bids at all. These outcomes not only underline the need for more robust auction design and regulatory clarity but also raise concerns over the pace of expansion needed to meet long-term targets. Rather than accelerating project pipelines toward 2050 ambitions, auction failures and delays are increasingly threatening to slow down the required capacity build-out.

KPI 2—Project durations: The average duration for projects to become operational increased slightly by 7% in 2025 (13 years and 4 months) compared to 2021–2024 (12 years and 6 months). This was mainly driven by a 14% increase in the UK's project timelines, the largest market in the North Seas. Germany and France showed the reverse trend, with project timelines reducing slightly by 6% and 2%, respectively. These diverging outcomes highlight the need for targeted policy responses, reliable grid schedules, and resilient market designs to end this stagnating trend and instead shorten project timelines.

KPI 3—Progress of cooperation projects: Only 32% of hybrid offshore projects presented for the current draft Ten-Year Network Development Plan (TYNDP) are at least in a concrete planning stage, and one is currently in permitting. 68% of projects are still "under consideration", so far. This reflects the novelty of the concept of connecting offshore wind farms to more than one national grid and interconnecting countries via offshore wind hubs. Due to its newness, regulatory uncertainties around cross-border market arrangements and cost-sharing remain and are slowing down progress. Resolving them will be essential for accelerating the pace of development that is needed to stay on track for the 100 GW hybrid target by 2050.

... ARE DRIVEN BY SLOWER POWER DEMAND GROWTH THAN ANTICIPATED ...

KPI 4—Power demand projection: By 2040, current projections for power demand leave a 13% gap to the political (net-zero) target scenario. This is driven by a policy gap to sufficient electrification incentives, but levels of industrial activity and energy consumption are also challenged in current outlooks. If power demand falls short of the target scenario, the need for additional generation capacity will decline, risking delays in offshore wind expansion. Closing this gap will depend on stronger incentives for electrification across transport, heating, and industry.

KPI 5—Secured offtake: The limited demand outlook is already reflected in insufficient commercial offtake: So far, offtake has been secured for only for 62% of the 120 GW offshore wind target in the North Seas by 2030—leaving 38% without commercial security. Most projects currently depend on two-sided CfDs, while corporate PPAs play a smaller role. The lack of secured offtake reflects limited electricity demand growth, which reduces investor certainty and slows project progress. Advancing the remaining capacity will require stronger offtake frameworks, including availability of CfDs, demand for PPAs, and potentially tripartite contracts of public support for private offtake to increase investment confidence.

KPI 6—Offshore interconnection: Only 52% (11 GW) of the offshore interconnection capacity required for the North Seas hybrid corridor by 2040 is currently covered by projects in the (draft) TYNDP, leaving a shortfall of 10 GW—primarily toward DE and the UK (5 GW each). This limited progress constrains the ability to balance regional power flows and fully utilize offshore generation potential. To capture the system value of an integrated offshore grid, additional projects must be advanced and delivered on schedule. Accelerating planning and execution across borders will be essential to enable efficient power exchange and support the future offshore demand corridor.

... AS WELL AS PERSISTENT BOTTLENECKS FOR KEY ENABLERS AND DELIVERY OF OFFSHORE WIND PROJECTS

KPI 7—Supply chain capacity: Europe's manufacturing capacity for offshore wind is becoming a bottleneck, as components can currently cover only around 48% of the 17 GW p.a. added capacity that is required to reach the 120 GW target in the North Seas by 2030. All key components required to build an offshore wind farm face shortfalls in local supply capacity compared to the target. The most severe constraint is in cables and power converters, for

which European facilities currently meet only 29% of demand. Unless local manufacturing and logistics are scaled up rapidly, strong dependence on imported supplies will remain.

KPI 8—Financing framework: A milestone-driven approach that tracks the progress of framework implementation starting today is covered in this KPI. Current progress stands at 0%, reflecting the simultaneous release of this report and the agreement on the action plan at the North Sea Summit in Hamburg. Going forward, countries should implement the agreed actions within the set timeframes. Without clear and predictable financial frameworks, investment in cooperation projects will remain risky and uncertain. Effective implementation is therefore crucial to unlocking private capital needed for hybrid offshore project expansion.

KPI 9—Workforce capacity: Reliable workforce data for offshore wind is not systematically measured in most NSS countries, with gaps in coverage and limited comparability. However, initial evidence points to significant workforce shortages in offshore wind, with an analysis for UK showing only 53% of the required workforce available by 2030. Offshore wind expansion hinges on scarce technical talent—turbine technicians, engineers, and electricians—who are also in high demand for onshore wind and grid build-out. Addressing these risks, systematic data collection across countries is needed, alongside targeted measures to attract and retain talent in bottleneck professions.

KPI 10—NIS2 implementation: Only 3 out of 8 countries[2] (Belgium, Denmark, and Germany) have implemented the EU's NIS2 directive, a unified legal framework for (cyber) security in critical sectors, into national law so far. While EU country France is close to passing the national law and the UK is updating its existing NIS1 framework, other countries do not have a concrete timeline or are in even earlier stages. Until all countries establish national laws to implement NIS2, uneven progress and security standards are a potential bottleneck. Risking weak points in the connected offshore grid and exposing it to rising cyber-attacks results in an overall higher risk for seamless power supply.

Our first assessment of selected early indicators therefore shows that most of them are not on track to support current expansion targets. See Exhibit 2 for a summary of the 10 assessed KPIs.

A committed and coordinated response by all stakeholders is required to reset offshore wind expansion on a path to success. Regulators should review and adapt auction designs to restore investor confidence, shorten the auction-to-FID gap, and support bankable, predictable revenue frameworks. Transmission system operators need to secure timely grid buildout and reliable offshore and onshore connections, aligned with auction schedules and project timelines, to prevent infrastructure from becoming a binding constraint. At the same time, industry stakeholders across the value chain should accelerate industrialization, deepen cross-border and cross-sector cooperation, and focus relentlessly on cost reduction. Achieving a step-change in productivity and significantly lowering the levelized cost of energy (LCOE) will be critical to make offshore wind resilient under tighter market conditions. The need for decisive action is clear: without rapid, collective measures, today's structural bottlenecks will continue to translate into delays tomorrow.

Regular updates on progress and gaps to be reported

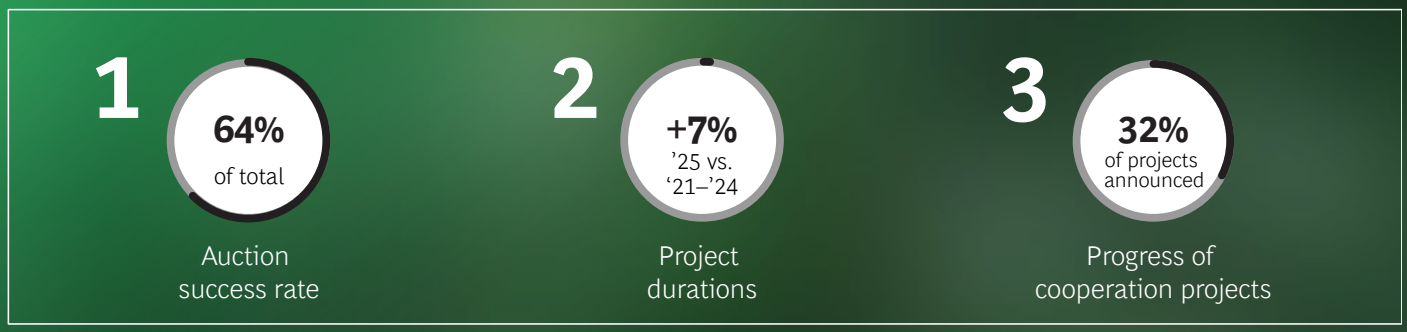
This publication could constitute the starting point for a regularly updated (e.g., yearly) report on the status and progress of key drivers in the offshore wind expansion in the North Seas. Holistic KPI tracking should be further developed, maintained, and updated across all relevant dimensions. Policy and decision makers should use it as a compass to set the right course on time.

[2] Luxembourg was not assessed for lack of physical offshore infrastructure

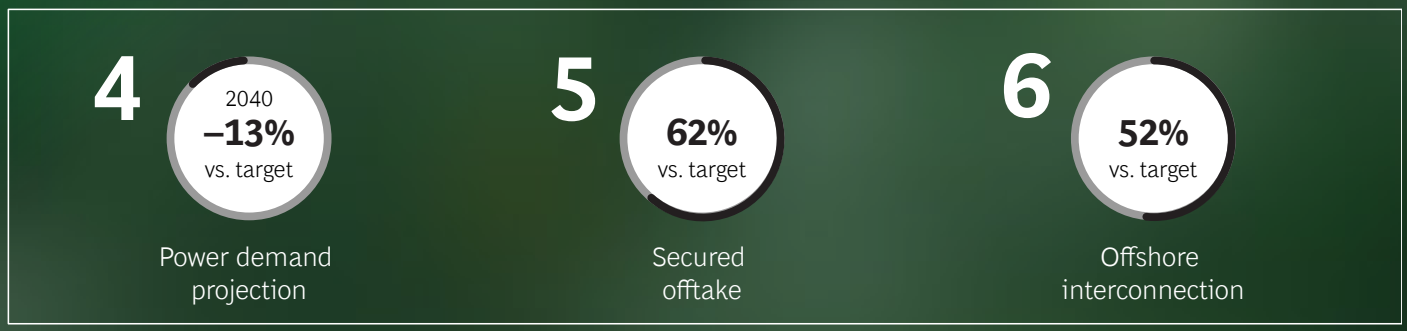
EXHIBIT 02

Several forward-looking KPIs are not on track to support targets of 120 GW by 2030

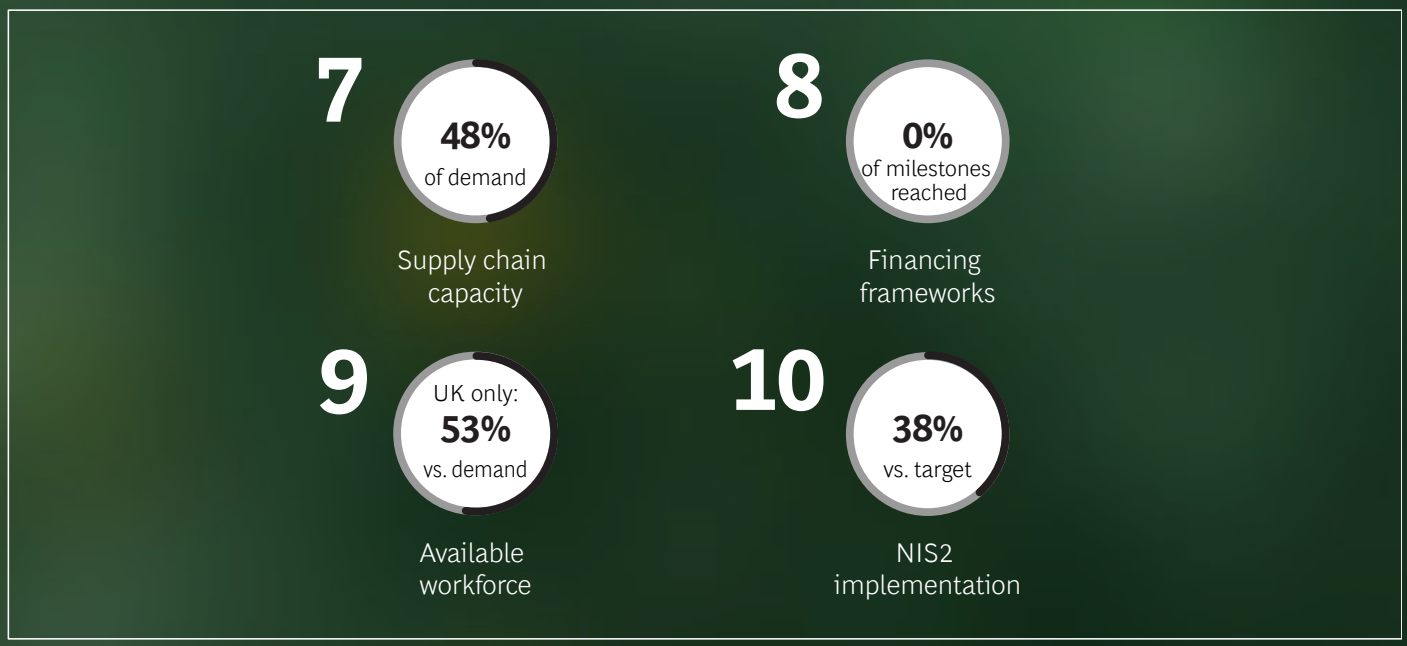
Too slow progress in offshore wind expansion …



… is driven by slower than anticipated demand growth …



… and persistent bottlenecks for key enablers



Concept for Continuous KPI Tracking

International cooperation on offshore wind expansion in the North Seas has resulted in ambitious targets and concrete plans for cooperation. Offshore wind expansion in the North Seas is targeted to reach about 120 GW by 2030 and at least 300 GW by 2050 combined across the nine signing countries of the Ostend declaration. Other cooperations include the Offshore Network Development Plan (ONDP) mandated by EU regulation and concrete projects to develop energy islands/hubs or interconnectors between the countries of the North Seas.

Visibility on progress is limited mostly to retrospective stock-taking of few indicators. While information about installed offshore wind capacities and results of offshore wind auctions is typically available through national internet sources, the Ten-Year Network Development Plan (TYNDP) by ENTSO-E provides information on the status of international network projects. However, as of now there is no consolidated, comprehensive public source that tracks the general status and outlook of the offshore wind expansion in the North Seas.

Holistic and continuous KPI tracking can provide the required information for policy and decision makers to better shape the realization of joint targets. Implementing a comprehensive, up-to-date data source such as a KPI dashboard can provide the necessary transparency for stakeholders to make informed decisions in shaping the regulatory and other framework conditions. Through regular updates following a clear assessment logic, results can be made comparable and progress trackable. The risks of bottlenecks can be detected earlier and be addressed in a targeted way. By providing a combined view for the North Seas region, joint targets can be followed more closely, and necessary measures accelerated.

Dimensions of such a dashboard should cover all relevant aspects of cooperation between the North Seas countries and provide a forward- rather than backward-looking view on the state and progress of offshore wind expansion. To allow for comprehensive steering of the offshore wind expansion and its relevant drivers, the dashboard dimensions should provide a 360° view. This can include but is not limited to physical cooperation and interconnection projects, supportive conditions in terms of financing, auctioning, permitting, power demand, and offtake security, or a sufficient supply chain including the necessary workforce.

Core KPIs featured in the dashboard should be simple, objective reflections of the respective dimensions and provide a clear view on obstacles or shortcomings in the targeted expansion. For a meaningful overview of the state and progress of offshore wind expansion as well as clear attention to critical bottlenecks or shortcomings, a few core KPIs should be defined. Without going into too much detail, they should provide a high-level assessment for each relevant dimension. Key characteristics for the definition of a core KPI should be: *simple, objective, clearly linked to dimension, transparent and available, timely and regularly updated, and predictive rather than descriptive.*

As a starting point, this report defines a set of 10 relevant KPIs across key aspects of offshore wind expansion in the North Seas to be further developed and updated in the coming months and years. The KPIs cover a range of relevant dimensions with a forward-looking character and build on readily available public or third-party data. In some instances, data availability is limited and should be further built up. Final KPIs to be included in the dashboard can build on the selection below and refine or extend it to provide a comprehensive view on offshore wind expansion in the North Seas:

1. **Auctions success rate:** Development of auction award volumes and the implied success rates as an outlook for future expansion volumes
2. **Project durations:** Development of project durations across permitting, development, and construction phases to identify trends and measure progress to reduce implementation times
3. **Progress of cooperation projects:** Status of cooperation projects from initial consideration until start of operations, tracking their current state against plans for build-out
4. **Power demand projection:** Projection of expected power demand volumes against a net-zero target scenario to identify implications for offshore wind generation volumes
5. **Secured offtake:** Concrete offtake strategies or contracted offtake volumes to de-risk offshore wind projects and allow investment decisions
6. **Interconnection capacity:** Comparison of expected build-up of offshore interconnection capacity vs. the identified system needs in the current offshore network development plan for the hybrid offshore corridor of the North Seas basin
7. **Supply chain capacity:** Comparison of Europe-for-Europe supply chain capacity of individual offshore wind components against demand for components from offshore wind expansion
8. **Financing framework:** Milestone-based implementation progress of the Hamburg North Sea Summit's action plan towards an effective financing and investment framework
9. **Workforce capacity:** Availability of sufficient workers across a series of capabilities required for offshore wind expansion in Europe
10. **NIS2 implementation:** Progress of the implementation of regulations (particularly NIS-2) for offshore infrastructure assets and their physical and cyber security

More detailed KPIs can supplement the core KPIs for better context and disaggregation, allowing for the best prioritization and focus. More detailed information such as country-level, historical evolution, underlying drivers, or any other dimension-specific details can help to interpret core KPIs and implications on offshore wind expansion and required measures even better and therefore constitute a possible future enhancement of the KPI tracking. Expert audiences can use detailed KPIs to "double click" and better understand drivers behind core KPIs and respective observations. As such, detailed KPIs can be understood to tailor required measures by policy and decision makers, after identifying general fields for action from the core KPI assessments.

EXHIBIT 03

Set of 10 KPIs proposed covering relevant offshore wind expansion dimensions

Source: BCG analysis.

Detailed KPI Analyses

1. Auction success rate

Seabed auction results are a forward-looking indicator of future offshore wind capacity and a reflection of current market conditions. They show which projects are likely to advance further and how attractive frameworks are for developers. Tender volumes reflect the level of government ambition in bringing capacity to market, while award outcomes serve as an early indicator of progress—signaling the potential that these ambitions will translate into real projects[3].

Seabed auction frameworks vary across countries, but a consolidated view highlights common trends. National authorities define the auction schedule, the design—in some cases already incorporating a plan for the revenue mechanism—and award criteria. To provide a consistent picture, data from 4C[4] has been analyzed, covering tendered volumes, award outcomes, and timing. Results are grouped into capacity awarded, not awarded, or still pending a final decision.

2025 saw the success rate slow down to only 64% of tendered volumes awarded to bidders. A total of 14 GW was brought to auction, for which results have been published. Of this, 8.9 GW have been awarded and 5.1 GW not awarded (thereof 2.5 GW in Germany alone). Germany launched 3.5 GW but only awarded 1 GW (29 percent success rate), while 2.5 GW in two pre-investigated North Seas sites did not receive any bids. France tendered 2.5 GW (tendering of another 1.5 GW was delayed), awarded 1.5 GW, and saw one auction fail. Norway (1.5 GW), the Netherlands (1GW), and Ireland (1 GW) added smaller rounds with mixed results. Overall, the share awarded declined to 64% in 2025, down from 73% in 2024.

The 2025 auction outcomes highlight two main challenges: lower award rates driven by auction design and uncertainties. The drop in awarded shares reflects the influence of design choices: In Germany, several sites received no bids under a zero-support, negative-bidding framework, while Denmark's 2024 auction failed entirely under similar conditions. Inflation, supply chain constraints, and revenue uncertainty have further weighed on developer confidence[5]—in auction bids as well as in the following development process with some projects being delayed or canceled even after successful auctions[6]. As one industry representative noted, "the long gap between auctions and final investment decisions often turns awarded projects into stranded ones—by the time they move forward, market and financing conditions have shifted completely". Together, these factors underline that the conversion from auction to project depends on both timely decisions and resilient frameworks.

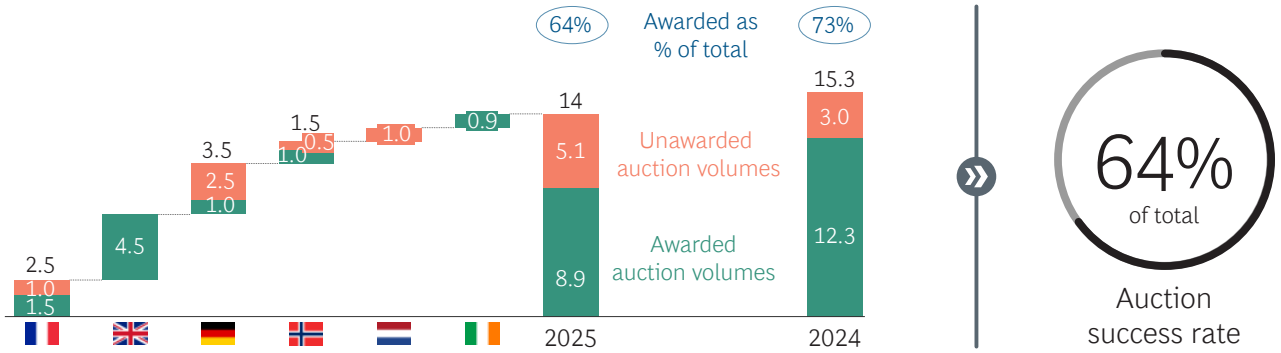
[3] Seabed awards mark an early milestone in development but do not ensure timely realization; projects may still face delays (e.g., Hornsea 4) or cancellation (e.g., Sceirde Rocks Windfarm) due to environmental and grid constraints, permitting issues, or market conditions
[4] TGS 4C Offshore Ltd
[5] E.g., Danish Energy Agency (2025)
[6] E.g., Ørsted (2025)

EXHIBIT 04

KPI 1 | Only 64% of auction volumes succeeded in 2025

Offshore wind auction volumes and award rates 2025 versus 2024

In GW



Source: 4C; BCG analysis
Note: Seabed awards mark an early milestone in development but do not ensure timely realization; projects may still face delays or cancellation

2. Project durations

Project durations are a critical measure of offshore wind delivery progress, and an indicator of how quickly future projects can materialize. From the award of seabed right to grid connections, offshore wind projects typically take 6–16 years. This span covers approvals, preparation, building, and grid connection. Tracking these durations highlights efficiency across different phases and shows whether recent policy initiatives to accelerate permitting in North Seas countries are translating into faster delivery.

This KPI measures the percentage change in the time from seabed award to grid connection in 2025 compared to the 2021–2024 average, weighted by capacity. The analysis is based on 4C[7] and distinguishes three steps: permitting (official approvals), development (preconstruction work and financing), and construction (build and installation). Results are weighted by project size—that means larger projects carry proportionally more influence. The analysis covers six North Seas countries, since Belgium and Ireland both had no projects in scope during the considered timeframe of 2025 compared to 2021–2024 and Luxembourg does not have physical access to the North Seas. As permitting in the Netherlands is handled centrally and not publicly reported, only development and construction durations are included in the analysis. Where 2025 data was unavailable for a particular step, permitting, development and/or construction times were assumed to remain unchanged compared to the 2021–2024 average.

In 2025, project durations increased by 7% on average compared to 2021–2024 but range from -6% to +14% on an individual country level. The UK, representing the largest project volume in the North Seas, saw increased overall timelines by 14%. German projects shortened on average by 6%. France shortened by 2%. Permitting durations were broadly stable, with evidence available only for the United Kingdom and Germany.

Diverging outcomes reflect differences in market rules, economic pressures, and infrastructure readiness. While a success factor for UK offshore wind development has been stable long-term price contracts (CfDs), anchoring revenues during periods of high inflation and enabling earlier go-ahead decisions, increased project durations in 2025 are attributed to individual projects facing legal challenges from special interest groups and not winning in initial CfD auctions, extending overall project timelines. The German 2025 projects contain pre-examined sites, illustrating how government involvement in early development stages can remove some of the developers' timeline risk. Overall, delivery speed depends on alignment between market rules, the cost environment, and credible grid schedules.

[7] TGS 4C Offshore Ltd

The growing auction-to-FID gap increases delivery risk. While auction outcomes and project duration trends provide important signals for future offshore wind expansion, industry stakeholders consistently highlight a deeper structural issue: the widening gap between auction award and Final Investment Decision (FID). This period—often spanning multiple years—has become one of the most decisive sources of risk for developers, OEMs, suppliers, and financiers alike.

Across interviews, market participants emphasized that winning an auction no longer guarantees that a project will be built. Instead, the true milestone has shifted to FID, where projects must commit to multi-billion-euro investments under increasingly volatile market and cost conditions. Several developers and OEMs stressed that long intervals between auction award and grid connection or commercial operation dates make it nearly impossible to lock in turbine supply, installation capacity, financing, or revenue certainty. During such extended periods, interest rates, commodity prices, supply chain availability, and the regulatory environment can shift significantly, thus undermining previously viable business cases.

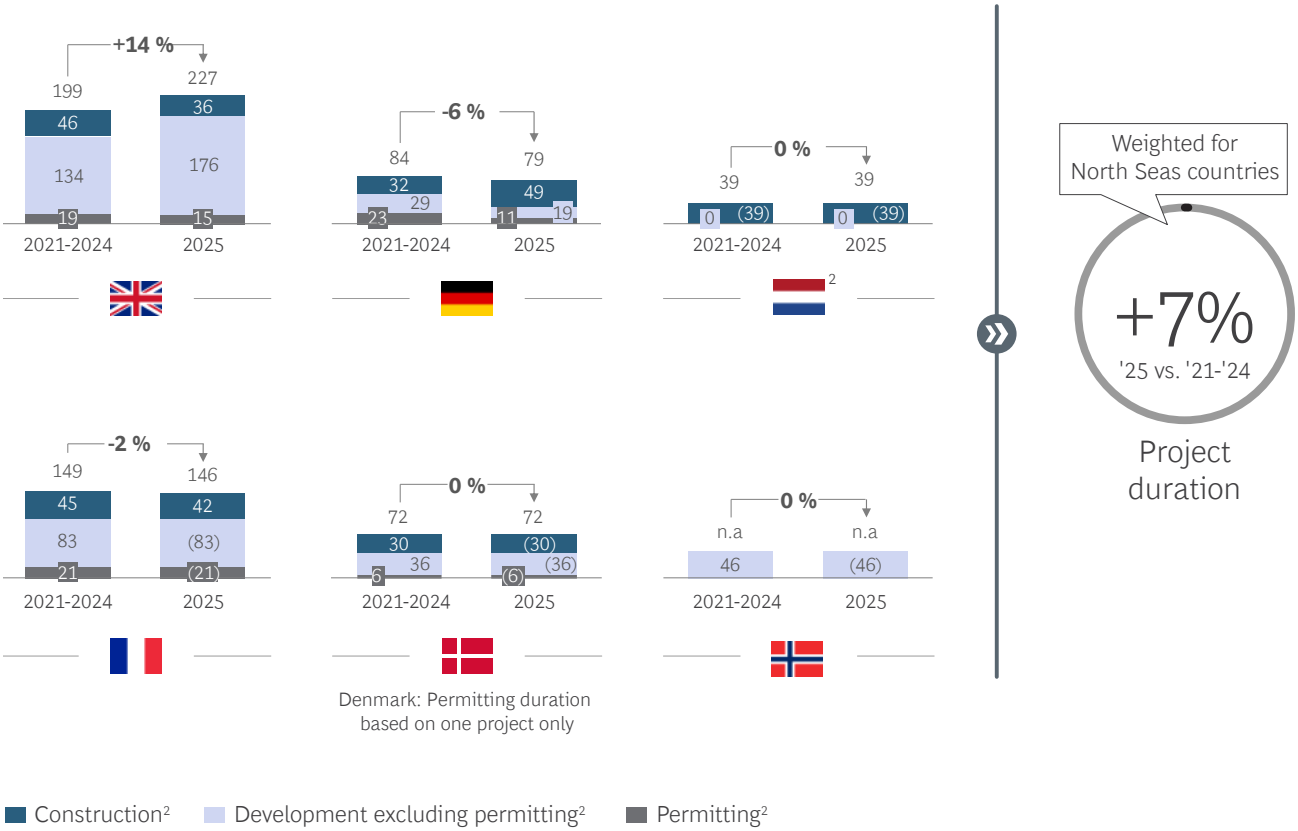
Stakeholders therefore point to the need for shorter, more predictable, and better aligned timelines across permitting, auctioning, grid connection, and commercial frameworks. Pre-permitted sites, separation of seabed and offtake auctions, and earlier availability of CfDs or other revenue-stabilizing instruments were repeatedly cited as possible tools to reduce attrition between auction and FID. Without reforms to reduce this timeline risk, industry representatives warn that auction pipelines will continue to show high nominal volumes but low materialization rates, jeopardizing the speed and reliability of offshore wind expansion.

EXHIBIT 05

KPI 2 | Average +7% project durations—but diverging country-level trends

Average offshore wind project durations[1] in North Seas countries

In months



Source: 4C; BCG analysis
Note: Parenthesized values (x) indicate phases with no recorded activity and historic averages were copied; no projects in Belgium and Ireland; no projects in construction in Norway
1. Weighted average considering project sizes (MW) 2. Missing project steps indicate no activity between 2021–2025; in the Netherlands, permitting not shown as conducted centrally by government 3. Change of duration weighted by total 2021-2025 project volumes

3. Progress of cooperation projects

Cooperation projects, particularly offshore hybrid projects, can improve system efficiency and asset utilization in the North Seas. These projects effectively connect offshore wind farms with multiple countries, thereby enabling the transport of offshore wind-generated power to where it is most in demand as well as the exchange of electricity between markets. Because of this, they offer high potential for more efficient and cost-effective grid use, resulting in faster progress to reach climate goals. Due to the relative novelty of the concept and the future-affecting changes that come with it, tracking the implementation rate is considered an important indicator for the offshore capacity expansion of the North Seas.

To measure the progress of cooperation projects, this KPI considers the current status of projects according to the latest draft TYNDP by ENTSO-E[8]. It thus serves as an early indicator of momentum in regional cooperation and highlights where build-out of hybrid solutions is starting to take shape. The KPI measures the cooperation projects that have at least the status "planned but not yet permitted" as a share of total cooperation projects within the current TYNDP.

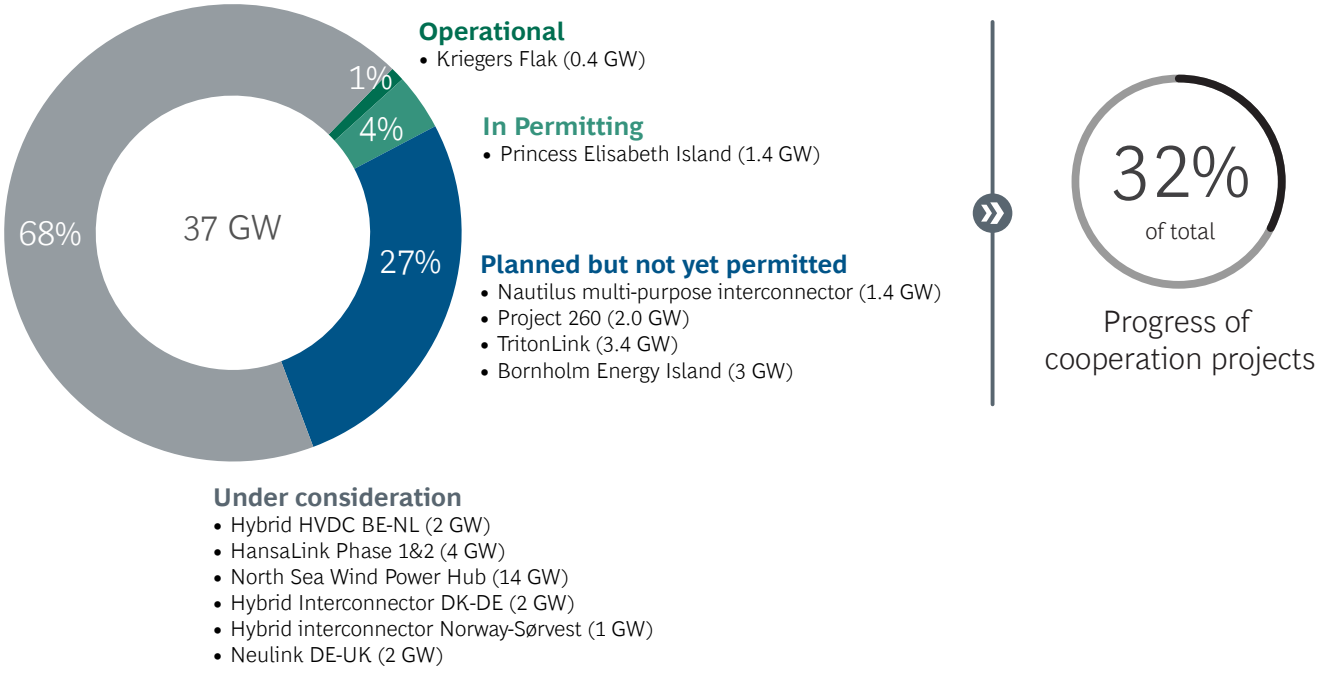
Currently, only around 32% of the 37 GW of cooperation projects in the draft TYNDP 2026 are at least in a planned status. Only one, "Kriegers Flak," is currently in an *"operational"* state and one further project, "Princess Elisabeth Island," has reached the *"in permitting"* phase so far. Also, only 10 GW of capacity can be attributed to projects are currently *"planned but not yet permitted"*, while 68% of the capacity is found in cooperation projects *"under consideration"* for now.

Cooperation projects will only begin to deliver a significant contribution to the North Seas offshore wind build-out from 2035 the earliest. Progress to date remains at an early stage, with most projects still under consideration. While the presence of projects in planning signals initial alignment among TSOs and policy-makers, the low share of advanced projects highlights both the early state of hybrid concepts and current regulatory and permitting hurdles. Those issues should be resolved as quickly as possible to make cooperation projects attractive for investors and close the gap between political and concrete project progress.

EXHIBIT 06

KPI 3 | 32% of cooperation projects are at least in planned status

Distribution of cooperation projects according to draft TYNDP 2026
In GW



Source: ENTSO-E draft TYNDP 2026; BCG analysis

[8] ENTSO-E (2025c)

4. Power demand projection

Offshore wind is needed to meet rising electricity demand as Europe decarbonizes, but tangible policies to accelerate electrification lag behind climate ambitions. Net-zero pledges by the North Sea Summit countries—set for 2050 at the latest—are accelerating the electrification of emitting sectors and driving growth in electricity demand. Yet pledges alone are not enough—concrete policies are needed to create a demand-pull for electric vehicles, heat pumps, power-to-heat, and electrolysis. If policy frameworks fall short, electrification will progress more slowly and the ramp-up of power demand will lag behind the target scenario. Relatively costly offshore wind will likely be affected by an overall slowdown of renewables expansion, although decarbonization of the power sector and other factors such as utilization hours and available areas relative to other renewable power generation will also play a role. As a result, offshore wind business cases today face greater revenue uncertainty than before, particularly in merchant settings. Ensuring consistency between demand-side policies and pledges is therefore critical to support offshore wind expansion.

As proxies for power demand, net-zero power production volumes have been compared to current projections for power demand for the EU[9], UK[10], and Norway[11]. Given better availability of data, projections for total power generation (instead of demand) are used for this analysis. These are a good proxy, considering that transmission and storage losses as well as imports/exports outside of the EU are limited. Comparison of the two scenarios over time shows the remaining gaps between demand under current policies and the demand implied by net-zero pledges and therefore the underlying assumption of demand for offshore wind expansion.

The results show a growing gap between projections and net-zero scenarios: -13% in 2040, and -16% in 2050. Even though power demand is expected to rapidly increase, the current power projections fall increasingly short of the pledged pathway. This reflects broader trends in electrification: Demand from data centers is rising, but adoption of electric cars and trucks, the rollout of heat pumps, electrification of industrial heat, and the use of electricity for domestic green hydrogen production are all progressing slower than previously assumed. For offshore wind, this translates into lower and more uncertain medium-term revenue expectations than those assumed in net-zero target scenarios.

Offshore wind expansion requires stronger incentives for electrification to generate sufficient demand. Only if policy frameworks create sufficient incentives and certainty, will electrification in transport, heating, and industry scale at the pace implied by net-zero pledges. For offshore wind, this is decisive: Its expansion depends on electricity demand materializing at scale, as otherwise new projects cannot be planned or financed with confidence. If demand stimulation falls short, countries may ultimately need to adjust their pledges to lower levels—slowing offshore development and undermining progress toward net-zero.

Unlocking demand requires acknowledging offshore wind's system value and energy-security contribution. The current demand outlook for electricity in Europe shows a widening gap relative to net-zero pathways, creating uncertainty for future offshore wind offtake and investment decisions.

Stakeholders emphasize that offshore wind delivers high full-load hours, provides a stable generation profile that complements other renewables, and can operate as a "near-baseload" technology in certain system contexts. Several interviewees noted that offshore wind enhances Europe's energy sovereignty by reducing reliance on imported fuels and strengthening security of supply—an increasingly important consideration given geopolitical developments and heightened risks to energy infrastructure.

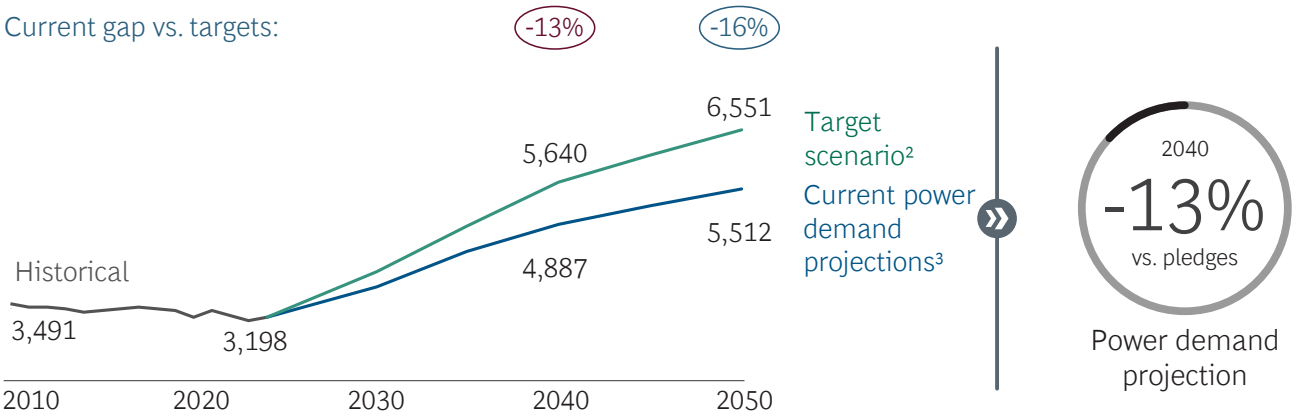
Developers and OEMs therefore highlight the wish for broader demand stimulation measures. Recognizing and valuing the system-level benefits of offshore wind can help accelerate electrification, create firmer offtake foundations, and provide the confidence needed for investment decisions across the value chain.

[9] International Energy Agency (2024 and 2025)
[10] Aurora Energy Research (2025)
[11] Aurora Energy Research and Statnett (2025 and 2026)

EXHIBIT 07

KPI 4 | Power demand pledges versus projections: Gap reaches –13% by 2040

Historical and scenario-based power demand[1] for EU, UK, and Norway



Source: IEA WEO 2024 and 2025; Aurora Energy Research 2025 and 2026; Statnett 2025; BCG analysis
1. Power generation taken as a proxy for power volume 2. Based on pledged Net-zero scenario by 2050 from IEA WEO 2024 (EU), Aurora (UK), and Statnett (Norway) data 3. Based on stated policy scenario from IEA WEO 2025 (EU) and Central Scenario from Aurora (UK and Norway)

5. Secured offtake

Securing offtake is essential for offshore wind projects to reach the Final Investment Decision (FID). For a company to take FID and commit billions of euros to building a wind farm, there must be high confidence in future revenues: Without a secure offtake arrangement, that guarantees income, even technically ready projects are challenged in raising financing.

There are several ways to secure offtake, but most North Seas offshore wind projects currently rely on Contracts for Difference (CfDs) or Power Purchase Agreements (PPAs). Both instruments provide the revenue stability needed to make projects bankable: governmental CfDs by fixing a set capture price for power, and PPAs by locking in long-term purchase agreements with utilities or corporates. Other models exist but play only a limited role. For this analysis, commissioned projects and those with secured offtake were aggregated from 4C[12] data.

By 2025, 62% of the 120 GW offshore wind target is either installed or has secured offtake, leaving a 38% gap still without revenue certainty. Out of the 120 GW target by 2030, 34.3 GW are already commissioned, and 40.5 GW have confirmed offtake—split between pre-FID (20.8 GW) and post-FID (19.6 GW). Most post-FID volumes rely on two-sided CfDs, while 5.1 GW have corporate PPAs as a revenue stream. This mix shows that government-anchored contracts remain the backbone of offshore financing, with corporate demand playing a smaller role. To close the remaining 45.3 GW gap, secured stable offtake will be a major driver besides other bottlenecks described in this report.

How quickly offshore projects move from pipeline to operation will depend on credible offtake frameworks. Two-sided Contracts for Difference (CfDs) continue to offer the most effective mechanism for ensuring revenue stability. Their structure maximizes price certainty for operators and therefore enables lower cost of capital at reduced risk levels. The successful conclusion of the UK's CfD Allocation Round 7, which awarded 8.4 GW of offshore wind capacity following a substantial budget uplift, demonstrates that well-calibrated support mechanisms can still unlock large-scale project pipelines and restore momentum under current market conditions. Scaling CfDs through higher volumes and regular auctions could further enhance their impact. Power Purchase Agreements (PPAs) with corporate buyers can complement this if supported by measures such as standardized contracts or buyer pools. In addition, tripartite contracts—linking governments, developers, and corporate buyers—offer a way to combine public support with private demand by pairing a corporate PPA with a government-provided price floor. Ultimately, the effectiveness of CfDs, PPAs, and tripartite contracts will decide how much of today's ambition becomes tomorrow's generation.

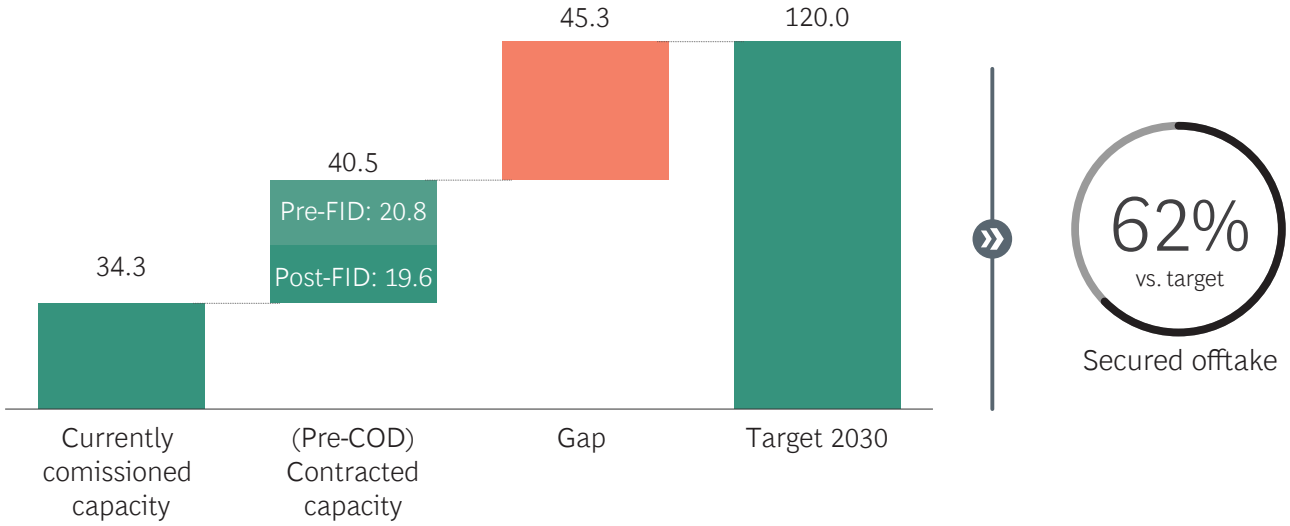
[12] TGS 4C Offshore Ltd

EXHIBIT 08

KPI 5 | 62% of 2030 capacity target has secured offtake

Commissioned and (pre-COD) contracted offshore wind capacity versus 2030 target

In GW



Source: 4C; BCG analysis

6. Offshore interconnection

Offshore hybrid corridors—cross-border transmission pathways linking multiple offshore wind hubs and grids—are essential to enable the transmission of offshore wind power to where it is most needed. Adequate interconnections are therefore a precondition for realizing the full system value of offshore wind and for ensuring that generation and demand are efficiently balanced across the North Seas region. The interconnection capacity needed for this is stated in the dedicated ENTSO-E Offshore Network Development Plan (ONDP). Tracking progress toward the required interconnection capacity allows policymakers and investors to assess what still needs to be planned and delivered.

This KPI measures the share of planned offshore interconnection capacity relative to the 2040 requirement defined in the ONDP for the North Seas hybrid corridor. The metric includes all offshore transmission projects listed in the ENTSO-E TYNDP that are planned to be commissioned by 2040 in the North Seas. This provides a transparent assessment of how current project pipelines compare to the capacity levels required for the ONDP's plan of an interconnected offshore power system. Note that this KPI focuses solely on developments that contribute to the offshore corridors identified by the ONDP. Other offshore interconnections and their capacity, if any, will not be tracked by the KPI.

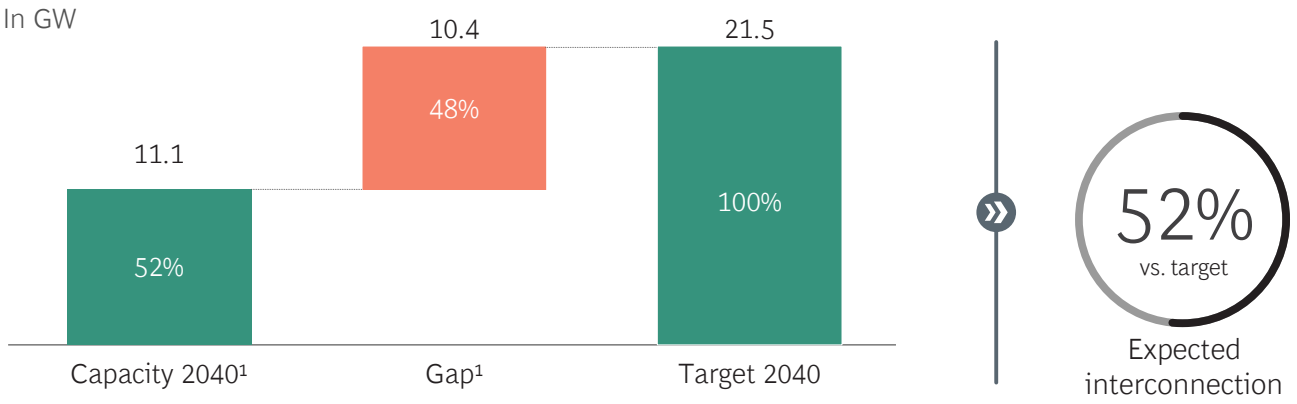
Current progress indicates that only 52%—equivalent to 11 GW—of the roughly 22 GW offshore interconnection capacity required by 2040 is covered by projects in the TYNDP project list. This leaves a shortfall of 10 GW across countries. However, those gaps are unevenly distributed. While several connections between countries already provide sufficient capacity, substantial shortfalls remain for links involving Germany and the United Kingdom, each of them showing a gap of 5 GW. Additionally, most of the projects considered still only have the status of *"in consideration"*, which could lead to an even bigger shortfall if those get canceled before reaching the *"in planning"* state.

To unlock the benefits of the offshore hybrid corridor, additional projects must be initiated and brought forward to close the gaps. Governments, developers, and transmission system operators (TSOs) should actively identify and propose new projects while ensuring that those already planned progress according to schedule. Expanding the overall project pipeline and maintaining timely execution will be critical to meeting system requirements and realizing an integrated North Seas power market by 2040.

EXHIBIT 09

KPI 6 | Only 52% of capacity needed for offshore corridor is covered by projects

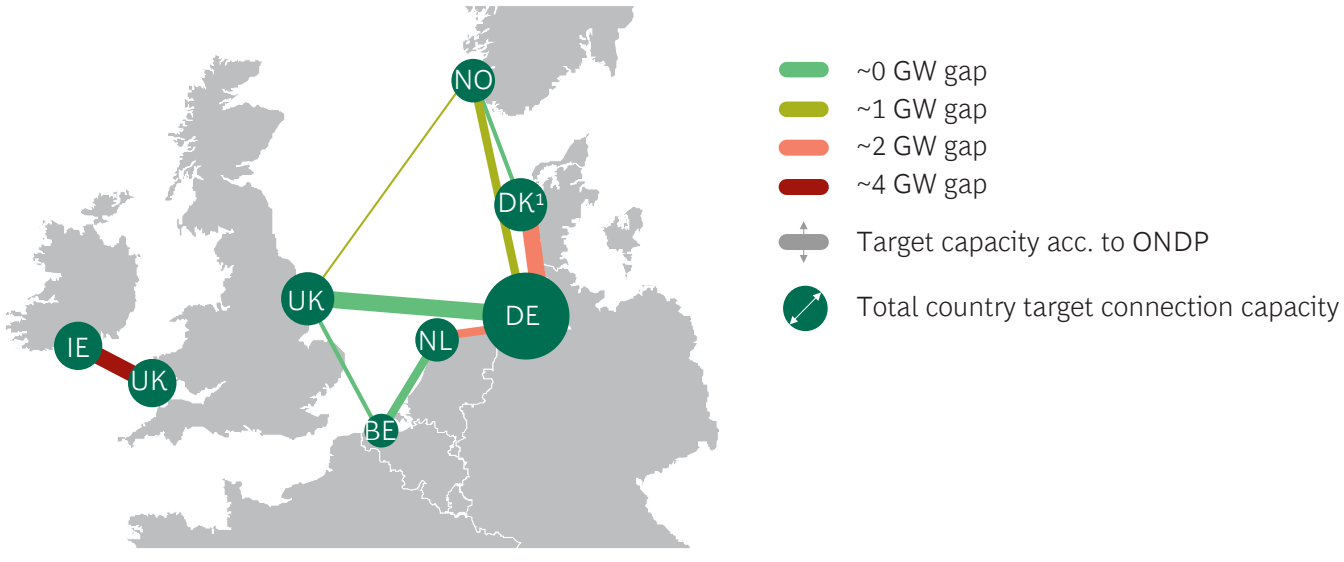
Offshore interconnection capacity suitable for hybrid offshore corridor in the North Seas



Source: ENTSO-E Offshore Network Development Plan (ONDP) 2024; ENTSO-E TYNDP 2024 and draft TYNDP 2026; BCG analysis
1. 2.6 GW of surplus capacity expected for BE-UK and UK-DE compared to the ONDP have not been considered for closing the gap

EXHIBIT 10

KPI 6 | Largest offshore interconnection capacity gaps expected towards Germany and the UK



Source: ENTSO-E ONDP 2024, ENTSO-E TYNDP 2024 and draft TYNDP 2026, BCG analysis
Note: Minor difference between the sum of all borders and the gap shown in Exibit 9 due to rounding; no differentiation between directions of border
1. In contrast to ONDP, connection from NTH to DK not visualized

7. Supply chain capacity

The balance between the European supply chain capacity and the demand for components of offshore wind farms shows how well the region can independently support its offshore wind ambitions—or how strongly it depends on imports. To support its targets, Europe must be able to manufacture, deliver, and install key components at scale. Assessing existing supply capacity against the expected demand shows whether the industrial base can keep pace with political ambition and highlights potential bottlenecks in the path to 2050.

This KPI is calculated by comparing local European supply chain capacity across critical components with the required volumes to reach 2030 expansion targets. Additionally, to measure capacity in relation to the current project situation, the same calculation has been applied to project volumes that have reached FID. The KPI distinguishes between the major components of offshore wind projects, such as blades, power converters, and cables. By segmenting the analysis by component, the KPI not only shows the overall gap but also identifies the weakest links in the value chain. The expected supply chain capacities were based on a study by GWEC and BCG[13] and compared with the expected demand assuming current generation targets.

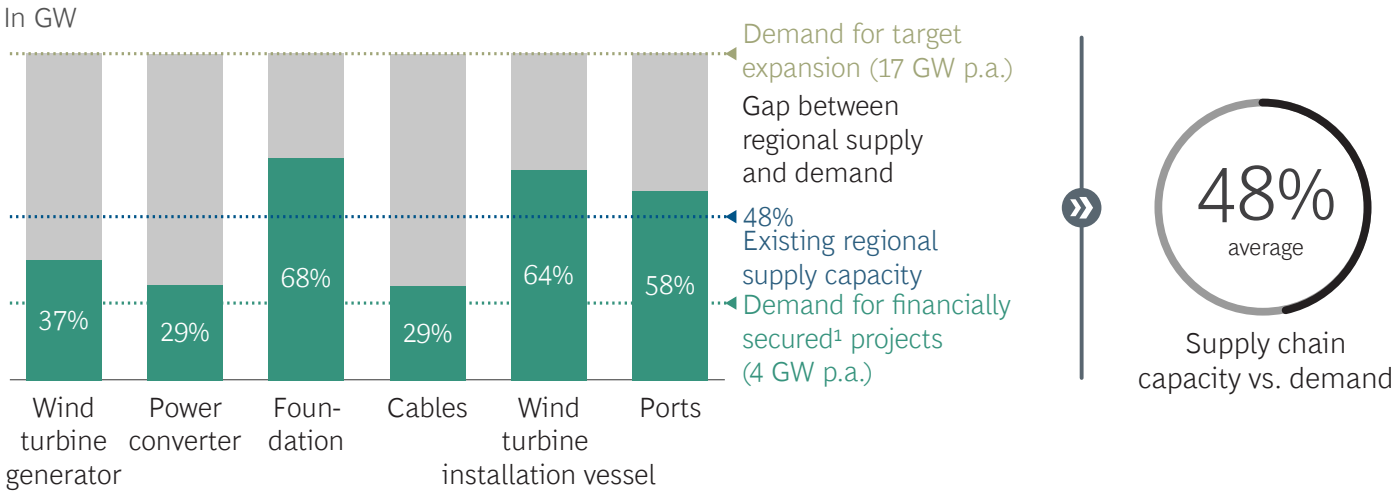
Current figures suggest that the regional supply chain can only deliver around 48% of the ~17 GW p.a. necessary to meet the 2030 target of 120 GW offshore wind in the North Seas. The most severe shortfall lies in cables and power converters, where capacity is sufficient for just 29% of needs. Other components perform slightly better but still fall short of what will be necessary to sustain the scale-up of offshore projects. Comparing the supply chain capacity to the expected capacity of projects with secured FID shows a slightly better picture: All of the 20 GW (4 GW p.a.) project volumes until 2030 that have already reached FID could be supplied from regional supply chain capacity, but only with the theoretical even distribution across the years. The result is a structural supply-demand imbalance that risks delaying project execution.

Securing the 120 GW goal by 2030 would require a significant ramp-up of local manufacturing and logistics capacity. Without investment in component production capabilities, the region risks becoming ever more dependent on external sources of supply, creating vulnerabilities in cost, timing, and energy security. Even if the deadline for the target was stretched—for example, to 2033— the annual capacity requirement would still be around 11 GW. Policy-makers have begun to address this through targets and as part of the "beauty contests" to attract developers, yet such measures alone have not activated the supply chain at the necessary pace.

EXHIBIT 11

KPI 7 | Regional supply chain only sufficient for ~48% of targeted expansion

Offshore wind components: Existing European supply capacities in 2026 versus demand



Source: 4C; GWEC x BCG study; Interview with GWEC intelligence January 2026; WindEurope; BCG analysis
1. Based on ~20 GW projects in FID stage today and expected COD by 2030

[13] GWEC&BCG (2023)

Predictable multi-year pipelines are essential for supply chain scaling. The analysis of supply chain capacity reveals significant structural bottlenecks for key offshore wind components. However, industry interviews point to a critical underlying cause that is not captured by capacity statistics alone: the absence of predictable, coordinated, multi-year project pipelines across North Sea countries.

OEMs and suppliers consistently noted that the European offshore wind supply chain cannot make long-term investment decisions—such as expanding factory output, adding installation vessels, or establishing new component facilities—without stable volume visibility. Today, auction schedules vary widely from year to year and across countries, creating a "boom-and-bust" dynamic that discourages investment.

Developers echo this concern, warning that uncertain auction calendars limit their ability to secure turbine supply and increase exposure to price volatility. In a capital-intensive sector, the absence of reliable demand signals pushes risk premiums higher and ultimately slows down project realization.

To address these issues, industry stakeholders call for rolling multi-year auction calendars, greater alignment of auction frameworks across countries, and closer coordination with grid connection schedules.

8. Financing framework

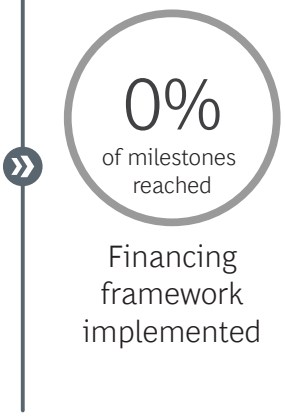
Private-sector investment in offshore cooperation projects has so far been cautious, largely due to regulatory uncertainty around hybrid projects. Building new hybrid offshore capacity is central to reaching the North Sea Summit's long-term targets, but this requires significant inflows of private capital alongside public funding. Developers and investors have repeatedly pointed to unclear rules and market arrangements as a barrier, a challenge also highlighted in ENTSO-E's offshore roadmap[14].

EXHIBIT 12

KPI 8 | All financing and investing actions have yet to be implemented

Progress implementation of financing and investment frameworks

Action items	Planned date	'Should status'	'Is status'
Prepare NSEC working structure	Q1 2026	Started	To be initiated
Establish SPOC[1] for OFF[2]	Q1 2026	Started	To be initiated
Assess risk and mitigation measures	Q2 2026	Started	To be initiated
Align tender and construction schedules	Q3 2026	Started	To be initiated
Assess national regulations	Q4 2026	Started	To be initiated
Implement cost-sharing CfD frameworks	Q1 2027	Started	To be initiated
Launch EIB hybrid project loan window	Q1 2027	Started	To be initiated
Enable creation of SPVs[3] for TSOs	Q1 2027	Started	To be initiated
Amend InvestEU guidelines	Q2 2027	Started	To be initiated
Establish first projects' cost-benefit sharing	Q2 2027	Started	To be initiated
Firm market arrangements for hybrid projects	Q2 2027	Started	To be initiated



Source: DENA; BCG analysis
1. Single point of contact 2. Offshore Financing Framework 3. Special purpose vehicles

[14] ENTSO-E (2025a)

This KPI measures the progress towards clearly defined financing and investment frameworks that will be detailed, adopted, and implemented across the North Seas countries. As a baseline, the frameworks and action items presented at the 2026 North Sea Summit were taken as reference and compared to the current implementation status. This enables an overview of whether the enabling environment for private investment is progressing in line with political commitments.

At present, no actions have yet been implemented, reflecting their contemporaneous introduction with this report and their medium-term timelines. Most milestones are set for 2026 and 2027, ranging from establishing a single point of contact for financial instruments under the Offshore Financing Framework (Q2 2026) to putting firm regulation on market arrangements for hybrid projects in place by Q2 2027. As such, the gap is currently not a result of inaction but of the frameworks still being in the early stages of adaptation, and this KPI is measuring its progress starting today.

Ensuring timely implementation of these actions is decisive for unlocking large-scale private investment to accelerate cooperation projects. Fast and steady progress can open up the capital needed to build hybrid offshore projects, making offshore wind an increasingly attractive asset class for developers. If member countries deliver on the agreed timelines, financing flows can be secured early, helping to meet the 2030 and 2040 capacity targets. Ensuring that frameworks are operational by their due dates is therefore not only about de-risking projects but also about creating confidence and momentum for rapid expansion.

9. Workforce capacity

A skilled workforce is essential for delivering 120 GW of offshore wind by 2030, yet labor shortages risk slowing progress. Successful expansion depends on having enough skilled people to develop, construct, and operate projects. Offshore wind is particularly demanding, requiring specialized training and certification, heavy offshore installation, and complex maintenance under harsh marine conditions. Understanding the size of today's workforce, its trajectory until 2030, and potential bottlenecks are therefore essential for assessing delivery risk—especially as related industries such as onshore wind and power grids also compete for similar skills.

EXHIBIT 13

KPI 9 | Workforce data is limited and heterogenous across North Sea countries

Availability of data	✓	✓	✓	✓	~	✗	✗	✗
Source, year	OWIC, 2025[1]	OEM, 2024[2]	BMWE, 2023[3]	OED, 2022[4]	RVO, 2025[5]			
Periodicity of data	✓ Annually	✓ Annually	✓ Annually	n.a.	n.a.	n.a.	n.a.	n.a.
Scope covered	Full value chain	Full value chain + universities	Full value chain	Full value chain	O&M activities	n.a.	n.a.	n.a.
Method and result	Extrapolated Survey-Feedback[6]: **40k employees**	Non-extrapolated Survey-Feedback[7]: **7.9k FTE**	Input-Output analysis: **25.5k employees**	Extrapolated Survey-Feedback[8]: **4.8k FTE**	n.a.	n.a.	n.a.	n.a.

✓ Yes ~ Partial ✗ No

Source: BCG analysis
Note: Luxembourg was excluded from the analysis as it does not have a North Sea coastline
1. Offshore Wind Industry Council & Renewable UK 2025 2. Observatoire des Énergies de la Mer 2025 (data from 2024)
3. BMWE 2025 (data for 2023) 4. Multiconsult for OED 2023 (data for 2022) 5. ECHT Human Capital for RVO (2025) 6. Survey among 20 companies
7. Survey among 334 companies and institutions 8. Survey among ~1100 companies

The goal of this KPI is to assess whether the currently available and expected offshore wind workforce is sufficient to meet the estimated needs for 2030 capacity targets. However, a systematic dataset covering all North Seas countries is not yet available. Only the UK[15], France[16], Germany[17], and Norway[18] publish current workforce estimates. Because these figures differ in publication years, methodologies, and reported units (e.g., FTE versus headcount), they are not directly comparable. Still, by analyzing existing qualitative reports it is possible to identify professions often described as scarce and at risk of becoming bottlenecks.

As an example, but not necessarily representative of the whole North Seas region, UK figures show a workforce capacity of around only 53% relative to peak demand by 2030[18]. Reaching 47 GW[20] in the UK by 2030 would require nearly double the current offshore workforce—a shortfall of about 47%. Even in a slower-expansion pathway reaching only 39 GW by 2030, workforce needs remain almost unchanged, driven by faster build-out rather than higher labor input, with assumed efficiency gains further reducing the difference between scenarios. WindEurope's recently published "Europe's Wind Energy Workforce Report"[21] confirms a similar situation across the wind sector in Europe, with a 36% increase in the workforce by 2030 compared to 2024.

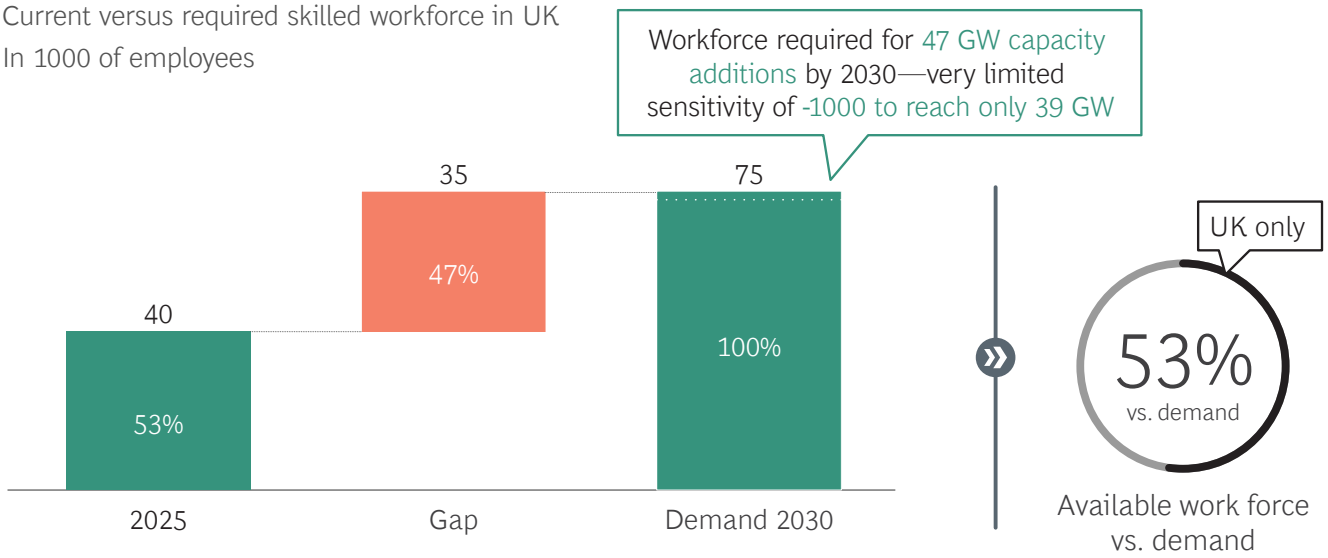
Offshore wind across the North Seas faces acute shortages in core technical roles, competing directly with other industries for the same skills and capabilities. Wind turbine technicians, engineers, high-voltage electricians, electrical technicians, and cyber security experts are repeatedly cited as bottleneck roles across countries. These shortages are particularly acute in vocational trades, where training pipelines are limited and certification requirements are strict. Competition from other sectors adds further strain: Electricians, for example, are equally in demand for power grid expansion, onshore renewables, and data centers. The overlap means offshore wind must compete directly with other strategic sectors for scarce talent, raising the risk of delays.

Closing this gap starts with better data and a focus on securing scarce skills. A regular survey across North Seas countries of offshore wind companies would provide a reliable picture of how many people currently work in the sector and where shortages are most acute. While this quantitative data would allow for more targeted action, governments and industry should already begin to attract and retain talent in bottleneck professions—particularly as other industries compete for the same skills—to ensure that workforce constraints do not become a limiting factor for offshore wind expansion.

EXHIBIT 14

KPI 9 | UK example: Only ~53% of workforce needed for expansion targets is available

Current versus required skilled workforce in UK
In 1000 of employees



Source: Offshore Wind Industry Council; BCG analysis

[15] Bundesministerium für Wirtschaft und Energie (2025)
[16] Offshore Wind Industry Council (2025)
[17] Observatoire des Énergies de la Mer (2025)
[18] Olje- og energidepartementet (2023)
[19] Offshore Wind Industry Council (2025)
[20] Which approximately reaches UK's target to install 50 GW offshore wind by 2050
[21] WindEurope (2025)

10. NIS2 implementation

As energy infrastructure is increasingly considered a potential target of attacks and sabotage, having robust protective measures is becoming a necessity for the security of offshore wind. The energy sector, including offshore wind farms, has seen an 80% increase in cyberattacks from 2023 to 2024[22], underlining the sector's vulnerability as part of Europe's critical infrastructure. In response, the EU introduced the Network and Information Systems (NIS2) Directive to set a harmonized, high-level cybersecurity standard across member states, focusing on areas such as risk management, incident reporting, and resilience[23].

This KPI measures the extent to which the North Seas countries with existing offshore infrastructure have actually translated the NIS2 Directive into national law. The implementation of NIS2 status is assessed across three categories: adopted by EU members (or aligned for non-EU members), advanced state but not yet fully adopted, early state.

Current results show that only 38% of the eight relevant North Seas countries have implemented NIS2 or equivalent measures fully. Belgium and Denmark have fully adopted NIS2, Germany has transposed the legislation. Among other EU members, the Netherlands, France, and Ireland have a draft law. While the Netherlands expects implementation in the second quarter of 2026, France and Ireland do not have a date. Outside the EU, the United Kingdom is updating its existing NIS1 framework, and Norway has indicated that alignment with NIS2 remains a future task.

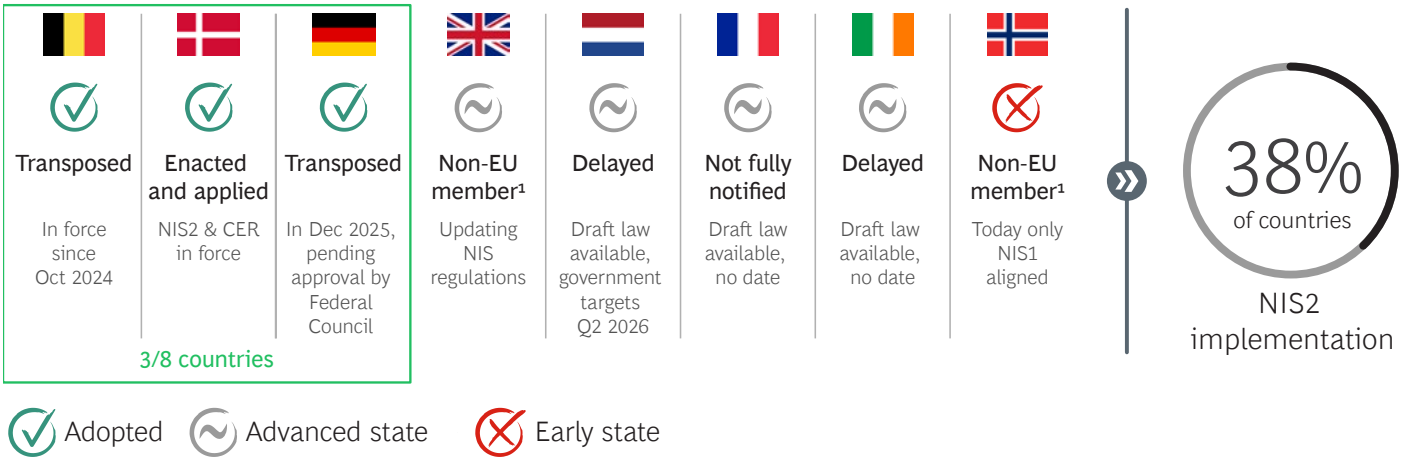
Cybersecurity risks remain high until all countries establish legally binding frameworks aligned with NIS2. Governments must accelerate implementation and ensure compliance, as uneven progress across the region could leave weak points in the offshore grid. Strengthening legal and operational security measures is therefore essential to safeguard both energy supply and investor confidence.

Additionally, due to the changed geopolitical situation since 2022, the physical protection of offshore wind farms needs to be improved. According to a recent report from WindEurope, the threat level of attacks on critical energy infrastructure has increased significantly[24]. While actions like the Symbiosis Project already exist, more needs to be done to ensure the safety of the offshore wind infrastructure. This includes the creation of robust security protocols, a defined separation of duties between state and operator in case of an attack, and guidelines on who bears the costs of the resulting measures and how they would affect existing business cases.

EXHIBIT 15

KPI 10 | 38% of NSS countries have implemented the NIS2 Directive into law

North Sea countries countries' local legislative implementation state of NIS2



Source: OpenKRITIS; EU Commission NIS cooperation group; ECSO; BCG analysis
1. NIS2 not binding for non-EU countries, necessary to comply for supply chain regulations

[22] Trustwave (2025)
[23] European Union (2022)
[24] WindEurope (2025)

Outlook: Monitoring and Reporting

This report identifies shortcomings across several key drivers in offshore wind expansion in the North Seas region via a systematic KPI assessment. Out of 10 analyzed KPIs, 7 show significant gaps to the requirements to achieve the offshore wind expansion targets of about 120 GW by 2030 and at least 300 GW by 2050, as declared by the North Seas countries. They require dedicated attention and measures by policy and decision makers. Three KPIs still show some gaps and should be further monitored to ensure they develop on track and support successful expansion.

Our assessment should be understood as a starting point for a regular and comprehensive assessment of the state and progress of offshore wind expansion in the North Seas and identification of critical shortcomings or obstacles. This report reflects the current state of offshore wind expansion and its drivers, but given their forward-looking nature, regular updates of the KPI tracking are important to show progress and allow for timely steering. Further refinement and development of additional (more detailed) KPIs should be conducted over the next months to establish KPI tracking as a powerful tool to provide the necessary information with the right level of detail and frequency.

Policy-makers should assign responsibility for the regular and structured update of the KPI monitoring to a suitable institution. Clear governance needs to be defined the systematic and regular updates and maintenance for the KPI tracking. This ensures a smooth process and comparable, trustworthy results. The institution selected for this task will need sufficient capacity, resources, capabilities, and an international network within the industry and general offshore wind landscape across the North Seas.

Access to structured and regularly updated data needs to be ensured by the institution and in potential partnership with third-party data providers. Given its objective nature, the power of the dashboard and its KPIs can only be as strong as the quality of the underlying data allows. Access to consistent and regularly updated data is therefore the foundation of the reporting. This needs also to be kept in mind for the refinement and addition of KPIs and their definitions.

To enrich the KPI tracking with interpretation, implications, and potential measures, industry experts should be involved. The KPIs of the dashboard itself should be defined in an objective, indisputable way to provide the facts and information as the basis for political discussions and decisions. Nevertheless, to provide interpretations, draw implications, and discuss solution options, the involvement of industry experts and stakeholders can add value. The institution responsible should therefore build and maintain a network of stakeholders across key companies, institutions, and associations in Europe and particularly the North Seas countries to regularly involve them in its update cycles and reporting of the KPI tracking.

Closing note

Offshore wind expansion in the North Seas is currently not progressing at a pace that would come even close to the target levels set by the cooperating countries.

Failed offshore wind auctions did receive public attention but are merely the tip of the iceberg. Framework conditions across several key dimensions lack necessary acceleration.

We therefore call for more effective regulatory action and more value chain cooperation on offshore wind expansion and its key drivers in the North Seas.

Policy-makers should establish public and regularly updated KPI tracking across relevant dimensions to monitor the progress of these actions.

Sources

Aurora Energy Research (2025, 2026). *Power and Renewables Market Forecast.*

Bundesministerium der Justiz und für Verbraucherschutz (2025). *Gesetz zur Umsetzung der NIS-2-Richtlinie und zur Regelung wesentlicher Grundzüge des Informationssicherheitsmanagements in der Bundesverwaltung.* Accessible at **https://www.recht.bund.de/bgbl/1/2025/301/VO** [January 16, 2026]

Bundesministerium für Wirtschaft und Energie (2025). *Bruttobeschäftigung durch erneuerbare Energien 2000 bis 2023.* Accessible at **https://www.bundeswirtschaftsministerium.de/Redaktion/DE/Downloads/E/ee-beschaeftigte-2000-2023.html** [January 16, 2026]

Chambre des Députés (2026). *Projet de loi concernant des mesures destinées à assurer un niveau élevé de cybersécurité.* Accessible at **https://www.chd.lu/en/dossier/8364** [January 16, 2026]

Danish Energy Agency (2025). *Summary of market dialogue on 3 GW offshore wind in the North Sea.*

ENTSO-E (2025). *Offshore Roadmap.* Accessible at **https://eepublicdownloads.blob.core.windows.net/public-cdn-container/clean-documents/Publications/2025/ENTSO-E_Offshore_Roadmap_2025.pdf** [January 16, 2026]

ENTSO-E (2025). *Ten Year Network Development Plan Study Explorer.* Accessible at **https://www.entsoe.eu/outlooks/tyndp/2024/#** [January 16, 2026]

ENTSO-E (2025). *TYNDP Project Collection.* Accessible at **https://tyndp2024.entsoe.eu/projects-map** [January 16, 2026]

ENTSO-E (2025). *TYNDP 2026 draft project portfolio.* Accessible at **https://www.entsoe.eu/news/2025/10/29/explore-the-tyndp-2026-draft-project-portfolio-178-transmission-and-49-storage-projects-now-published/** [January 16, 2026]

ENTSO-E (2024). *TEN-E Offshore Network Development Plans.* Accessible at **https://www.entsoe.eu/outlooks/offshore-hub/tyndp-ondp/** [January 16, 2026]

European Cyber Security Organization (2026). *NIS2 Directive Transposition Tracker.* Accessible at **https://ecs-org.eu/activities/nis2-directive-transposition-tracker/** [January 16, 2026]

European Union (2022). *DIRECTIVE (EU) 2022/2555 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 14 December 2022 on measures for a high common level of cybersecurity across the Union, amending Regulation (EU) No 910/2014 and Directive (EU) 2018/1972, and repealing Directive (EU) 2016/1148 (NIS 2 Directive).* Accessible at **https://eur-lex.europa.eu/eli/dir/2022/2555/oj** [January 16, 2026]

Government of Ireland (2025). *General Scheme of the National Cyber Security Bill 2024.* Accessible at **https://www.gov.ie/en/department-of-justice-home-affairs-and-migration/publications/general-scheme-of-the-national-cyber-security-bill-2024/** [January 16, 2026]

GWEC & BCG (2023). *MISSION CRITICAL: BUILDING THE GLOBAL WIND ENERGY SUPPLY CHAIN FOR A 1.5°C WORLD.* Accessible at **https://marketintelligence.gwec.net/wp-content/uploads/2023/12/MISSION-CRITICAL-BUILDING-THE-GLOBAL-WIND-ENERGY-SUPPLY-CHAIN-FOR-A-1.5%C2%B0C-WORLD.pdf** [January 16, 2026]

International Energy Agency (2024, 2025). *World Energy Outlook.*

Internetconsultatie (2024). *Cyberbeveiligingswet.* Accessible at **https://www.internetconsultatie.nl/cyberbeveiligingswet/b1** [January 16, 2026]

Le Sénat (2025). *Dossier législatif - Résilience des infrastructures critiques et renforcement de la cybersécurité.* Accessible at **https://www.senat.fr/dossier-legislatif/pjl24-033.html** [January 16, 2026]

Olje- og energidepartementet (2023). *Kartlegging av de norskbaserte næringene for fornybar energi og hydrogen i 2022.* Accessible at **https://www.regjeringen.no/contentassets/7b9d93afb78549b2ba229f896e050b32/10252268-01-kartlegging-av-de-norskbaserte-naringene-for-fornybar-energi-og-hydrogen-i-2022.pdf** [January 16, 2026]

NSM (2025). *Ny digitalsikkerhetslov i Norge.* Accessible at **https://nsm.no/aktuelt/ny-digitalsikkerhetslov-i-norge** [January 16, 2026]

Observatoire des Énergies de la Mer (2025). *Des projets qui continuent de se concrétiser au bénéfice de l'économie française.*

Offshore Wind Industry Council (2025). *Wind Industry Skills Intelligence Report.*

Ørsted (2025). *Ørsted to discontinue the Hornsea 4 offshore wind project in its current form.* Accessible at: **https://orsted.com/en/company-announcement-list/2025/05/orsted-to-discontinue-the-hornsea-4-offshore-wind--143901911** [January 16, 2026]

RVO (2025). *Identifying the Dutch Offshore Wind Workforce for 2035.*
Accessible at **https://echt.community/wp-content/uploads/2025/12/Rap_TKIOE_Identifying_the_Dutch_Offshore_Wind_Workforce_for_2035-1.pdf?** [January 16, 2026]

Statnett (2025). *Long-term Market Analysis.*
Accessible at **https://www.statnett.no/en/for-stakeholders-in-the-power-industry/our-analyses-and-assessments/long-term-market-analysis/** [January 16, 2026]

Trustwave 2025. *2025 Trustwave Risk Radar Report*
Accessible at **https://levelblue.com/hubfs/Web/Library/Documents_pdf/2025_Trustwave_Energy_Utilities_Risk_Radar_Report.pdf** [January 16, 2026]

WindEurope (2025). *New collaborations to ensure physical and cybersecurity of wind turbines.*
Accessible at **https://windeurope.org/news/new-collaborations-to-ensure-physical-and-cybersecurity-of-wind-turbines/** [January 16, 2026]

WindEurope (2025). *Europe's Wind Energy Workforce Report.*
Accessible at **https://windeurope.org/data/products/europes-wind-energy-workforce-report/** [January 16, 2026]

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