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Energy

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Baltic Energy Perspectives 2026

Setting the context for regional collaboration

September, 2026

Executive summary

The Baltic region lags the North Sea in offshore wind and carbon storage deployment, despite its strong renewable resources and cross-border cost advantages. Greater regional collaboration could accelerate infrastructure development, supporting the energy transition while strengthening energy security and improving affordability.

NATURAL GAS

- The loss of Russian pipeline supply in 2022 inverted regional flows from east-west to intra-Baltic, with LNG-importing markets (Poland, Finland, Lithuania) now supplying neighbours alongside Northwest European imports.
- **Over 20 MMtpa of new LNG import capacity has been commissioned** since 2023, with a further ~30 MMtpa under construction or pre-FID - anchored by Swinoujscie, Klaipeda, Brunsbuttel and Wilhelmshaven.
- **Volatility persists:** TTF doubled from ~EUR30/MWh in late February 2026 to EUR63/MWh in late July. Regasification utilisation stays elevated into the mid-2040s, while Lithuania-Latvia capacity and Polish regas constraints remain the bottlenecks to ease.

OFFSHORE WIND

- **Generation is set to rise** from 36 TWh in 2025 to 167 TWh by 2040, with Poland emerging as one of the region's most important growth markets - though commissioned capacity remains around 8 times below the North Sea.
- Baltic Power when fully commissioned lifts advanced/operational capacity to ~9.5 GW by 2030 assuming all projects come online. This is under half the 19.6 GW Marienborg target.
- **LCOE has risen** 40% between 2023 and 2026, with financing the largest component. Permitting, grid connection, supply chain and security costs are the constraints; CfDs, auction flexibility and de-risking early development are the levers.

RENEWABLE HYDROGEN

- **RED III transposition is fragmented** — with few countries implementing and often below the level intended - making the EU's 2030 RFNBO ambitions increasingly unlikely. RED IV, due end-2026, is expected to be more technology-neutral.
- **Cost differentials are the opportunity:** Finland and Sweden show the lowest LCOH based upon hydropower, strong wind speeds and high electrolyser utilisation, versus higher costs in Germany and Poland.
- **Regional infrastructure could allow efficient use of resources:** The ~1,000 km Baltic Sea Hydrogen Collector could unlock those exports above a minimum throughput threshold

CARBON CAPTURE, UTILISATION & STORAGE (CCUS)

- **CO_2 infrastructure must be coordinated regionally.** Power and hard-to-abate emissions in steel, cement, chemicals and refining are geographically fragmented requiring coordination
- **Transport economics turn on scale:** at 2.5 MMtpa, shipping from Gdansk to the North Sea (~1,500 km) competes with Baltic storage (~500 km), but at a 20 MMtpa hub scale Baltic pipelines become significantly cheaper
- **Storage is the binding constraint** — the Baltic lacks depleted fields and needs cost-competitive saline aquifers. Baltic Aurelia (Orlen Petrobaltic) is evaluating millions of tonnes of storage and collaboration on subsurface mapping could unlock further opportunities.

The common thread: no single Baltic market can carry the cost or the risk alone. Shared CO_2 transport and storage, interconnected gas and hydrogen infrastructure, and coordinated offshore wind development can turn national ambition into deliverable projects.

Context for Baltic Cooperation

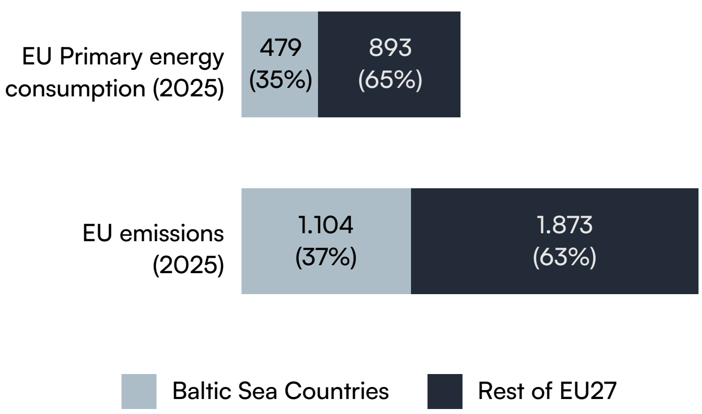
THE BALTIC REGION ACCOUNTS FOR ROUGHLY A THIRD OF DEMAND AND EMISSIONS OF THE EU27

The countries bordering the Baltic Sea account for 37% of all emissions and 35% of energy consumption in the EU. What happens in these countries will have a profound impact on Europe as a whole. However, compared to the North Sea basin, the region is lagging behind across decarbonization initiatives.

Commissioned offshore wind projects are 8 times lower than the North Sea equivalent, whilst the North sea has >10MMT of operational carbon storage projects compared to zero in Baltic Sea countries. Significant renewable resource potential and differences in production costs between countries provides opportunities for cooperation in the region. With decarbonization and energy security increasingly intertwined, collaboration at a local level offers the possibility to support both vectors.

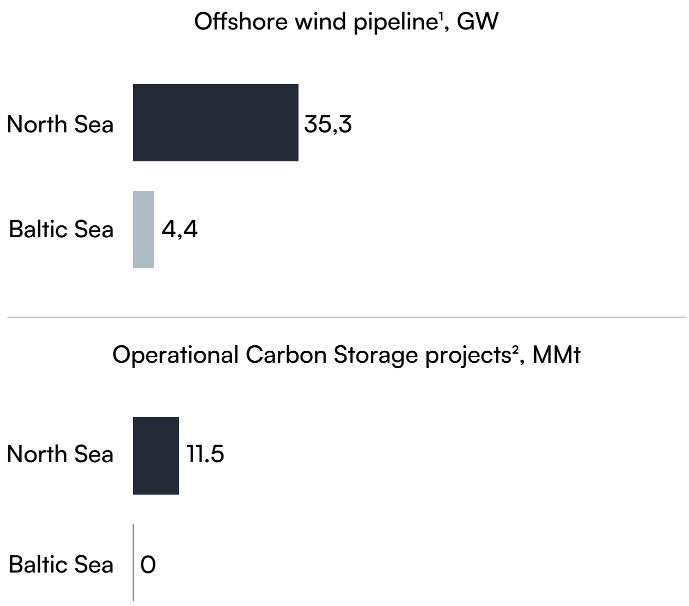
Figure 1
Primary energy and total emissions by EU region

MMtoe GtCO₂



Source: S&P Global Energy

Figure 2
The Baltic Sea lags behind North Sea for decarbonization initiatives



Source: S&P Global Energy

The ongoing war in Ukraine and war in Iran have highlighted the vulnerability of European and Baltic supply chains to geopolitical disruption. The TTF gas benchmark price doubled from ~€30/MWh in Late—February 2026 to €63/MWh in late July in response to LNG supply disruptions. In this context, Policymakers are being forced to reconsider their approach to targets such as REDIII where Stretching industrial RFNBO targets are not widely transposed.

1. *Offshore wind pipeline includes projects which are 'fully commissioned' only.*
2. *Carbon storage project pipeline includes projects which are 'operating and under construction' only.*

As countries around the Baltic Sea accelerate their energy transition, decarbonization and energy security are being pursued as complementary objectives with energy affordability increasingly moving to the fore. Recent energy price volatility, heightened by geopolitical tensions and the disruption of Russian energy supplies, have reinforced the need for a transition that not only reduces emissions and strengthens resilience, but also maintains internationally competitive energy costs for households and industry. This is particularly important for the Baltic economies, where large-scale investments in alternative energy sources are being explored. While these investments are critical for achieving climate and security goals, policymakers are increasingly focused on ensuring that the costs of the transition are managed effectively and translated into lower long-term energy prices. Affordable low-carbon energy is viewed as a key enabler of industrial competitiveness, economic growth and public support for the energy transition. This paper sets the scene for 4 technologies where collaboration between the Baltic Sea countries can

Figure 3
The pillars of decarbonisation, Energy Security and Affordability in the Baltic Sea Countries

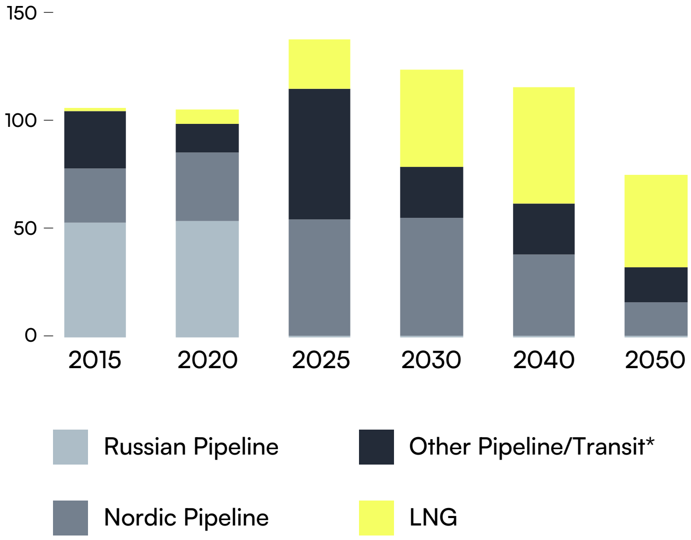
Theme	Technologies covered
Environmentally Sustainable Pursuit of Offshore Wind and other renewables to meet REDIII and Fitfor55 targets	**Carbon Capture, Utilisation & Storage (CCUS)**
Energy Security Securing international gas supplies following phase out of Russian pipeline gas	**Hydrogen**
Affordability Replacing existing coal-fired generation with alternative, lower carbon sources that remain affordable	**Offshore wind**
	Gas

Baltic Sea Countries within scope

Natural Gas

Figure 4
Gas Supply Imports to Baltic States by Source

BCM/A



** Other Pipeline Imports/Transit includes imports from Netherlands/UK into Germany and transit flows to other states further south e.g. Austria, Czech Republic*

The loss of Russian pipeline gas supply to Europe in 2022 catapulted energy security to the top of political agendas, forcing Europe to diversify energy imports, emphasising the strategic importance of supply security for natural gas and other critical industrial inputs. The crisis in the Middle East and volatility surrounding passage through the Strait of Hormuz has further reinforced energy security concerns and the need for Europe to diversify supply sources and strengthen resilience of key resource supply chains.

Europe's supply picture shifted significantly in 2022, pivoting towards LNG and increasing Norwegian pipeline supplies to combat the loss of Russian pipeline volumes. New LNG import infrastructure was sanctioned and commissioned in addition to existing plans, and an inversion in the direction of gas flows highlight the critical role of the region's pipeline interconnector network and transit corridors.

LNG supply increasingly gains market share in the Baltics gas supply mix through to 2050 against the backdrop of declining gas supply from alternative sources such as Norway. This pivot highlights the strategic importance of gas pipeline interconnectors in the region that accommodate the transit of LNG and gas supply from LNG-importing markets around the Baltic states via transit corridors.

Following the loss of Russian pipeline gas supply in 2022, the pattern and direction of gas flows in the Baltic states has inverted from previously flowing East to West, leaving markets once-dependent on Russian pipeline gas supply such as Estonia and Latvia increasingly reliant on LNG supply from LNG importing markets within the Baltic region.

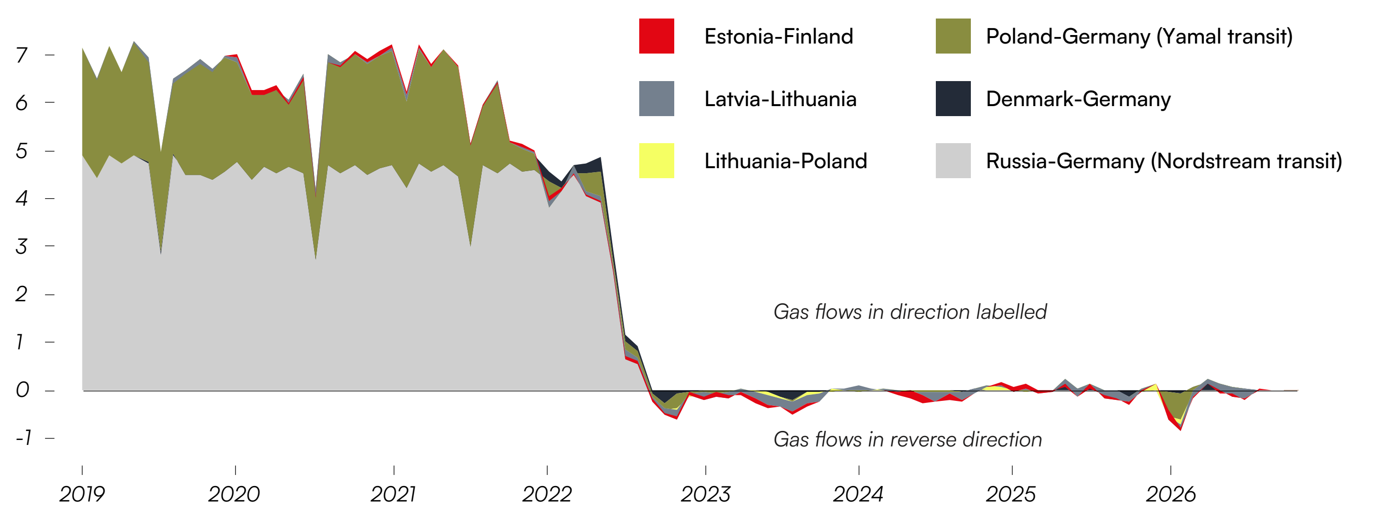
As market share of LNG supply in the Baltic's gas supply mix increases, the role of strategic pipeline interconnectors becomes increasingly important to meet domestic demand requirements, refill strategic storage inventories, and strengthen regional energy security.

The Lithuania-Latvia Interconnection remains important for energy security in the Baltics connecting the Klaipėda LNG terminal with Inčukalns storage facility in Latvia, and Latvia and Estonia domestic gas markets.

The BalticConnector continues to serve Estonia's domestic gas market with LNG imported to Finland, serving as a strategic interconnector connecting Finland to the rest of the Baltic states.

Gas Interconnection Poland-Lithuania (GIPL) enables the strategic bi-directional flow of gas between two of the Baltic region's largest regasification capacity markets and will remain key for alleviating market tightness prior to the commissioning of new LNG import capacity in Poland.

Figure 5 | Major Baltic Gas Pipeline Flows (Net) bcm/month



Europe's regasification capacity buildout has been crucial for energy security, particularly following the supply disruptions in 2022. Since 2023 over 20 MMtpa of new LNG import capacity has been commissioned and is operating, with an additional 30 MMtpa under construction or in pre-FID stage.

LNG terminals such as Świnoujście in Poland, Klaipėda in Lithuania, and Brunsbüttel and Wilhelmshaven in Germany play a key role in maintaining regional energy security. These facilities support a stable supply of natural gas, diversifying energy sources and reduce dependency on any single supply route.

Utilisation rates at regasification terminals across the Baltics are expected to remain high long-term as LNG supply in the region increasingly gains market share. The commissioning of new import infrastructure, particularly in Poland and larger onshore capacity in Germany, will help to ease infrastructure constraints within the region. However, increasing demand for natural gas in power generation will sustain gas demand requirements in the region in the 2030s through to the mid-2040s, keeping LNG regasification utilization rates across the region elevated.

Figure 6
Baltic LNG Regasification Capacity Utilization Rates

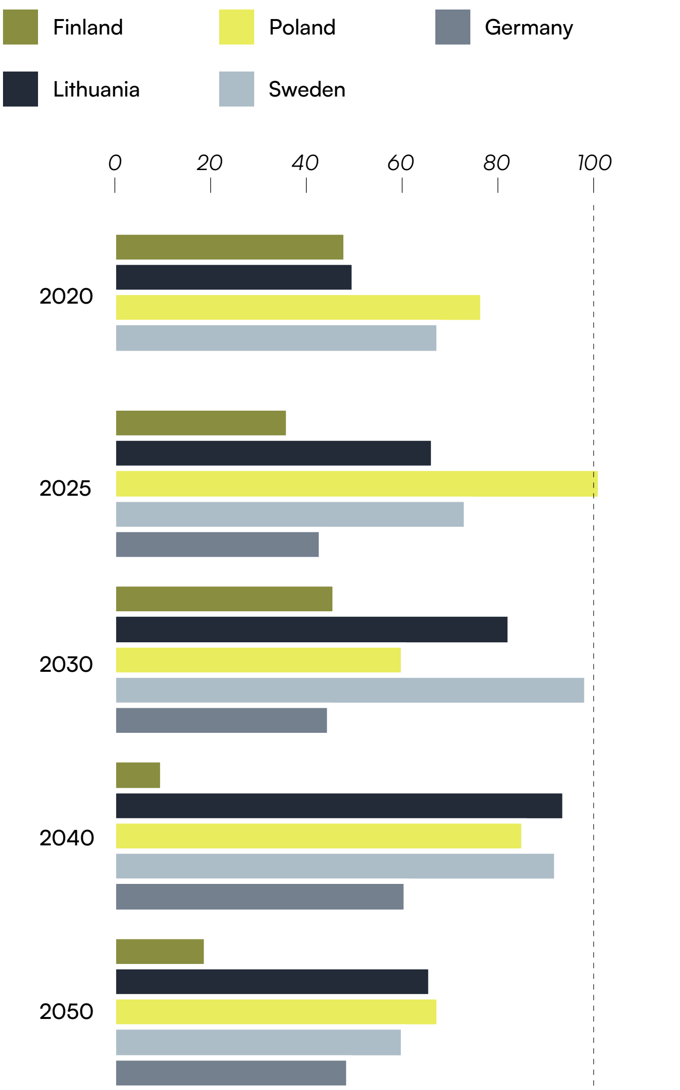


Figure 7
Baltic LNG Regasification Terminals by Status

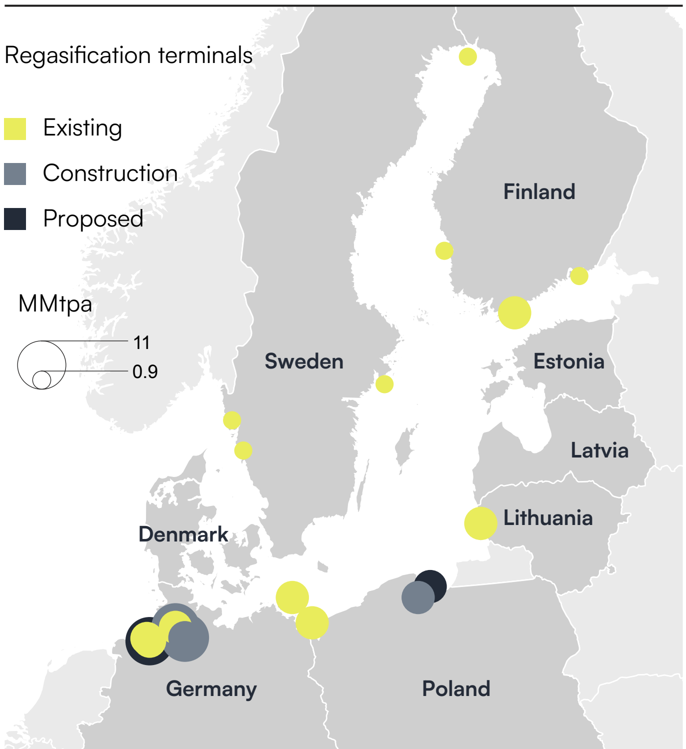
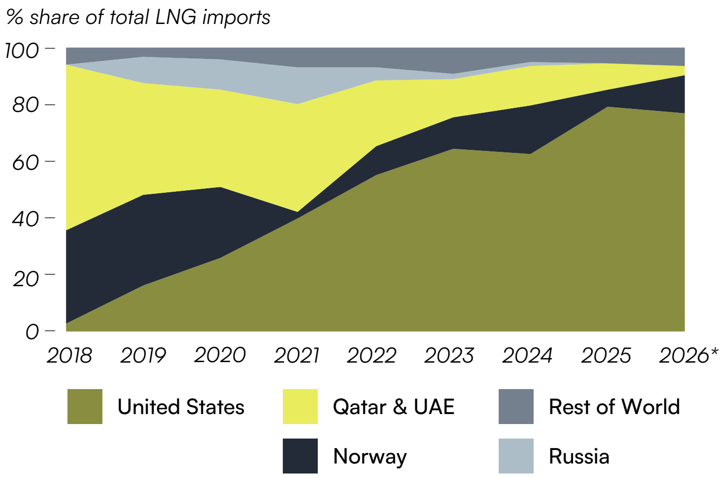


Figure 8
Baltic States LNG Supply by Source



** 2026 LNG imports are year to date*

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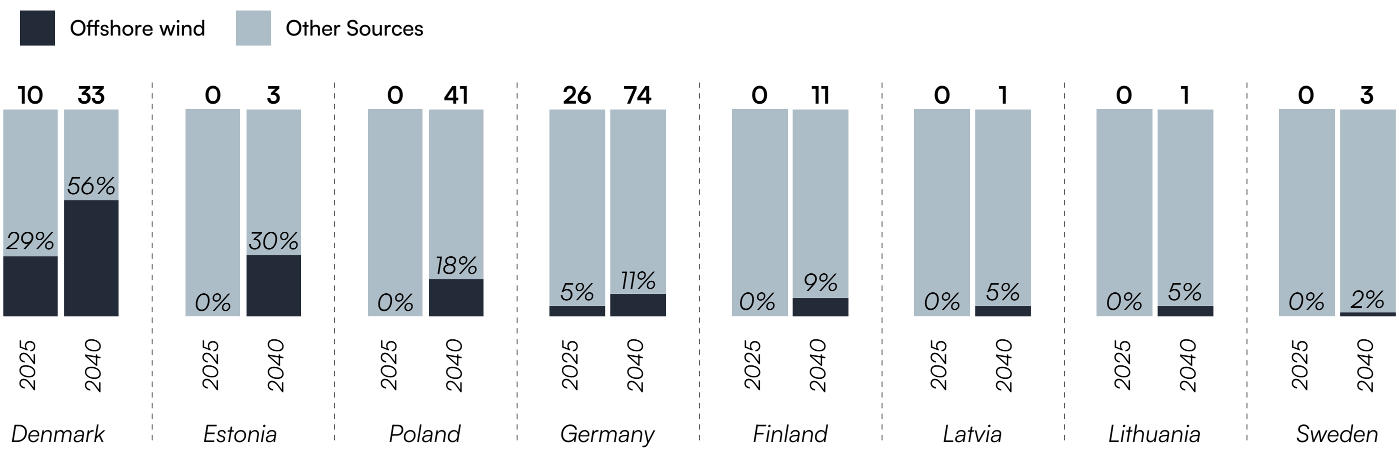
Offshore Wind

Figure 9 | Offshore wind generation and share of total power generation

TWh



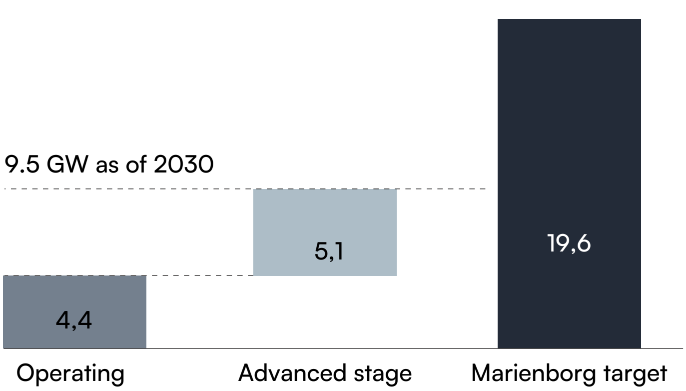
Source: S&P Global Energy

Offshore wind generation in the Baltic Sea is set to expand rapidly over the next two decades, rising from 36 TWh in 2025 to 167 TWh by 2040. Much of this growth is driven by new projects coming online in Poland, which is emerging as one of the region's most important offshore wind markets. To facilitate this growth, significant barriers need to be overcome with projects in the region constrained by lengthy permitting processes, grid connection challenges, and increasing concerns around defence and military interests in the Baltic Sea.

Baltic Power's full commissioning sees the region on a trajectory to ~9.5 GW by 2030 assuming all projects come online. This is under half the 19.6 GW Marienborg target. Failure to meet the target leaves greater exposure to imported fuels, potentially higher electricity prices and slower industrial decarbonisation.

Figure 10
Projects pipeline vs Marienborg targets, as of 14th August 2026[1]

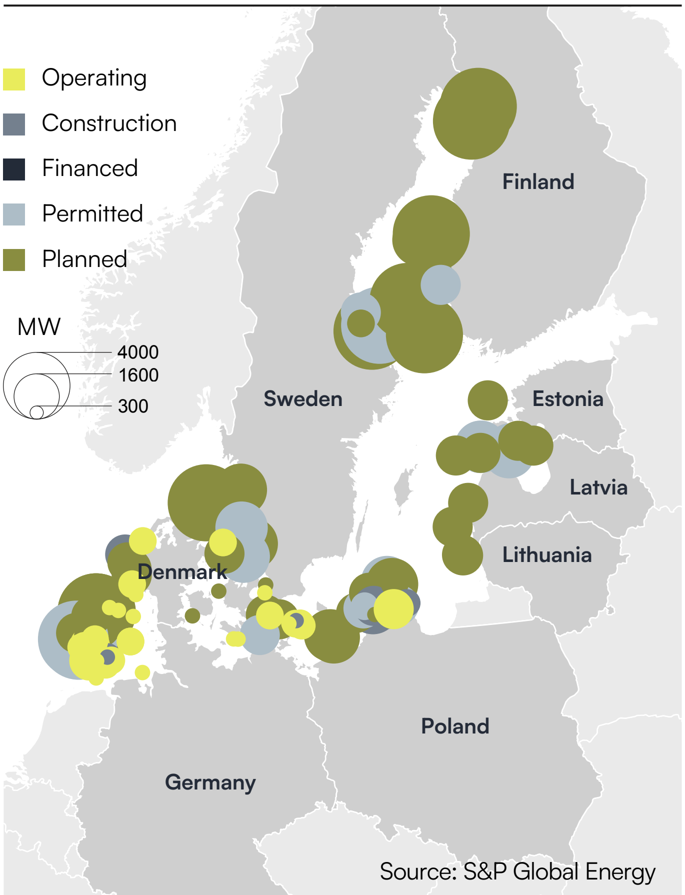
GW



Source: S&P Global Energy

Figure 11
Offshore wind projects pipeline by status[2]

MW

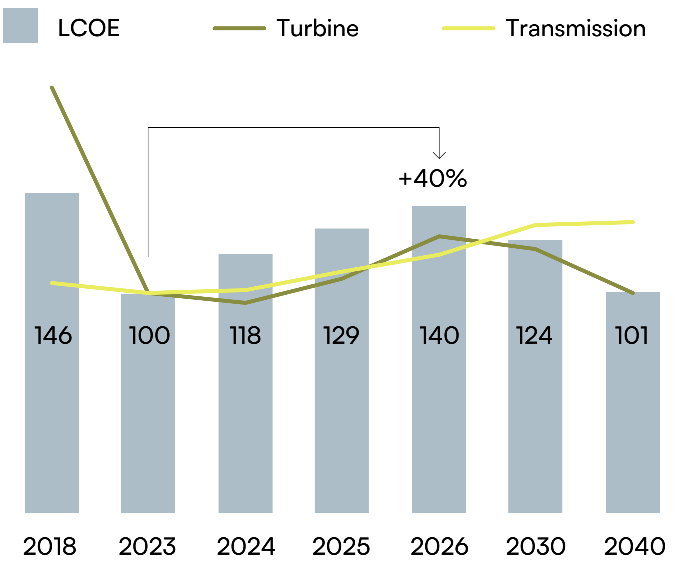


1. *Advanced Stage includes projects financed and under construction expected to be commissioned by 2030.*
2. *Includes offshore wind projects >100MW capacity.*

The Baltic Sea offshore wind pipeline has expanded significantly in recent years with the vast majority of projects at planning or permitting stage. Only a limited share have progressed to financing, construction or commissioning. This highlights a key challenge for the region: moving projects from planning to financing. This is particularly complex given developers must secure revenue certainty, finalize grid connections, manage supply-chain risks, and obtain financing to support project economics. Auctions that do not reflect market costs or where revenue frameworks are unclear hamper the move towards financing. Actions to improve revenue certainty, flexibility in auction design, streamlined permitting and environmental approvals can all support in moving projects further up the development pipeline.

Figure 12
Indexed LCOE, turbine, and transmission cost for Baltic Sea countries (2023 = 100) [1]

€

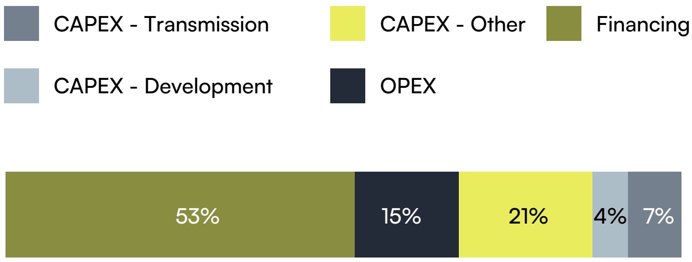


Source: S&P Global Energy

The Levelised cost of electricity for offshore wind has risen by 40% 2023-26, reflecting rising costs associated with bringing new offshore wind projects to market. **Turbine and transmission costs** illustrate two important components of this challenge. Their costs increased owing to continued pressure on manufacturing capacity, installation vessels, and other supply chain segments. However, the increased LCOE cannot be attributed to these two components alone. Growing threats to energy infrastructure are also forcing developers and operators to make additional investments in security measures and monitoring systems, increasing project costs.

Figure 13
LCOE breakdown for Baltic Sea countries, COD 2026[1]

€



Source: S&P Global Energy

The LCOE breakdown provides further insight into the weight of the bottlenecks. **Financing represents the largest component of total costs.** Offshore wind requires substantial upfront investment and long development periods before revenue generation begins, making project economics **highly sensitive to the cost of capital.**

Delays in development, construction, or grid connection do not simply postpone commissioning; they also increase financing costs by extending the period over which capital is committed without generating returns.

Achieving Baltic Sea offshore wind ambitions will require reducing project risk as much as reducing project costs. While financing is the largest component of LCOE, development, transmission and supply-chain constraints ultimately determine the speed, cost and bankability of new projects.

1. *The indexed LCOE represents an average of the Baltic Sea countries for bottom-fixed technologies, based on the S&P Global Energy's 2026 LCOE report. Transmission costs are included in the analysis. The average WACC is equal to 6.8% in 2026. The project's lifetime is assumed to be 30 years.*

Renewable Hydrogen

Since 2023, high production costs, project delays and slow demand growth has weakened sentiment towards renewable hydrogen. It remains significantly more expensive than conventional alternatives, while concerns over industrial competitiveness and energy security have increased across Europe, contributing to a more cautious investment environment.

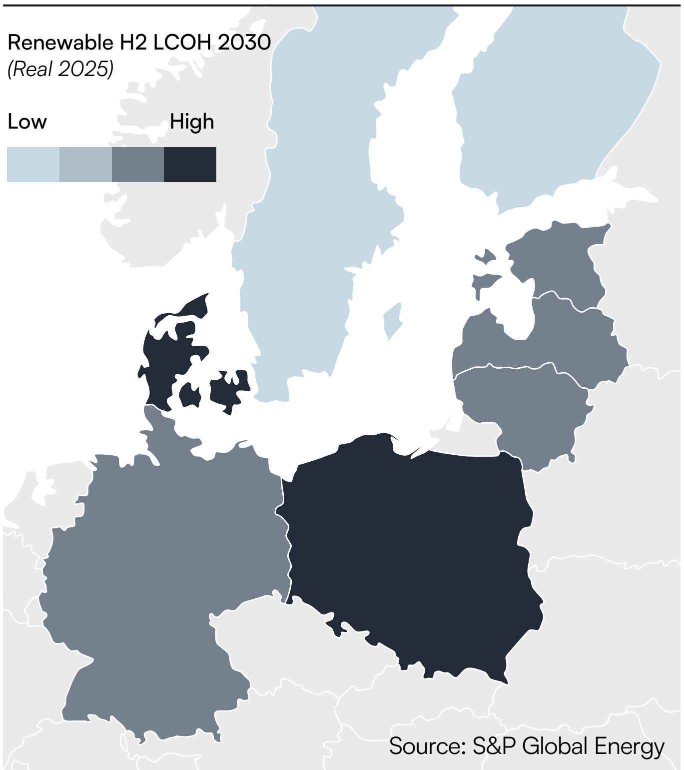
As a result, transposition of RED III remains fragmented across the EU with only a fraction transposing. Even where measures have been implemented, these have often been weaker than targeted.

Figure 14
EU27 countries with transposed REDIII targets

This slow and fragmented adoption of targets has weakened the demand signals needed to support investment in renewable hydrogen, undermining the EUs key demand side mechanism (RED III) from delivering its REPowerEU ambitions[1].

The latest amendment to the EU's renewable energy legislation, RED IV, is expected by the end of 2026. Early indications suggest a more technology-neutral framework, reflecting growing concerns over the cost and competitiveness of renewable hydrogen.

Figure 15
Levelized cost of renewable hydrogen for Baltic States

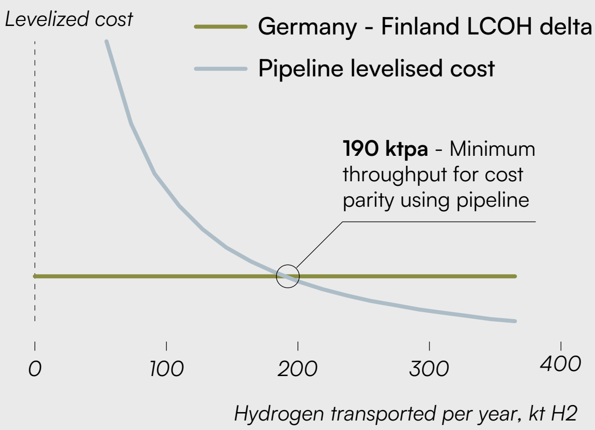


Finland and Sweden are expected to have the lowest LCOH in the Baltic region by 2030, benefiting from abundant hydropower, strong wind resources and high electrolyser utilization rates. By comparison, production costs are anticipated to be higher in Germany, Poland, creating an opportunity for lower-cost Nordic hydrogen exports2.

Leveraging a €1-3.5/kg cost differential between Baltic countries could deliver significant cost savings for hydrogen and hydrogen--derivative supply.

CASE STUDY

Figure 16
Finland to Germany H2 pipeline volumes threshold[3]



S&P analysis indicates that above a throughput threshold of **190 ktpa,** imported renewable hydrogen from Finland achieves a lower landed cost in Germany than domestic production.

Supporting this pathway, the Baltic Sea Hydrogen Collector project is proposing a dedicated hydrogen pipeline of approximately ~1,000 km connecting Finland and Germany. However, the infrastructure has yet to be built and its development will likely require collaboration across market participants, both in project planning and financing.

Establishing a hydrogen pipeline with throughput above the minimum economic threshold could reduce delivered hydrogen costs across Germany and the wider Baltic region supporting policy goals. In addition, it would enhance regional energy security by reducing reliance on ammonia imports from outside Europe amid growing geopolitical and supply chain risks.

3. *REPowerEU set the ambition for EU countries to meet a total domestic production of 10Mt of renewable hydrogen , and a further 10 Mt of imports. 2.LCOH data from SPGE Hydrogen Projects DCF model. 3. Theoretical pipeline modelled as 1,000 km and a 90% utilization rate using the SPGE Hydrogen Transportation model, 2026.*

Carbon Capture, Utilization and Storage (CCUS)

The narrative around CCUS is shifting from solely a climate discussion to a climate-and-industry discussion.

Policymakers increasingly see CCUS as a mechanism to:

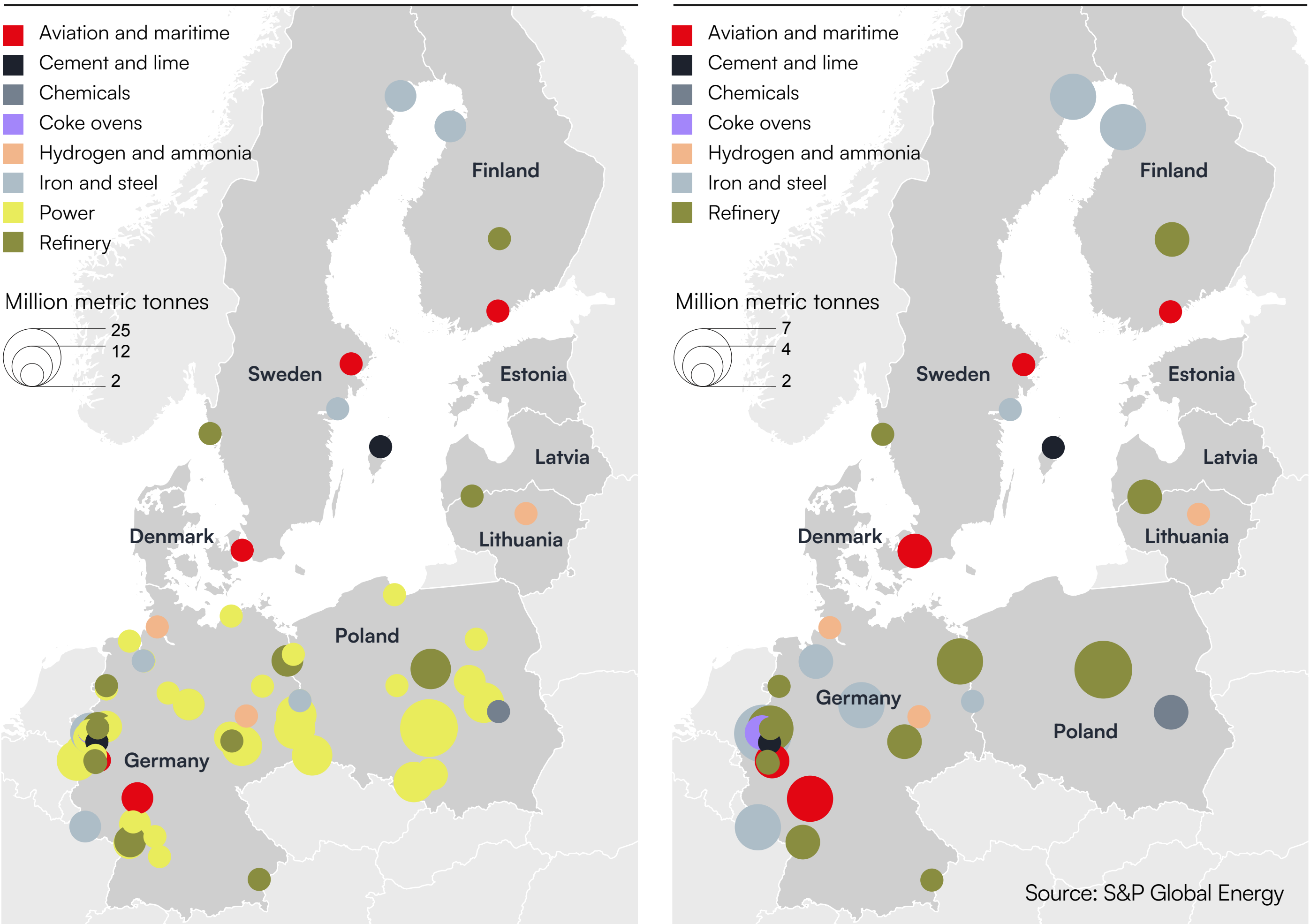
- Preserve energy-intensive industries in Europe.
- Reduce the risk of carbon leakage.
- Support industrial clusters and manufacturing jobs
- Create a new CO_2 transport and storage industry.

The EC Industrial Carbon Management Strategy and Net Zero industry Act (NZIA) have provided the framework and targets for CCUS development. The Baltic Sea can be a significant enabler to meeting the NZIA target of injecting 50 million tonnes of CO_2 by 2030 if storage capacity can be identified and infrastructure can be co-ordinated within the region.

Figure 17

Key emitters 2025 including and excluding power generation

Million tonne CO_2e

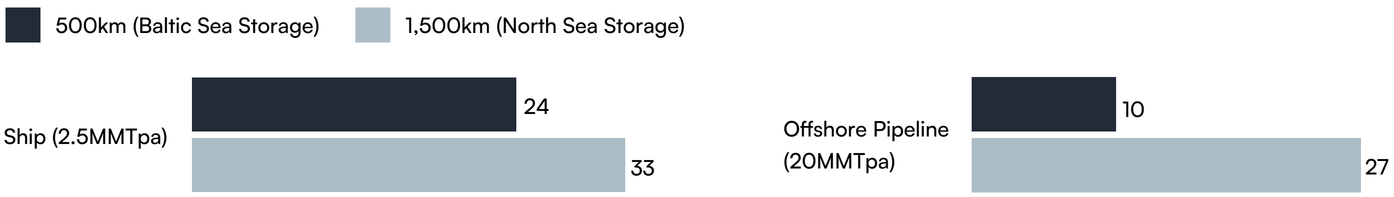


Source: S&P Global Energy

More than 250 million tonnes of emissions[1] in 2025 came from facilities emitting >1 Million tonnes of CO_2 per year. Assuming that power generation is decarbonized, the landscape of heavy emitters is fragmented. Steel, cement, chemicals, and refining are hard to abate due to their inherent reliance on carbon-intensive processes. With Power generation facilities removed, 78 Million Tonnes of CO_2 remain in hard to abate industries where Carbon Capture, Utilization, and Storage (CCUS) presents a solution. Infrastructure for capturing, transporting, and storing CO_2 will need to be coordinated and aligned given the geographical dispersion of hard to abate facilities within the region. If infrastructure can be coordinated, Storage of CO_2 under the Baltic Sea would be an enabler for large scale storage within Europe as envisioned under the Net Zero Industry Act.

Figure 18 | Cost of carbon transportation

2025 €/metric ton CO_2



Source: S&P Global Energy & Zero Emission Platform

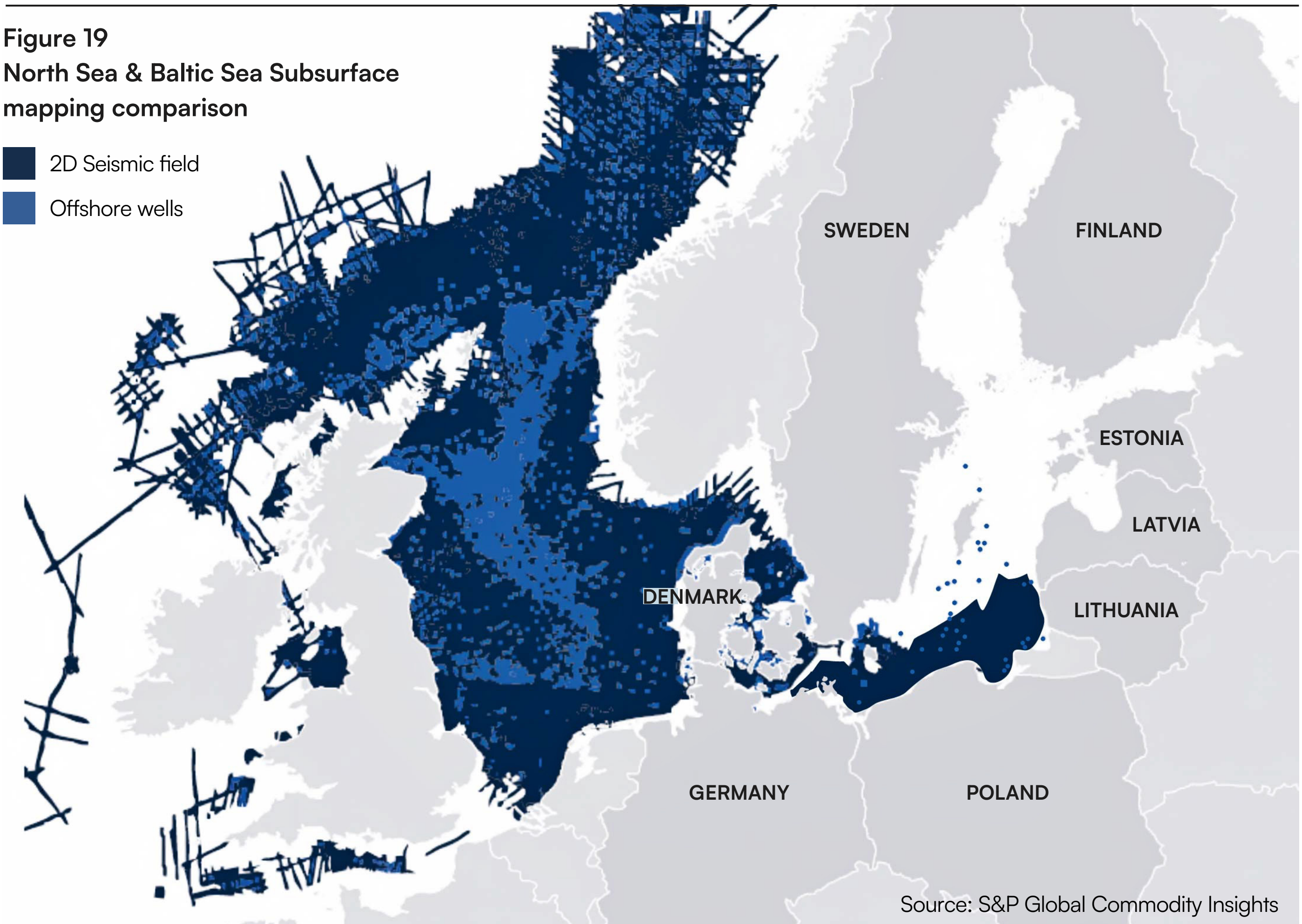
Using 1500 km as a proxy for a shipping route from Gdansk to Bergen (North Sea) and 500km as a proxy for a shipping route from Gdansk to a Baltic Sea storage site, the cost dynamics of carbon transportation have been assessed.

At 2.5 million metric tons per annum (MMTpa), transportation via ship to the North Sea is more expensive than shipping to the Baltic Sea. However, the limited availability of depleted oil and gas wells in the Baltic Sea necessitates the identification of saline aquifers for storage.

When considering a future hub scale of 20 MMTpa, transportation to the Baltic Sea is likely to be significantly cheaper than transportation to the North Sea. In such a scenario, pipelines are likely to emerge as a more cost-effective solution compared to ships. Despite the potentially higher expense of using saline aquifers for storage in the Baltic Sea, transportation and storage could be competitive with the North Sea. Therefore, identifying cost-competitive saline aquifers within the Baltic Sea could make the transportation and storage of carbon under the Baltic Sea a viable option.

Seismic and well data plays a key role in providing clarity on the potential for CO_2 storage. The North Sea is significantly more advanced in this analysis due to decades of oil and gas exploration, which has yielded extensive subsurface data. The Baltic Aurelia project is amongst the developing projects in the region, with Orlen Petrobaltic and partners evaluating two oil and gas fields in the Baltic Sea to potentially store up to 4 million tonnes of CO_2/year under the Baltic Sea. Collaboration around the region on projects such as this will be critical to supporting the region's decarbonization.

Figure 19
North Sea & Baltic Sea Subsurface mapping comparison



Source: S&P Global Commodity Insights

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