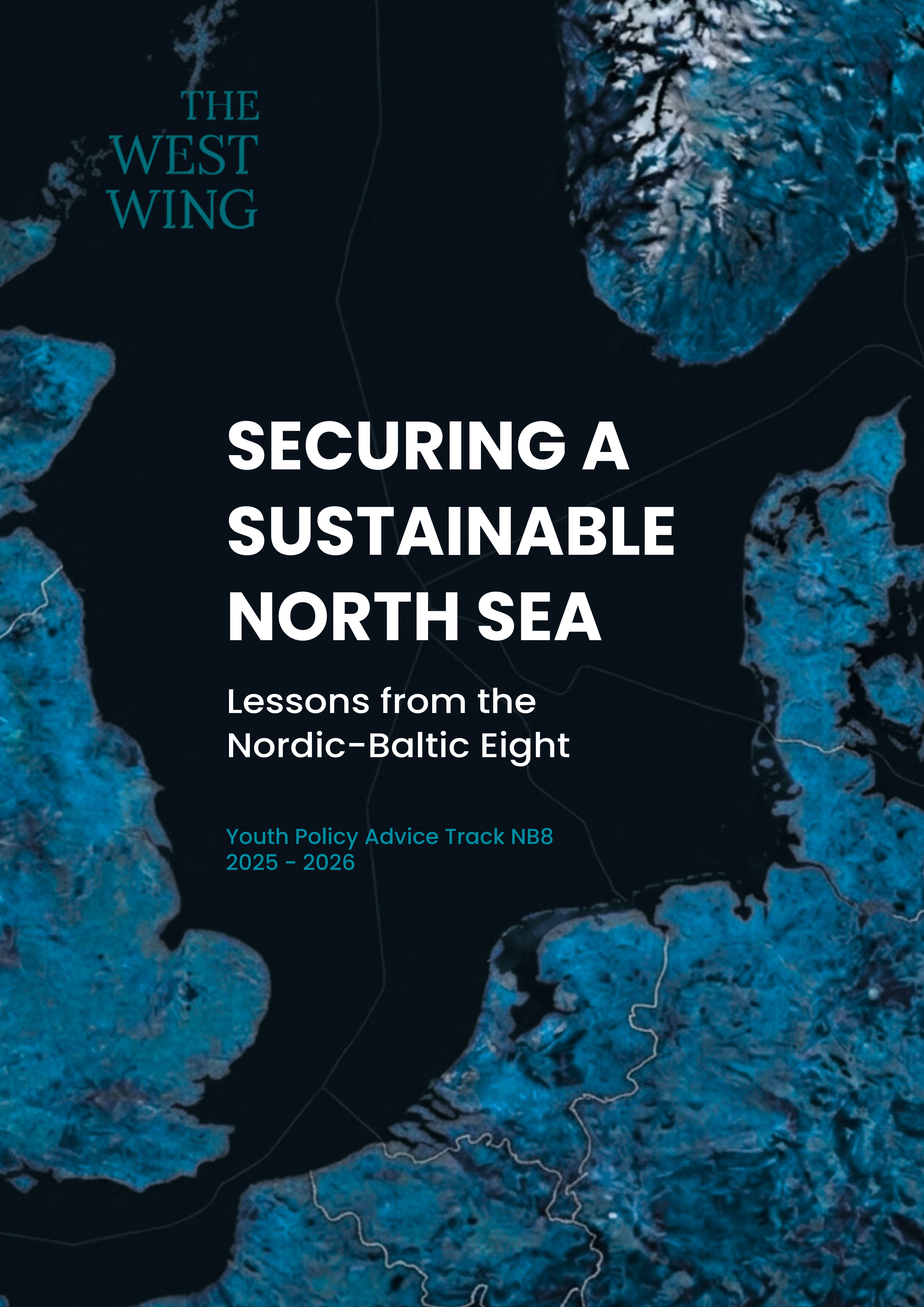

THE WEST WING

SECURING A SUSTAINABLE NORTH SEA

Lessons from the Nordic-Baltic Eight

Youth Policy Advice Track NB8
2025 - 2026

Executive Summary

The North Sea lies at the core of Dutch prosperity, energy supply, and security, but is under increasing strain from geopolitical tensions, environmental pressure, and intensifying use.

Russian shadow fleet tankers pass the Dutch coast daily, posing risks to critical infrastructure and the environment. Meanwhile, marine ecosystems continue to degrade and the offshore energy transition is slowed by technical, financial and regulatory bottlenecks.

Taken together, these challenges pose significant strategic risks to Dutch security, sustainability goals, and economic resilience; risks that the Dutch government has also recognised as requiring further policy attention. However, current Dutch governance structures are too fragmented to respond effectively, with overlapping responsibilities, poor coordination, and limited integration across policy domains.

This report addresses these pressures by looking to the Nordic-Baltic Eight (NB8), whose comparable challenges in the Baltic Sea make the region a useful case study for the Netherlands. Drawing on expert interviews and extensive literature analysis, the report proposes four recommendations for a more integrated approach to North Sea policy:

1. Improve monitoring at critical points in the North Sea through reformed public-private cooperation and investments in new technologies. Focus should be on intersections between critical infrastructure, wind parks, Marine Protected Areas, and zones where vessels routinely disable AIS transponders. The Netherlands should follow Denmark and Norway in deploying (under)water drones for this purpose.

2. Develop a North Sea Energy Island in cooperation with neighbouring countries. Denmark's Bornholm Energy Island demonstrates how such infrastructure can support cross-border energy integration, strengthen offshore resilience, and serve as a maritime surveillance platform.

3. Adopt a joint "one incident, one response" approach to marine and shoreline incidents, designating a lead authority and pre-agreed cross-agency roles before incidents occur. The HELCOM-coordinated BALEX exercises in the Baltic Sea illustrate the value of regular joint preparedness mechanisms.

4. Involve private stakeholders in maritime monitoring and crisis management, in particular through partnerships with fishing companies. Infrastructure operators and fishers can contribute to maritime awareness and early warning systems. In several NB8 countries, actors already active at sea play a more integrated role in reporting suspicious activity and supporting monitoring efforts.

Together, these measures will make North Sea policy more coherent, resilient, and capable of integrating security and sustainability objectives simultaneously.

Preface

The West Wing is the official youth think tank of and for the Dutch Ministry of Foreign Affairs. We advise the Ministry on various areas of Dutch foreign policy. Founded in 2015, The West Wing has grown significantly in recent years. What began as a think tank for the Western Hemisphere Directorate (hence the name 'The West Wing') has now grown into a think tank for the entire ministry. Moreover, we now actively collaborate with the *Adviesraad Internationale Vraagstukken* (Advisory Council on International Affairs).

The West Wing consists of a carefully selected group of around 60 young professionals and students from diverse academic and professional backgrounds. Each year, a new cohort volunteers to help make the voice of the younger generation heard in Dutch foreign policy.

This year, the Dutch Embassies in the Nordic-Baltic Eight (NB8) region tasked The West Wing with a question on North Sea policy, using the NB8 region as its central point of departure: how can the Netherlands better integrate security and sustainability in the North Sea, using lessons from the NB8-approach in the Baltic Sea?

The report aims to provide Dutch policymakers and public actors involved in North Sea governance with recommendations for a future-proof North Sea policy that is both secure and sustainable. The research combines expert interviews with extensive analysis of news and literature, as well as governance structures in both regions.

This report was written by the following policy advisors from The West Wing Think Tank: Abel van Beest, Duco Dijkema, Else Klein Ikkink, Friso van Aken, Julian Lambriex, Konstantijn Rondhuis, Lalaine Jansen, Raphaël Dobbelstein, Romeo Haitsma, Saimi Bouckaert, Sjoerd van der Lugt, Soraya Lamochi Roozalipour & Susanna Koppe.

This report does not represent the views of the Ministry of Foreign Affairs nor the interviewees. This concerns an external advisory report.

The West Wing

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Securing a Sustainable North Sea: Lessons from the Nordic-Baltic Eight

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Introducing Track NB8

A note from the track leader

If the past 9 months have taught me one thing, it is that the challenges facing the North Sea are deeply multifaceted and interlinked, involving a wide range of actors and conflicting interests. All in all, a complex (sea) beast. As such, the process leading up to this report has been far from straightforward or easy. However, thanks to all people involved, I believe we managed to bring structure into this complexity and turn it into a report I am proud to present. I would therefore like to express my sincere gratitude to everyone who contributed to this report.

First of all, I would like to thank the 12 track members whom I had the pleasure of guiding as trackleader. For me, it was the combination of your curiosity and hard work, together with all the informal moments and shared laughter, that made this year both truly inspiring and fun. Your diverse academic and professional backgrounds were vital for tackling this topic and taught me new perspectives. From marine resource management to history, and from hydraulic engineering to (international) law, your different areas of expertise gradually came together in a shared understanding of the North Sea and its many challenges.

During our brainstorm sessions, I witnessed how you cooperated, challenged one another, and built on each other's ideas, forming a strong and supportive group along the way. I hope you look back on this year with new friendships, new perspectives, and a report that reflects both your own hard work and a collective effort you can all be proud of.

Secondly, I would like to express my gratitude to the seven Embassies that presented us with this complex, yet highly relevant policy question. Having such a diplomatic network at our disposal offered us unique opportunities and insights throughout the research process. In particular, I would like to thank Hannah Pannwitz for her guidance, practical tips, critical reflections, and willingness to think along at every stage. Thank you all for your involvement and support.

Next, I want to thank all the experts who were willing to take part in our interviews. From the Netherlands, the NB8 region, and beyond, you provided us with new directions to explore and highly valuable perspectives, helping us to grasp the complexities of the North Sea and Baltic Sea. After each interview, the group was left with fresh ideas, inspiration and energy that helped shape and strengthen this report. On behalf of all the track members, thank you for your participation.

Lastly, I would like to turn to you, the reader. We hope our research and recommendations offer concrete, actionable ideas for a future-proof, secure, and sustainable North Sea, and in doing so, contribute to taming this complex sea beast.

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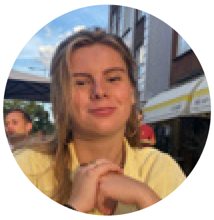

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The North Sea lies at the heart of Dutch history.

For centuries, it has been a source of fishing, trade, energy, and security. Today, the Port of Rotterdam handles roughly twelve percent of Europe's seaborne trade. Offshore wind is central to the Netherlands' energy transition, while the seabed carries data cables and gas pipelines serving much of Northwest Europe.

Yet the North Sea is facing growing security challenges, including those posed by the Russian shadow fleet. The fleet's operations also create significant environmental risks, putting further pressure on an already fragile ecosystem, as illustrated in a major report by OSPAR (2023) and the 2024 documentary *De Wilde Noordzee*.[1]

The accumulation of interests in the North Sea makes comprehensive and effective governance difficult to achieve. Jurisdictions overlap, mandates are divided across national and international bodies, and the institutional architecture was designed for a quieter geopolitical era.

The 2026 Hamburg Declaration reflects a growing awareness among North Sea states of this gap. The effective protection of offshore energy infrastructure, critical subsea assets and the marine environment requires innovative and integrated solutions.

The Baltic Sea offers a useful comparison. Like the North Sea, it faces converging military activity, energy infrastructure, dense shipping and ecological strain. However, eight key surrounding states — the Nordic-Baltic 8 (NB8), comprising Estonia, Latvia, Lithuania, Finland, Sweden, Norway, Denmark and Iceland — have developed more active governance structures to manage these pressures.

The Helsinki Convention (HELCOM), for instance, coordinates monitoring, shared standards and incident response. The NB8 operates as a meso-regional network: smaller and more aligned than broader frameworks, and thus able to act quickly.

The Dutch government is increasingly engaged with the Baltic Sea region and the NB8 countries, as evidenced by state visits, green shipping corridor agreements, and growing alignment on energy and security dossiers.[2] Yet a key question for Dutch embassies remains: what can the Netherlands learn from this region? Which policies have proven effective, and could they apply to Dutch North Sea governance? This report seeks to answer these questions.

Ultimately, this report addresses the following research question: *How can the Netherlands integrate security and sustainability in the North Sea, using lessons from the NB8-approach in the Baltic Sea?*

The report proceeds in two stages. First, it describes four key challenges for the Dutch government — monitoring and control, protection of critical infrastructure, ecological pressures, and the offshore energy transition — drawing parallels with the Baltic Sea where relevant. Second, it presents four concrete policy recommendations, supported by case studies from the NB8 countries. These recommendations draw on semi-structured expert interviews, analysis of news and academic research, and a structured comparison of governance arrangements in both sea regions.

While the North Sea and Baltic Sea differ in geography and history, both face rising hybrid threat activity, pressure on subsea assets, and intensifying spatial competition. The NB8 countries have developed concrete responses to these challenges, offering the Netherlands practical reference points for shaping its own governance approach.

How do the North Sea & Baltic Sea differ?

Although the North Sea and Baltic Sea are comparable in many respects, there are key differences in their geographic setting and maritime use.

The Baltic Sea is a relatively enclosed basin, connected to the North Sea only through the narrow Danish Straits. This limited exchange with the open ocean increases its environmental sensitivity, and creates a more contained maritime space that is easier to oversee.

The Baltic Sea region is also characterised by numerous islands, which shape shipping routes and geopolitical strategic positioning.[3] Moreover, the Baltic Sea is generally shallower, meaning that subsea infrastructure is more exposed and therefore more vulnerable.

By contrast, the North Sea is an open sea directly connected to the Atlantic Ocean, with high exposure to maritime traffic and strong competition for space from energy infrastructure, fisheries, and transport corridors. As one of the most intensively used sea basins in the world, it plays a central role in European energy systems and trade.[4]

Both seas have dynamic seabed conditions, meaning that the physical environment in which offshore infrastructure operates is subject to change over time.[5] These changes in the seabed can lead to burial, exposure, or mechanical damage of subsea critical infrastructure, such as cables and pipelines.

How is the North Sea governed?

The North Sea is governed by multiple institutions with overlapping mandates across enforcement, ecology, infrastructure protection, and energy.

Organisations and platforms such as EMSA, OSPAR, the Joint Expeditionary Force, and IDON — alongside numerous ministries and nearly 250 other bodies — share responsibilities that are rarely clearly delineated.

The result is a governance landscape in which no single body holds comprehensive authority, and where coordination across sectors and national boundaries remains difficult.

Interviews conducted for this report indicate that practitioners view fragmented mandates and unclear responsibilities as among the most significant barriers to effective maritime governance in the region.

For a visualisation of this governance overlap, please see the matrices on pages 17 and 25.

What really is the Nordic-Baltic 8? And why can we learn from it?

The NB8 is often described as if it were a formal organisation. In reality, it is something looser but highly functional: a flexible network of eight countries that cooperate through overlapping formats rather than a single institutional structure.

There is no treaty, secretariat or binding decision-making. Instead, the NB8 operates through regular consultations between heads of government, foreign ministers, senior officials and sectoral experts. Its tradition of alignment and trust allows members to coordinate positions quickly, particularly on security, energy and regional stability. This often happens ahead of discussions in larger frameworks such as the EU or NATO.

Since Russia's 2022 invasion of Ukraine, the platform's importance has grown considerably. Coordinated governance, public-private cooperation, security, and sustainable innovation have become its defining pillars.[6] In this sense, the NB8 is less a single mechanism than a habit of cooperation — a meso-regional layer between bilateral ties and broader multilateral institutions.

Governance in the NB8

Within the NB8, coordination rotates annually among the member states, with one country taking the lead in setting priorities, organising meetings and ensuring continuity across initiatives. This rotating role is light and facilitative rather than directive. Estonia holds the NB8 chairmanship in 2026.

The NB8 serves as an umbrella for multiple, partly overlapping forms of cooperation. Some are well-established regional frameworks. The Nordic Council and Nordic Council of Ministers underpin political coordination among the Nordic countries, as the Baltic Assembly and Baltic Council of Ministers do among the three Baltic states.[7]

Other frameworks are more flexible. The Council of the Baltic Sea States also includes Poland, Germany, and the EU. HELCOM drives joint environmental governance in the Baltic Sea and still includes Russia. On the security side, cooperation increasingly links into NATO structures, alongside regional initiatives such as NORDEFCO.

For the Netherlands, the value lies as much in this practical experience as in the format itself: how member states monitor and protect subsea infrastructure, balance ecological and economic pressures, and coordinate responses to hybrid threats. Translating such lessons to the North Sea context may prove just as important as understanding the NB8 as a model of cooperation.

The platform's roots go back to 1991. Following the Soviet collapse, the Baltic states pivoted westward and Nordic countries were among the strongest advocates of their integration.[8] Formal cooperation developed through the 1990s, culminating in the "Nordic-Baltic Eight" name adopted at a ministerial meeting in Denmark in 2000.[9] Security dialogue followed in 2003 with the establishment of e-PINE (Enhanced Partnership in Northern Europe).[10]

Weak enforcement, vulnerable infrastructure, ecological strain, and a lagging offshore energy transition.

Key Challenges in the North Sea

Key Challenges

This chapter discusses four key challenges in the North Sea that we have identified as particularly pressing for the Netherlands. They were selected because of the strategic risks they pose to Dutch security, economic resilience, and sustainability objectives, and because all four involve complex governance challenges that the Dutch government has yet to resolve. The following sections describe each challenge in detail, including their underlying causes and associated strategic risks

Monitoring and control

Current monitoring and control mechanisms in the North Sea are insufficient to identify and respond to high-risk and non-compliant maritime activity. Activity of the Russian shadow fleet and illegal, unreported and unregulated fishing illustrate these gaps.

Protecting critical infrastructure

The North Sea hosts dense networks of critical infrastructure — including pipelines, subsea cables and renewable energy assets — that are vital to Dutch energy supply and European connectivity. Protecting this infrastructure is crucial, especially given growing risks of sabotage and climate-related stress.

Ecological pressures

The ecological health of the North Sea is critical for biodiversity, food security, and economic and societal stability. However, growing environmental pressures, ineffective MPAs, and expanding offshore infrastructure undermine marine protection.

Offshore energy transition

The North Sea is set to become the world's largest energy hub, contributing to climate neutrality, energy resilience, affordability, and industrial competitiveness. The Netherlands seeks a resilient, affordable and sustainable energy system, contributing to its energy autonomy. Yet delivering on this ambition is complicated by a range of technical, ecological, and security challenges.

"Everything starts with situational awareness: do I see what's out there?"

Major General Netherlands Marine Corps Kees Schellens, programme director *Schaalbare Krijgsmacht*

Monitoring and Control

Current monitoring and control mechanisms in the North Sea are insufficient to identify and respond to high-risk and non-compliant maritime activity. Activity of the Russian shadow fleet and illegal, unreported and unregulated (IUU) fishing illustrate these gaps.

Problem

The Russian shadow fleet

Oil tankers of the Russian shadow fleet pass the Dutch coast daily — over 1300 times in 2023 and 2024 — posing security and environmental risks.[11]

Security concerns arise for two main reasons. First, the shadow fleet enables large-scale sanctions evasion, allowing Russia to continue exporting oil and financing its war against Ukraine. This ongoing conflict on the European continent directly affects European and Dutch security. Second, in the context of growing "grey zone" tensions between Russia and NATO, the shadow fleet can facilitate hybrid threats. For example, recent research has found a correlation between suspicious shadow fleet activity and drone incidents near military bases in Europe.[12] Moreover, the fleet's frequent deactivation of the Automated Identification System (AIS) allows ships to evade surveys and inspections, and increases navigational risk for other vessels, raising the likelihood of maritime accidents.[13]

Shadow fleet operations also carry major environmental risks. Many of these tankers are ageing vessels that conduct ship-to-ship oil transfers, posing a significant risk of oil spills in the North Sea. They often lack marine liability protection and indemnity (P&I) insurance which covers oil spills, potentially leaving the Netherlands with the costs of environmental damages.[14] By May 2025, over 50 incidents involving the Russian shadow fleet had been recorded worldwide, including fires, engine failures, collisions and oil spills.[15]

IUU fishing

Research demonstrates that different forms of IUU fishing occur in the North Sea. For example, the use of illegally small mesh in fishing nets is widespread, and increases whenever nautical patrol declines.[16] Other forms of IUU fishing in the North Sea include illegal discards, AIS disabling when fishing in Marine Protected Areas (MPAs) such as the Dogger Bank, and illegal bottom trawling, which involves dragging heavy nets along the seabed.[17] Monitoring and enforcement are currently insufficient to tackle these problems.[18]

IUU fishing further threatens the sustainability of marine ecosystems that are already under significant pressure. Bottom trawling is especially destructive for marine habitats and species.[19] Furthermore, IUU fishing undermines common fishery policies and international ocean governance efforts. Weak flag state control over vessels, reflagging practices, and the deliberate disabling of AIS are linked to the occurrence of IUU fishing practices, which complicates the control and regulation needed to address this issue effectively.[20]

Key constraints

Shadow fleet

Monitoring and control of shadow fleet activity faces several interconnected constraints. Vessels routinely employ misleading techniques such as reflagging and deliberate AIS-deactivation to avoid detection. Their limited port calls further reduce enforcement opportunities, leaving the Netherlands largely dependent on coordinated EU sanctions as a countermeasure.[21] Monitoring capacity remains limited more broadly, compounded by diverging interpretations of UNCLOS regarding coastal states' right to inspect vessels or deny passage. Finally, Russian military escorts of shadow fleet vessels render stricter enforcement strategically sensitive.

IUU fishing

Enforcement against illegal, unreported, and unregulated fishing is hampered by weak flag state control over vessels, which allows similar evasion techniques — including reflagging and AIS-deactivation — to go unchecked. These challenges are further compounded by limited domestic maritime enforcement capacity within the coast guard.

Many tankers in the Russian shadow fleet are old and lack proper insurance, posing environmental risks.

Strategic risks

! Maritime insecurity and hybrid threats

Limited situational awareness and enforcement in the North Sea enable shadow fleet activity that undermines sanctions, increases navigational risks, and creates opportunities for hybrid threats, including harm to critical subsea infrastructure.

! Environmental and financial risks

Ageing, high-risk vessels operating without adequate oversight or insurance increase the likelihood of oil spills, with severe consequences for marine ecosystems, fisheries, and coastal habitats, while potentially exposing the Netherlands to substantial clean-up costs.

! Irreversible damage to marine life

Persistent IUU fishing and weak enforcement accelerate the depletion of fish stocks, damage marine ecosystems, and undermine sustainable fisheries management and international governance efforts.

Stakeholder Matrix

Fig. 1) Matrix of stakeholders, categorised by type of organisation, relative power level, and interest in North Sea monitoring and control. For full explanation, see appendix.

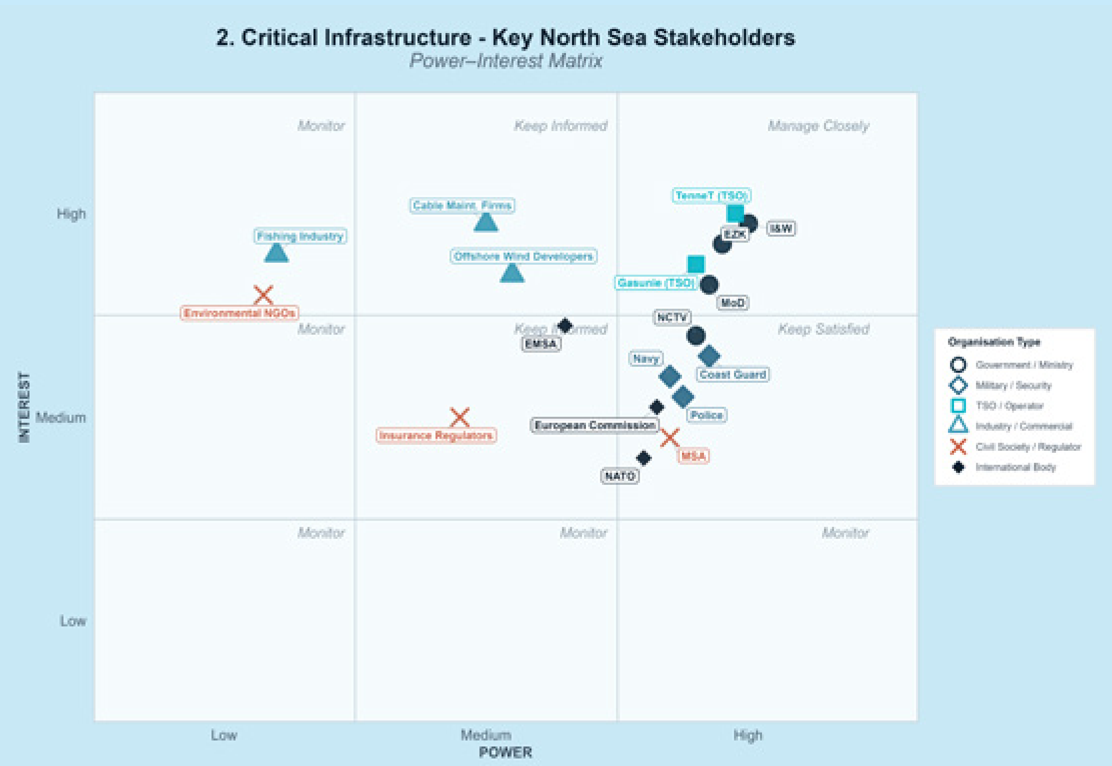


Fig. 2) Matrix of stakeholders, categorised by type of organisation, relative power level, and interest in North Sea critical infrastructure. For full explanation, see appendix.

Protecting Critical Infrastructure

The North Sea hosts dense networks of critical infrastructure — including pipelines, subsea cables, and renewable energy assets — vital to Dutch energy supply and European connectivity. Protecting this infrastructure is increasingly urgent given growing risks of sabotage and climate-related stress.[22]

Problem

Hybrid sabotage risks

The North Sea faces increasing hybrid threats targeting subsea infrastructure. The NCTV has warned that Russia is actively identifying critical maritime infrastructure in the Dutch North Sea and conducting preparatory activities for disruption and sabotage.[23] Physical damage can have severe consequences: subsea cables carry approximately 99% of intercontinental internet traffic and transfer offshore-generated electricity to the national grid.[24]

Not all infrastructure faces equal risk. Energy cables and fuel pipelines are especially vulnerable due to spatial concentration and limited redundancy; internet cables benefit from greater redundancy.[25]

Climate-related stress

Climate change adds further pressure on multiple fronts. More frequent extreme weather accelerates structural fatigue in offshore installations.[26] Rising temperatures, ocean acidification, and changing salinity intensify corrosion of cables, pipelines, and foundations.[27] Moreover, shifting seabed sediment patterns can bury, expose, or mechanically damage subsea assets.[28]

Increased dependency on offshore energy

The Dutch energy transition is driving rapid expansion of offshore infrastructure: wind farms, interconnectors, and future hydrogen networks.[29] This increases dependency on a concentrated set of assets whose disruption could have severe consequences if not adequately managed.

Key constraints

Evolving legal framework and designation gaps

Infrastructure protection operates within a rapidly evolving legal framework. At EU level, the Critical Entities Resilience Directive (CER) strengthens the physical and operational resilience of essential service providers, while the NIS2 Directive imposes cybersecurity obligations on critical sectors. In the Netherlands, the CER is being transposed through the *Wet weerbaarheid kritieke entiteiten* (*Wwke*), adopted by the Tweede Kamer on 15 April 2026 and pending Senate approval, alongside the *Cyberbeveiligingswet* for NIS2.

A key ambiguity persists: it remains unclear whether offshore wind parks and associated grid infrastructure are explicitly designated as critical infrastructure. Without formal designation, the legal basis for coordinated incident response is uncertain and private operators lack clear resilience obligations.[30] Unlike the Baltic, where critical

"The idea that we could prevent these incidents is a fantasy."

Jan Stockbruegger, expert in maritime safety and security

infrastructure is often state-owned, North Sea infrastructure is predominantly privately operated — making clear designation under the *Wwke* both more important and more complex to realise.

Lack of comprehensive infrastructure mapping

No comprehensive, up-to-date registry of critical subsea assets exists for the Dutch EEZ. Actual cable and pipeline positions frequently deviate from official charts, and data remains dispersed across multiple operators and authorities.[31] The KLIC at Sea project represents an important first step, but remains at an early stage.[32] Without a complete picture of location, ownership, and interdependencies, it is difficult to prioritise monitoring or coordinate effective incident response.

Limited monitoring capacity

Subsea monitoring relies primarily on periodic naval patrols, leaving critical assets exposed between inspections.[33] While Denmark and Norway have deployed Unmanned Surface Vehicles (USVs) and Autonomous Underwater Vehicles (AUVs) for continuous subsea surveillance, the Netherlands has yet to reach comparable capability.[34] The result is significant gaps, particularly in offshore zones where energy and data infrastructure is most concentrated.

Underdeveloped public-private cooperation

There is a persistent lack of shared watchlists, intelligence-sharing protocols, and joint standard operating procedures between military, civilian, and private actors. Integrating private infrastructure operators into national security frameworks is both more important and institutionally more complex in the North Sea than in the Baltic, where state ownership simplifies coordination.[35]

Operational constraints

Effective infrastructure protection requires not only surveillance but the capacity to intervene and support asset recovery.[36] Coast guard and naval enforcement capacity, as well as repair facilities, currently fall short of what credible protection demands.

Strategic risks

! Cascading system failure

The concentration of energy cables around offshore wind parks and the limited redundancy of fuel pipelines mean that disrupting a single asset can trigger cascading effects across interconnected systems — a risk amplified by the absence of comprehensive infrastructure mapping.

! Governance and responsibility gaps

Ambiguity over the classification of offshore energy assets as critical infrastructure, combined with fragmented mandates and underdeveloped public-private cooperation, creates uncertainty about who is responsible in the event of an incident. The *Wwke* and CER provide the legal architecture, but their effectiveness depends on explicit designation and operationalisation of private-sector obligations.

! Investor uncertainty

Insufficient protection and unclear legal responsibilities increase perceived investment risk in offshore wind, hydrogen, and interconnector projects — compounded by growing hybrid threat exposure and climate-related disruption, both of which undermine the long-term business case for offshore investment.

Ecological Pressures

The ecological health of the North Sea is critical for biodiversity, food security, and economic and societal stability. However, growing environmental pressures, ineffective MPAs, and expanding offshore infrastructure undermine marine protection.

Problem

The North Sea supports diverse ecosystems, including benthic habitats, shellfish reefs, and key feeding and breeding grounds for marine species.[37] These ecosystems provide essential services such as food production, climate regulation, and coastal protection.[38]

However, the ecological carrying capacity of the North Sea is under significant pressure. Climate change alters water temperatures, while human activities such as fishing, sand extraction, shipping, and pollution have degraded habitats.[39] Overfishing threatens fish stocks and food security, and bottom-disturbing fishing methods cause further damage to marine habitats and species.[40]

Nutrient pollution from agriculture and wastewater contributes to eutrophication, and hazardous substances enter the marine environment through rivers, industry, and shipping.[41] These combined pressures complicate effective marine protection. As the Netherlands benefits from a healthy North Sea, ecosystem protection and restoration is a policy priority, as outlined in the Dutch North Sea Agreement which aims to safeguard marine health while balancing the demands of the energy transition and fisheries sector.[42]

Key constraints

Although there are many causes underlying the North Sea's ecosystem degradation, this policy advice focuses on three in particular.

Limited effectiveness and weak enforcement of MPAs

To address environmental pressures, the Netherlands has designated several MPAs (*Fig. 3*) under the Natura 2000 network, covering around 26% of the Dutch North Sea.[43] These contribute to

5%

Despite 26% of the Dutch North Sea being designated as Marine Protected Area, only 5% is fully protected from the most harmful bottom-impacting fisheries.

broader EU biodiversity goals and the UN Biodiversity Agreement, which aims to protect 30% of marine areas by 2030.[44]

In practice, however, protection remains limited. Across Europe, many MPAs fail to prevent destructive activities, with over 80% only minimally regulating human use.[45] In the Netherlands, despite 26% of the North Sea being designated as MPA, only 5% is fully protected from the most harmful bottom-impacting fisheries.[46]

Beyond inadequate regulations, MPA effectiveness is further undermined by insufficient monitoring and weak enforcement. Vessels may circumvent restrictions by disabling tracking systems such as AIS when entering protected areas, enabling illegal bottom trawling in ecologically sensitive zones like the Dogger Bank.[47] As a result, MPA designations do not translate into effective ecological protection.

Environmental risks from offshore energy expansion

The expansion of offshore wind farms introduces additional ecological pressures. Construction generates underwater noise that disturbs marine mammals, while turbines pose collision risks for birds and bats.[48] Offshore infrastructure also alters seabed conditions by introducing artificial structures that affect benthic ecosystems.

Although mitigation and compensation measures are increasingly included in offshore energy projects, current incentives are insufficient to fully offset ecological risks. The cumulative impacts of wind development across the North Sea also remain poorly understood, partly due to limited cross-border knowledge exchange, complicating the development of effective mitigation measures.[49]

Insufficient international coordination for environmental disaster preparedness

Growing maritime activity, including by shadow fleet tankers, increases the risk of environmental disasters such as oil spills. As marine pollution spreads across borders, incidents can affect multiple coastal states simultaneously, requiring coordinated responses. Cross-border preparedness mechanisms exist but are insufficiently adapted to the North Sea's evolving ecological and security risks.

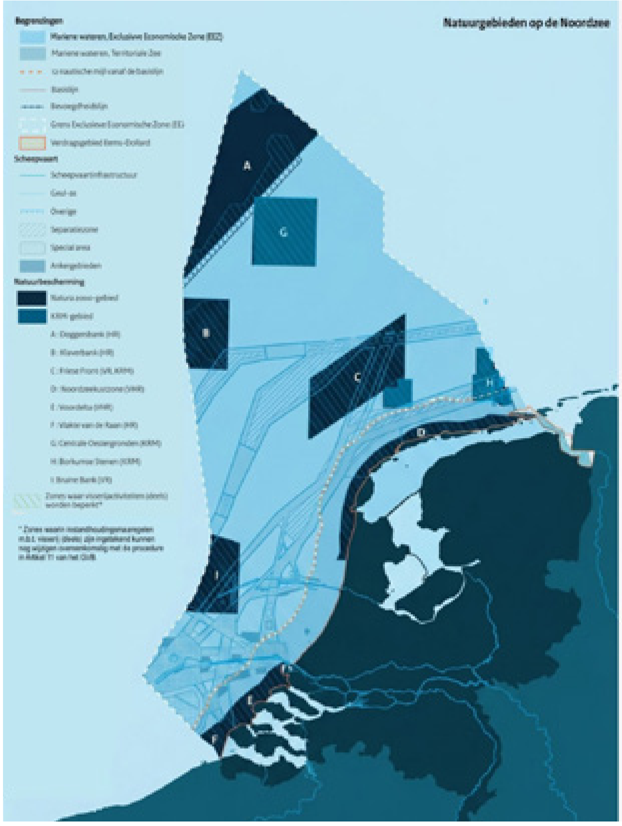


Fig. 3) Natura 2000 areas in the Dutch North Sea [51]

Strategic risks

! Ecosystem degradation and loss of resilience

Continued environmental degradation undermines biodiversity, weakens ecosystems, and reduces the resilience of the North Sea to pressures such as climate change and fisheries.

! Economic and (food) security risks

Declining fish stocks and ecosystem degradation threaten fisheries, food production, and supply chains, affecting societal resilience and geopolitical stability.[50] An ecologically healthy North Sea is critical not only for biodiversity conservation but also for economic and societal security.

! Cross-border environmental crises

Increased high-risk maritime activity and insufficient preparedness raise the likelihood of environmental disasters such as oil spills, with transboundary impacts that reduce regional resilience and security.

Offshore Energy Transition

The North Sea is central to Europe's offshore energy ambitions. Coastal states aim to transform the region into the world's largest energy hub, contributing to climate neutrality, energy resilience, affordability, and industrial competitiveness.[52] The Netherlands in particular seeks a resilient, affordable and sustainable energy system with a high degree of energy autonomy.[53] Yet delivering on this ambition is increasingly complicated by a range of technical, ecological, and security challenges.

Problem

Deteriorating business case of offshore wind

The business case for offshore wind has weakened over the last few years, with recent tender procedures all failing.[54] The root cause is a lack of system integration. Currently, offshore wind farms rely almost exclusively on radial connections, where individual cables link single wind farms directly to national grids. This causes severe onshore grid congestion, as energy can only be redirected to a single national grid that cannot fully absorb peak output and cannot reach other markets.[55]

Effective system integration also requires sector coupling: linking electricity grids with other energy networks such as hydrogen.[56] Converting surplus offshore electricity into green hydrogen via electrolysis offers crucial flexibility, effectively bypassing structural grid bottlenecks.

The Contracts for Difference (CfD) system proposed in the latest coalition agreement may help stabilise energy prices for wind farm developers. CfDs guarantee a pre-agreed "strike price" for electricity: if market prices fall below it, the government pays the difference; if they rise above it, the developer returns the surplus.[57] This reduces financial uncertainty and makes it easier to secure investment in offshore infrastructure.

However, CfDs address the symptom rather than the underlying lack of system integration. Without comprehensive system integration across borders and energy carriers, Europe's offshore energy targets remain technically unfeasible.

CfDs also risk deprioritising innovation in ecological measures.[58] Earlier tender procedures created market incentives for ecological innovation by awarding points to wind farm developers that proposed effective measures to minimise ecological damage. The stronger the proposed measures, the greater the chance of securing the tender. Yet under the current CfD system, ecological criteria are determined in the Wind Farm Site Decisions ("*het kavelbesluit*"). As a result, the government decides which ecological measures must be implemented, leaving less room for market-driven innovation and effectiveness.

Case study

Contracts for Difference in the UK

Between 2010 and 2020, European offshore wind capacity grew from fewer than 5,000 MW to more than 35,000 MW, driven by economies of scale and low-cost capital.[59] Understanding this expansion — and its subsequent stalling as interest rates rose — requires closer examination of Contracts for Difference, with the UK offering the clearest example.

Since introducing CfDs in 2014, the UK has successfully established them as the dominant financial instrument for incentivising sustainable energy projects.[60] Through the government-owned Low Carbon Contracts Company (LCCC), a fixed "strike price" is guaranteed for electricity generators: when the market price exceeds it, generators repay the difference; when it falls below, the LCCC compensates. This reduces market uncertainty and lowers investment risk, driving a substantial acceleration in UK decarbonisation since 2010.

The British CfD model illustrates how public financial guarantees can attract private investment into offshore energy.[61] Applied more broadly across the North Sea, CfDs could support coordinated energy development.

Vulnerability to security and geopolitical risks

Offshore energy infrastructure is increasingly exposed to physical and cyber threats. Like subsea cables and pipelines, offshore installations are vulnerable to sabotage, particularly from Russian actors mapping and potentially targeting the infrastructure.[62] Wind farms also face growing cyber threats, as sub-state actors sponsored by adversary states increasingly target operational technology systems. Disruptions could trigger large-scale power outages.[63]

Strategic vulnerabilities are further exacerbated by dependence on non-EU suppliers for components such as turbines, rare earth materials, cables, and specialised vessels.[64] Concentrating supply chains in a limited number of countries exposes offshore energy systems to geopolitical risks, including trade disruptions and industrial bottlenecks.

Ecological pressure from large-scale offshore expansion

The scale of offshore energy expansion puts increasing pressure on marine ecosystems. By 2050, offshore infrastructure could occupy up to 26% of the Dutch North Sea, making it crucial that ecological impacts are considered in the planning and design of wind parks.[65]

The environmental impacts of offshore wind are also cumulative and transboundary. Marine ecosystems do not follow national borders, meaning expansion cannot be adequately assessed at the level of individual projects.[66] Instead, offshore development contributes to ecosystem-wide pressures across the North Sea, requiring international coordination and monitoring.

Increasing spatial conflicts in the North Sea

The North Sea is intensively used by shipping, fisheries, oil and gas activities, and ecologically sensitive species and habitats. This complicates the designation of offshore wind zones, since location choices must balance affordability against impacts on shipping, nature, fisheries, and other uses.[67] This pressure will intensify as offshore deployment accelerates. National and EU-level plans anticipate installed capacity to rise from 26 gigawatt (GW) to 300 GW by 2050.[68]

The challenge is compounded by the need to move beyond single-use planning. The offshore energy transition increasingly involves not only wind farms but also hydrogen production, CO2 transport and storage, interconnectors, and potentially solar infrastructure. This creates opportunities for spatial synergies, but also adds a layer of complexity to planning and coordination, as different functions must be located and integrated in ways that remain technically and economically feasible.[69]

Key constraints

Lack of system integration

Offshore energy development is held back by insufficient grid capacity: surplus energy produced on very windy days cannot be absorbed by the national electricity grid.[70] This is compounded by a lack of integration between wind energy infrastructure and infrastructure for other energy carriers, including hydrogen, green ammonia, and carbon capture, utilisation and storage (CCUS).

Security vulnerabilities and supply chain dependencies

Resilience is undermined by the exposure of subsea infrastructure to hybrid threats and the weak integration of security measures in offshore energy systems. These operational vulnerabilities are reinforced by structural dependencies on non-EU suppliers for critical minerals and technologies, leaving the energy transition exposed to external disruption.

Fragmented governance and spatial planning

Effective implementation is constrained by limited coordination in maritime spatial planning, which increases the risk of ecological damage and inadequate assessment of cumulative environmental impacts across national borders. Underlying this is a broader tension between economic and ecological uses of offshore space that current governance arrangements have yet to resolve.

Strategic risks

! System inefficiencies and investment stagnation

Lack of system integration and grid capacity risks undermining the economic incentives for offshore wind, slowing down the energy transition.

! Critical infrastructure vulnerability

Exposure to hybrid and cyber threats increases the risk of disruption to offshore energy systems, potentially leading to power failures.

! Lack of strategic autonomy

Dependence on external supply chains weakens Europe's ability to independently scale and secure its energy transition. The EU is currently working on tackling this problem by building better relations with parts of the world where critical raw materials come from, for example through its Global Gateway strategy.

! Ecological degradation and policy trade-offs

Uncoordinated offshore expansion risks cumulative environmental damage, undermining biodiversity and the long-term sustainability of the energy transition.

! Spatial conflicts

Growing competition over maritime space may delay projects and increase costs.

Stakeholder Matrix

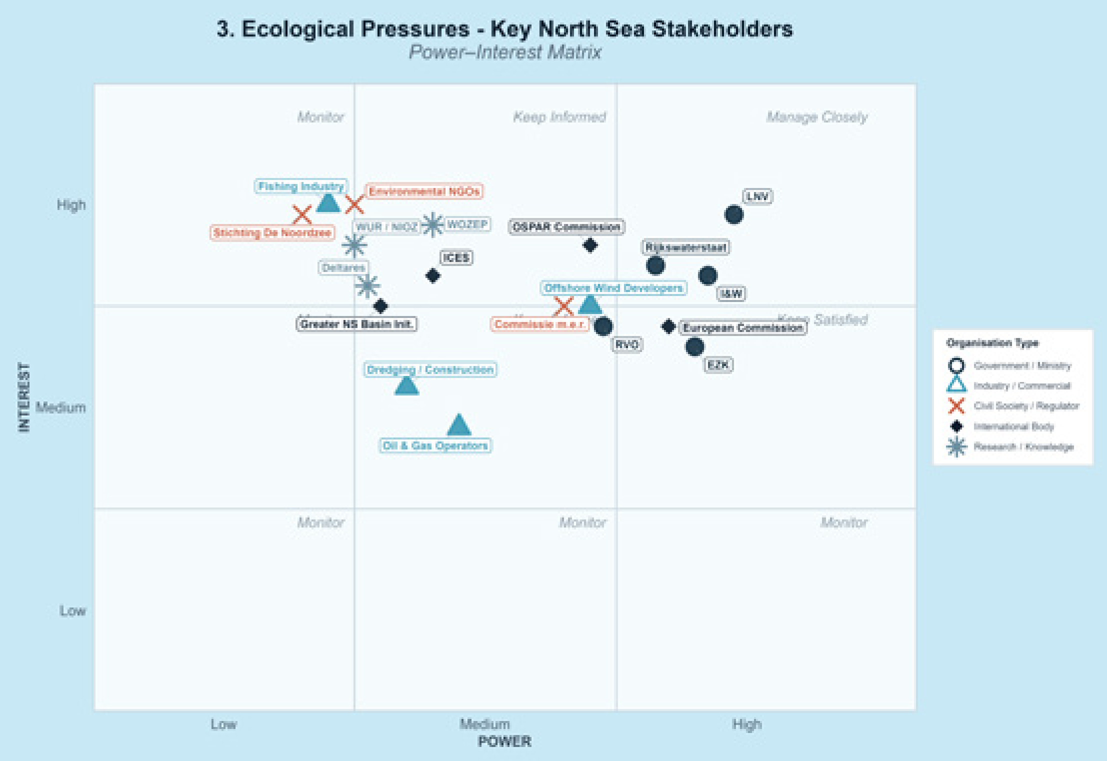


Fig. 4) Matrix of stakeholders, categorised by type of organisation, relative power level, and interest in North Sea ecology. For full explanation, see appendix.

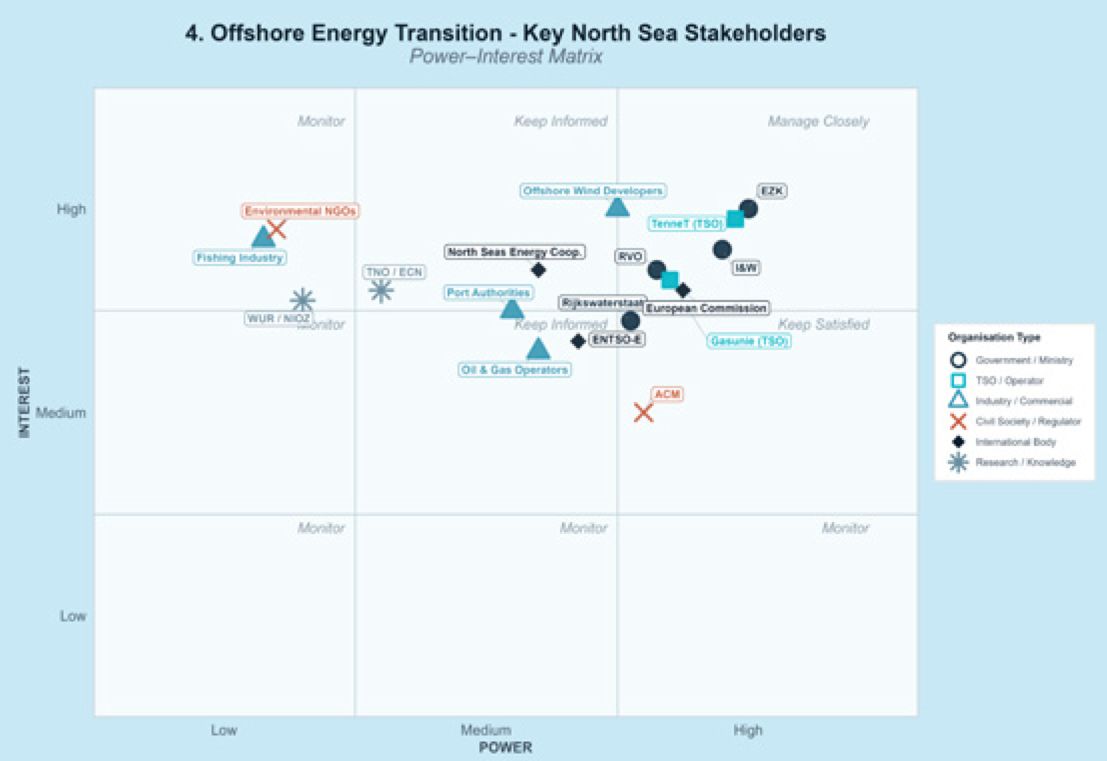


Fig. 5) Matrix of stakeholders, categorised by type of organisation, relative power level, and interest in North Sea offshore energy transition. For full explanation, see appendix.

You cannot protect what you cannot see.

1

Improve monitoring at critical points in the North Sea through reformed public-private cooperation and investments in new technologies.

The Netherlands should...

1

Improve monitoring at critical points in the North Sea — namely, intersections between MPAs, critical infrastructure hubs, and wind parks, as well as areas where suspicious vessels are known to deactivate their AIS. Targeted monitoring can be achieved through reformed public-private relations and procurement, and investments in new technologies such as UUVs and USVs.

Addresses Key Challenges

Focusing on critical points

The Netherlands is failing to effectively monitor and detect suspicious activity in its EEZ and the MPAs within it.[71] Given the scale of these maritime zones, the government should establish clear priorities and focus monitoring efforts on high-risk and high-value areas.[72] We recommend that the Ministries of Defence and of Infrastructure and Water Management (I&W) prioritise locations where critical infrastructure, such as pipelines and electricity cables, overlaps with MPAs.

It is worth noting that some forms of undersea infrastructure are more critical or vulnerable than others. For example, electricity cables may require greater protection than internet cables, as they are more geographically concentrated around offshore wind parks. Gas pipelines are also particularly important, as the consequences of potential disruption or destruction would be significantly greater than in the case of internet cables.[73] These differences should be taken into account when prioritising areas within the North Sea for monitoring and protection.

Reformed public-private collaboration

However, monitoring these designated critical points should not be the responsibility of the Dutch government alone. The Netherlands should develop a stronger public-private cooperation framework inspired by NB8 countries, and Norway in particular.[74] Firstly, private companies should be (legally) encouraged to monitor and secure not only their own infrastructure, but also the surrounding area. Secondly, traditional procurement models should be reformed to include more pre-financing, thereby stimulating domestic innovation.

The Norwegian model

The Norwegian Security Act *Sikkerhetsloven* pushes both public and private entities to protect critical infrastructure and data against security threats. Under this legislation, businesses considered essential to "fundamental national functions" are legally required to cooperate with authorities, conduct risk assessments, and implement strict monitoring and security measures.[75]

The Netherlands is currently developing the Act on Resilience of Critical Entities (*Wwke*), which implements the EU-directive 2022-2557 to involve private parties more actively in securing the North Sea.[76] The Dutch act differs from Norway's law in both purpose and scope - for instance, the Sikkerhetsloven also incorporates government bodies and cyber security, which are covered under different laws in the Netherlands.

In the Netherlands, obligations are largely regulatory and compliance-based, focusing on risk management, reporting, and resilience, with limited emphasis on direct state operational control and integration with intelligence and security services. Norway's *Sikkerhetsloven*, by contrast, is more state-centric and security-driven, allowing for stronger intervention powers and tighter integration with national security services. Dutch legislation should consider an increased security focus, since the current law inadequately reflects current geopolitical threats in the North Sea.[77] As the law has already been adopted by the Parliament, such a revision would be a longer-term initiative.

Fig. 6) Overlapping maps of MPAs and offshore infrastructure show critical points to monitor.

Not all infrastructure faces equal risk: internet cables have more redundancy than energy cables and fuel pipelines.

A comparison of the *Wwke* and *Sikkerhetsloven* reveals five areas where the Dutch act could be strengthened:

1. Under the *Wwke*, companies designated as critical have nine months before their risk assessment obligations begin, whereas the *Sikkerhetsloven* imposes this duty immediately upon designation.[78] While some lead time is reasonable, nine months may be excessive. Additionally, the *Wwke* requires risk assessments only every four years under article 14(3), compared to the more regular cadence under the Sikkerhetsloven.

2. The *Wwke* sets a 24-hour deadline for incident reporting, whereas the Sikkerhetsloven requires reporting without undue delay, imposing a more immediate obligation on operators.

3. The *Sikkerhetsloven* mandates personnel screening for those working with sensitive information, including at private entities. The Dutch *Wwke* does require companies to guard against internal threats, but leaves the manner of doing so largely to the companies themselves.

4. Under section 4-3 of the *Sikkerhetsloven*, companies are required to conduct regular exercises to evaluate the effectiveness of their security measures. The *Wwke*, by contrast, only obliges the responsible ministry to support companies in organising such exercises under article 10(1)(c), stopping short of imposing a legal obligation on companies to conduct them.

5. The *Sikkerhetsloven* distinguishes between three levels of criticality under section 7.2, enabling a more tailored approach to security obligations and helping to clarify which areas warrant priority attention.

Several interviews have indicated that the Nordic countries have a culture characterised by companies' awareness of their responsibilities towards the society as a whole. As a result, private actors cooperate not only during crises, but also in the preventive monitoring of the North Sea and its critical infrastructure — which can strengthen deterrence. Updating the *Wwke* in combination with strengthening governmental-company dialogue will enhance this development, oversight, and resilience of critical entities.

"Procurement rules were designed for a time of peace."

Policy advisor, Ministry of Infrastructure and Water Management

Reshaping procurement

Dutch procurement currently follows a traditional model in which finished products are usually purchased "off-the-shelf", rather than investing early in the development of new technologies. This approach limits the growth of innovative domestic solutions, particularly among smaller technology firms. Existing procurement frameworks are also highly bureaucratic and poorly aligned with rapidly evolving technologies and security needs.

In practice, procurement procedures remain too slow for the pace of modern security threats. Defence procurement through COMMIT follows a three-phase process: announcement, tender, and award. Each phase involves extensive administrative requirements, including conduct statements from Justis, Chamber of Commerce extracts, tax compliance certificates, and notarised declarations, all with strict validity periods. The Ministry also reserves the right to amend timelines without explanation, while no rights can be derived from provisional planning.[79] The Dutch government itself has acknowledged these delays. The Defence Strategy for Industry and Innovation 2025–2029 (D-SII) explicitly refers to a 'Letter to the House of Representatives on reducing the administrative burden and speeding up the procurement process' and commits to making 'more and quicker use of exception provisions'.[80]

These limitations are particularly problematic in the field of monitoring technology, where startups and small firms can often succeed. Short innovation cycles, particularly for technologies such as drones, reward flexible companies that are willing to take risks. Yet existing tender procedures and mandatory viability assessments often prevent these firms from obtaining the funding they need. Without guaranteed orders, companies struggle to secure financing; without financing, they are unlikely to win contracts. As a result, many firms face difficulties scaling up, further developing their technologies, and remaining competitive internationally. Several interviewees confirmed that this dynamic risks placing Dutch technological innovation at a structural disadvantage.[81]

One particular startup active in defence-related technologies, interviewed for this report, illustrated this clearly: although the Dutch government has expressed interest in procuring the company's products and services, existing procedures mean

The *Aanbestedingswet 2012* governs civilian procurement through mandatory open tendering, while the *Aanbestedingswet op defensie- en veiligheidsgebied* (ADV) provides a separate framework for defence and security procurement, including provisions for supply security and classified information. In addition, Article 346(1)(b) TFEU allows member states to exempt procurement from EU rules when essential national security interests are at stake, a provision the Dutch government has stated it is willing to interpret broadly.

that actual acquisition could still take at least two years. In the current geopolitical context, such delays are problematic. For both Dutch strategic interests and national defence, it is essential that critical technologies move from innovation to implementation more rapidly.

Norway demonstrates how early and sustained investment in national innovation ecosystems — with projects such as Hywind Tampen or the HUGIN underwater drone — can yield strategic advantages over time.[82] The Dutch Ministries of Defence and I&W should therefore actively stimulate the development and deployment of new multi-purpose technologies by Dutch (or European) companies. Such technologies could contribute simultaneously to both security and ecological monitoring. Investing in innovative domestic solutions, even when they are initially costly or lack an immediate business case, would help position the Netherlands as a leader in integrated maritime security and environmental protection

According to one of our interviewees at the Ministry of I&W, procurement procedures relating to defence and national security should allow for greater flexibility and the use of exceptional measures where strategic interests are at stake. Although the ADV already allows for exemptions for national security purposes, these are currently used only by the Ministry of Defence, and in a relatively limited scope. Yet when it comes to securing and monitoring critical infrastructure, I&W is just as important. Broadening these exemptions across ministries and use cases would strengthen Dutch resilience and responsiveness, while accelerating the deployment and further development of homegrown technologies. As the interviewed advisor explained: 'If there is a sound assessment framework in place, the government should be willing to use exceptional procurement measures and acquire technologies when necessary'.

"When it comes to physical security and protection, subsea drones are a serious threat to infrastructure. Yet autonomous subsea drones are also a great technology for underwater monitoring around infrastructure."

Jan Stockbruegger

Success stories: maritime drones

Specifically, the Netherlands should invest in maritime drones — USVs and UUVs. Compared to neighbouring countries and within NATO, the Netherlands is demonstrably lagging behind with these technologies.

In mid-2025, NATO deployed USVs and UUVs in the Baltic Sea to strengthen surveillance and protect critical infrastructure.[83] Around the same time, Denmark deployed two USVs equipped with sensors in the Baltic Sea and North Sea, with remarkable results: in six months, the drones recorded over 170,000 ships, including vessels that had deactivated their AIS — as is common with shadow fleet vessels and ships engaging in illegal fishing.[84] Denmark and Sweden have since announced additional procurement, while the UK is experimenting with SG-1 Fathom drones in the North Sea to track Russian vessels.[85] In Norway, the AUV HUGIN — initially developed for mine hunting — now plays a crucial role in subsea infrastructure protection. Norway also opened a Critical Maritime Infrastructure Protection Test Bed in 2025.[86]

The Netherlands should engage in similar projects, possibly through joint procurement with NB8+ countries. Although the Netherlands has invested in new radars to track dark vessels, experiments with unmanned vehicles have not reached the news in recent years.[87] These technologies should urgently be invested in — and this should be communicated publicly to deter potential sabotage of critical North Sea infrastructure.

Secure procurement: managing supply chain risks

While procurement rules should be loosened in some areas to increase flexibility and speed, they must also adapt to the risks associated with new technologies. Companies awarded defence contracts should be required to disclose their full component supply chains. Dependence on Chinese chipsets or foreign-made sensors, for example, should be treated as a risk factor within procurement evaluations rather than being discovered only after contracts are signed.[88] A well-known example is the case in which a major Chinese computer manufacturer was accused of installing "spy chips" on server motherboards used by US companies and the US Department of Defense. The incident highlighted vulnerabilities in global technology supply chains and the risks associated with foreign-produced hardware.[89]

Policies that prioritise commercial off-the-shelf (COTS) procurement and promise to "sovereignise later", are part of the problem. Hardware architecture is often not modular enough for that. A system built around an Asian commercial chipset, for example, cannot easily be transferred to European alternatives without major redesign.

At present, sovereign European hardware is often less performant, less available at scale, and more expensive for innovative European companies to integrate. COTS components are cheaper, easier to source, and faster to implement, making them the rational commercial choice when sovereignty is not part of procurement evaluation. If procurement policy does not actively reward companies that absorb these higher upfront costs and build sovereign systems from the start, the market will continue to favour foreign dependencies.

Procurement rules should therefore do two things: penalise supply-chain exposure as a risk factor and reward investment in sovereign hardware and software development. Companies that do the hard work of hardware-software co-design on sovereign components are carrying a cost that benefits the entire industrial base. Procurement frameworks should reflect and support that contribution. Otherwise, they risk continuing to fund dependency while presenting it as a strategic capability.

An energy island is not just an energy asset — it is a security asset.

2

Develop a North Sea Energy Island in cooperation with neighbouring countries

The Netherlands' MFA & I&W should...

2

Work with their international counterparts and Transmission System Operators (TSOs) in Denmark, Norway, Germany, the UK and Belgium to establish binding agreements on a fully integrated offshore energy system in the North Sea. This should include the development of a blueprint for a North Sea Energy Island, comparable to the Bornholm Energy Island (Denmark) and Princess Elisabeth Island (Belgium).

Addresses Key Challenges

What is an energy island?

An energy island is a specialised offshore hub that acts as a central node for collecting, storing, and distributing renewable energy to multiple countries. In practice, this energy will mainly come from offshore wind farms, although an energy island may also include facilities for converting electricity into green fuels such as hydrogen. An energy island can be built on an existing island or on a purpose-built offshore structure.

Positive impact:

This will positively impact:

- The business case for offshore energy, specifically wind and hydrogen;
- The competitiveness of Dutch energy solutions in international markets;
- The protection of critical energy infrastructure against security threats;
- The monitoring of vessels' compliance and environmental risks like oil spills.

This chapter will elaborate on the positive impact.

Actors involved

The Dutch government should do this together with:

- North Sea net operators: Energinet (DK), Elia (BE), Statnett (NO), Tennet (NL), 50hertz (DE), NESO (UK);
- The governments of the United Kingdom, Norway, Belgium, Germany and Denmark;
- The European Commission for financial support.

The consortium of Ørsted, ATP and North Sea Energy has advocated for the construction of a North Sea energy island for years.[90] Projects such as the Bornholm Energy Island, a joint Danish-German initiative, and the Princess Elisabeth Island in Belgium demonstrate that energy islands are technically feasible. In addition, many of our interviewees from both the public and private sectors argued that the Dutch government should provide a long-term and ambitious vision for transforming the North Sea into a regional energy hub.

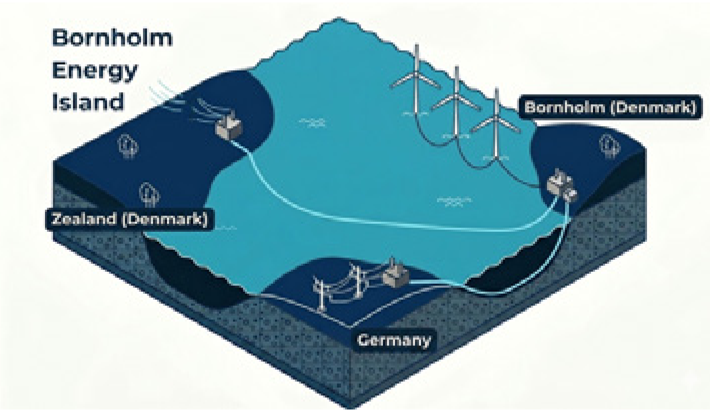


Fig. 7) Bornholm Energy Island, systemised view

Case study
Bornholm Energy Island

Location: Danish island of Bornholm, Baltic Sea.

Function: Hybrid interconnector and centralised energy hub, collecting electricity from surrounding offshore wind farms and distributing it across national borders.

Capacity: The initial phase will connect 3 GW of offshore wind energy. It routes this power to Denmark and Germany, providing power to an estimated 3 to 4.5 million households across the two countries.[91]

Key actors: Developers are the national transmission operators Energinet (Denmark) and 50Hertz (Germany).

Financials: Total cost approximately €7 billion, with €645 million from the EU's Connecting Europe Facility. Formally designated as one of only eight Energy Highway priorities under the European Grids Package published in December 2025.[92]

Timeline: Approved by the Danish Parliament in 2020; operational completion targeted for 2030.

EU Energy Commissioner Dan Jørgensen has described Bornholm as a blueprint for EU offshore renewable energy.[93] It demonstrates how infrastructure can transcend national boundaries through a bilateral cost-sharing framework within EU regulatory structures.

North Sea Energy Island

Why should the Netherlands build an energy island? A North Sea energy island would provide several important advantages for the Dutch government.

Energy islands as hybrid interconnectors

Firstly, the energy island would function as a hybrid interconnector, collecting electricity from surrounding wind farms and distributing it across multiple national energy grids. This allows electricity to be redirected to neighbouring countries when one grid becomes saturated and demand elsewhere is higher.[94] The traditional offshore wind business model suffers from "price cannibalisation". During periods of high wind generation, large volumes of electricity can flood a single national grid, sometimes driving local electricity prices below zero. As a result, wind farm operators may lose revenue during peak production periods. By operating as a hybrid interconnector, an energy island can mitigate this problem: it dynamically routes electricity to the connected market with the highest demand.[95] This reduces local market saturation and helps maintain more stable wholesale prices for developers.

Of course, there may still be periods in which energy production exceeds what national electricity grids can absorb. Energy islands can address this by integrating so-called Power-to-X facilities: technologies that convert surplus renewable electricity into energy carriers such as green hydrogen and green ammonia.[96] These can help decarbonise hard-to-abate sectors such as the steel industry, while also serving as fuels for ships. In this way, energy islands could play a pivotal role in the decarbonisation of the global shipping fleet.[97]

Using a hybrid interconnector also means reducing the total amount of subsea cabling required for large-scale offshore energy clusters.[98] This is not only more environmentally friendly, but also more cost-efficient than connecting multiple wind farms with separate grids to the same offshore entry point.

The involvement of multiple countries also allows costs to be shared among the participating governments. The Bornholm model demonstrates that intergovernmental cost-sharing frameworks can significantly reduce the risks associated with high-capital offshore investments by shielding individual countries from unexpected cost overruns. For the Dutch government, this model provides a blueprint for joint investment with other North Sea countries in the construction of one or more North Sea energy islands. Please see the appendix for a full overview of how the North Sea energy island should be financed.

Energy islands as a multi-purpose asset for security and monitoring measures

The second major advantage of a North Sea energy island is that its physical infrastructure could serve as a permanent platform for enhancing surveillance and situational awareness. This could strengthen geopolitical security, particularly the protection of critical energy infrastructure, while also creating opportunities to monitor (the areas surrounding) MPAs.

This is inspired by the NB8 approach in the Baltic Sea, where energy infrastructure is treated as a multi-purpose asset. On the one hand, it supports the offshore energy transition; on the other, it provides a platform for security and monitoring measures. The physical structure of energy islands could accommodate sonar, radar, and AIS base stations, significantly enhancing monitoring capacity and situational awareness in the North Sea.[99] More specifically, this would enable the Dutch Ministry of Defence and I&W to better monitor critical undersea infrastructure and protect it against hybrid threats, sabotage, and related environmental risks.[100] Using energy islands to strengthen monitoring capacity would also support the goal of securing interconnected North Sea energy infrastructure against all threats, as outlined in the Hamburg Declaration signed by the Dutch government in January 2026.[101]

Taking the lead in the energy transition

Lastly, by taking the lead in developing a North Sea energy island, the Dutch government could position itself as an international frontrunner in ambitious energy transition policy while increasing the competitiveness of Dutch energy solutions as export products. Denmark has been particularly successful with a similar strategy through the public-private partnership "State of Green".

Case study

Denmark's State of Green

Founded in 2008, Denmark's State of Green is a not-for-profit PPP between the Danish government and four leading industrial associations. It serves as a single entry point for international delegations seeking knowledge on Denmark's green transition - handling roughly 200 visits annually.[102]

Its deeper significance lies in its domestic role. Following Denmark's 2019 commitment to a 70% emissions reduction by 2030, the government divided the economy into 14 sector-specific climate partnerships, each tasked with producing concrete policy proposals.[103] Over 80% of the resulting 400 deliverables have since been implemented, with the State of Green serving as the knowledge platform through which this domestic architecture is showcased internationally.[104]

By co-owning the platform alongside major industry bodies - including the Confederation of Danish Industry, the Danish Energy Association, and Wind Denmark - the government ensures private stakeholders share accountability for Denmark's international green brand.[105] The result is a model where climate diplomacy and export promotion reinforce each other: rather than simply announcing green targets, Denmark has built an institutional structure that keeps government and industry jointly responsible for delivering them.

The risks of building a North Sea Energy Island

Despite the potential benefits of an energy island, several risks must also be addressed.

High construction costs

First of all, the investment costs are relatively high. For reference, the Bornholm Energy Island is projected to cost €7 billion in total. Therefore, the Dutch government needs to ensure a clear and long-term financing structure to realise the North Sea Energy Island. Costs should be shared between participating countries. For the Bornholm Energy Island, Denmark will cover 30% of the costs for the CfD system, while Germany will cover 70% of the costs for the coming 20 years.[106] Such a cost-sharing framework should also be used for the North Sea Energy Island. The Dutch government should pursue a coalition with the UK, Norway, Germany, and Denmark, distributing costs proportionally to each country's electricity share.

Just as Denmark and Germany have done for Bornholm Energy Island, the participating countries in the North Sea Energy Island should also apply for funding by the European Commission, as part of the European Grids Package.[107] Because the UK sits outside EU funding frameworks following Brexit, two parallel financing tracks are needed: a Project of Common Interest (PCI) application through the Connecting Europe Facility for Energy (CEF-E) programme for EU and European Economic Area (EEA) members, and a separate bilateral agreement with the UK. More on this can be found in the appendix.

Complex stakeholder management

Secondly, building an energy island entails complex governance processes and stakeholder management, as such projects involve a variety of international, national and subnational actors. Mitigating international governance challenges requires legally binding multilateral agreements; relying on informal or ad hoc cooperation can lead to project delays. The Ministry of Foreign Affairs should therefore focus on building coalitions with other North Sea countries and securing binding agreements at an early stage. Making use of established frameworks such as the North Seas Energy Cooperation (NSEC) is essential, as these provide structured mechanisms for resolving

Fig. 8) Princess Elisabeth Island, illustrated

Case study

Princess Elisabeth Island

Location: The project is located 45 kilometers off the Belgian coast in the North Sea.[108]

Function: It will function as a central hub for energy produced by offshore wind in the Belgian North Sea. It will connect the Danish and the Belgian electricity grid.[109]

Capacity: The island will integrate 3.5 GW of new offshore wind capacity.[110] This is enough to power 2.6 to 3.0 million households for a year. It will eventually connect to the UK and Denmark.

Key actors: Elia Transmission Belgium is the primary grid developer. Marine contractors DEME and Jan de Nul are constructing the physical foundations, based on caissons.[111]

Financials: Project costs have experienced severe inflation. Initial estimates projected roughly €3 billion. Current estimates exceed €7 billion due to supply chain bottlenecks. The European Investment Bank recently provided a €650 million loan.[112]

Timeline: Island foundation construction officially began in 2024. The physical infrastructure is scheduled for completion by 2027. Turbine connections will follow from 2028 onwards.

complex international disputes. Furthermore, establishing dedicated transnational joint ventures can help distribute risks more equitably.

Risk of sabotage

Thirdly, because an energy island serves as a central hub for energy distribution, it may prove vulnerable to hybrid warfare and sabotage. However, this risk is partly mitigated by the enhanced monitoring capabilities that energy islands can support. In addition, energy islands are typically integrated into a meshed grid, meaning the immediate consequences of sabotage or disruption would remain relatively limited.

An energy island could also be a strategic target during conventional warfare. However, a physical island also provides the Ministry of Defense opportunities to place military weapons.

Technological complexity

Fourthly, building an energy island and integrating it into existing North Sea energy grids is technologically complex. The Dutch Ministry of Foreign Affairs should therefore facilitate close cooperation with the Danish and German actors involved in the development of Bornholm Energy Island in order to learn from their best practices and the challenges they have encountered.

Where should the North Sea Energy Island be built?

The exact location of the North Sea Energy Island should meet the following conditions:

- A central offshore point between the Netherlands, the United Kingdom, Denmark, Norway and Germany. This is important so that it is technically feasible to transport energy from the island to the shores of these countries;
- Not in the designated Natura 2000 areas;
- Close to wind farms, so it can serve as an interconnector between the electricity grids of existing and future wind farms;
- Not in clearways for maritime shipping routes;
- Not in sand extraction areas.

The North Sea Wind Power Hub (NSWPH), a consortium of the TSOs Energinet, Gasunie and Tenet, is developing the scenarios shown in *Fig 9*.[113] By 2030, the consortium aims to establish a fully integrated offshore energy system linking Denmark, Germany and the Netherlands. By 2050, this integrated energy system would also include the UK, Belgium and Norway. Within these scenarios, NSWPH has identified several locations for hybrid projects that combine offshore wind grid connections and interconnectors with Power-to-X facilities. A North Sea energy island is one example of such a project.

Taking into account the conditions outlined above, the most viable option for 2030 is the location circled red in *Fig 9*.[114] Depending on its success, the Dutch government could later support the development of a second energy island at the location indicated by the green circle. Both locations meet the conditions outlined above: they are centrally positioned relative to the EEZs of the participating countries, lie outside MPAs, and are close to existing and planned wind farms in areas 6 and 7 identified by I&W.

At the same time, it is important to ensure that the energy island does not interfere with maritime shipping routes to the Nordic countries, which pass through this exact part of the North Sea. The Dutch Ministry of Foreign Affairs and I&W should therefore closely coordinate the final site selection.

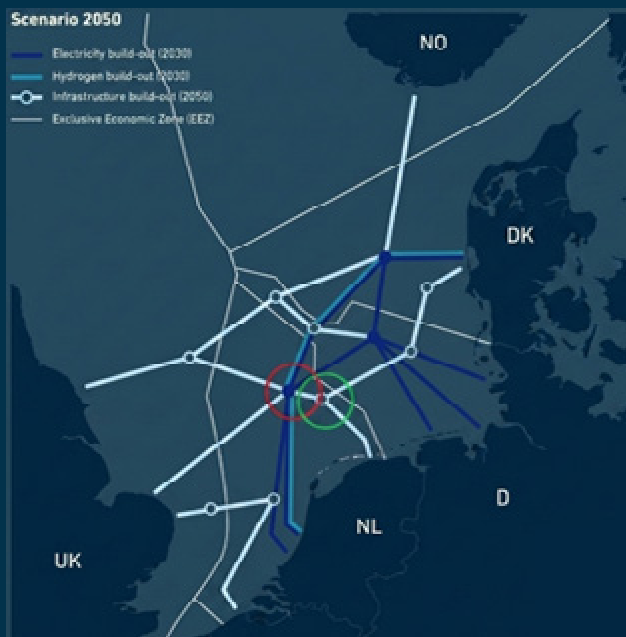


Fig. 9) Potential locations for North Sea Energy Island

Case study

PosHYdon

PosHYdon is the world's first offshore green hydrogen pilot on a working platform, located 13 kilometres off the coast of Scheveningen. Operating on Eni's Q13a-A platform — the first fully electrified platform in the Dutch North Sea — it integrates three energy systems: offshore wind, offshore gas, and offshore hydrogen.[115] Using electrolysis of seawater, surplus wind electricity is converted into green hydrogen and transported through existing gas pipelines, which is considerably cheaper than bringing electricity to shore via cable. Crucially, the project demonstrates how ageing offshore platforms can be given new purpose: rather than being decommissioned, their existing pipeline infrastructure can be reused for hydrogen transport. TNO estimates that large-scale offshore hydrogen production could become a reality between 2030 and 2035, making PosHYdon a foundational step towards that goal — and towards future offshore energy islands.[116]

Mitigating ecological risks

The construction of a North Sea Energy Island carries significant ecological risks. Nature-inclusive design and mitigation measures can reduce this damage, but will likely not fully offset the impacts of large-scale marine construction. The following recommendations help reduce the damage to the North Sea ecosystem and build on opportunities for nature inclusive design.

Site selection

Energy islands should be located in areas of relatively low ecological value. Co-locating developments with decommissioned oil and gas infrastructure has been proposed as one way to limit additional habitat disruption.[117] However, multiple interviewed experts have flagged this as technically unfeasible in most cases: these platforms require extensive restoration and lack foundations suitable for a full-scale energy island.[118] A further complication is that some of these structures have developed into ecologically valuable artificial reefs over time, making removal or repurposing potentially harmful.[119]

Existing oil and gas infrastructure is generally better suited for Carbon Capture and Storage (CCS), as demonstrated by the Porthos project.[120] This does not, however, preclude lighter forms of repurposing: existing platforms can successfully host smaller-scale facilities such as hydrogen production, where foundation requirements are less demanding. The PosHYdon pilot demonstrates this — a more technically compatible application that makes productive use of infrastructure that would otherwise require decommissioning.

Construction method

Where a new structure is required, construction method matters. Conventional approaches typically consist of either caisson-based structures (large prefabricated concrete units, generally capital-intensive) or land reclamation using sand fill, which can negatively impact marine ecosystems due to seabed disturbance and sediment displacement. A caisson-based structure, consisting of large prefabricated concrete units, is less ecologically damaging and is the approach used for the Princess Elisabeth Island.[121]

Nature-inclusive design

A single large structure may also offer ecological opportunities that smaller wind farms do not. While the construction of a new island in the North Sea will inevitably lead to environmental disturbance, adaptive design, long-term monitoring, and continuous ecological assessment can reduce biodiversity losses. In designing such an island, there are also opportunities to mitigate ecological impacts through nature-inclusive design principles. Nature-based solutions aim to integrate ecological processes into engineering designs, enhancing habitat while maintaining structural and technical performance.[122] For example, the island's foundational structure could be designed to incorporate reef-like features, materials that promote biological colonisation, oyster habitats and fish nurseries, thereby supporting seabirds and potentially attracting marine mammals such as seals.[123] This should, however, happen in concert with ecological measures that reduce risks such as noise pollution and collisions for these same species.

Hybrid designs that balance structural integrity with ecological value should be considered. In the case of the North Sea Energy Island, a caisson-based structure combined with sand nourishments to create beach habitats should be adapted to support the development of marine ecosystems.

Cumulative impacts and international coordination

The ecological footprint of offshore energy infrastructure does not respect national borders. Marine species migrate across the North Sea, and wind farms from multiple countries are often situated in close proximity. The cumulative effects of this development at the scale of the wider North Sea remain poorly understood, partly due to limited data sharing between countries.[124] A lack of knowledge exchange between North Sea countries hinders the assessment of these cumulative impacts and complicates the development of effective mitigation and compensation measures. This is especially the case for large scale infrastructure such as energy islands, whose effects may extend beyond national jurisdictions. Cumulative impacts should therefore be assessed at an international scale. Strengthening collaboration through existing initiatives, such as the Greater North Sea Basin Initiative, is essential to improve joint research and data exchange.

Reinstating and improving ecological tender criteria

The Netherlands has been a leader in embedding ecological considerations into offshore wind tenders, including the use of competitive criteria to incentivise mitigation, nature enhancement, and monitoring. Interviewees highlight that Dutch policy has served as a reference point for other North Sea countries such as Denmark. However, recent changes in tender design have reduced the emphasis on ecological innovation, shifting the focus towards financial considerations. The shift to a CfD structure has further decreased incentives for ecological innovation. Mandatory minimum requirements remain in plot decisions, but without competitive ecological criteria, developers have little incentive to go beyond them. An expert interviewee warns that this risks slowing innovation and limiting the development of more effective mitigation measures over time.

At the same time, relying on market driven approaches presents challenges. Private developers may have low incentives to share ecological data, which can hinder collective research and reduce the further development of effective mitigation strategies.

Put in perspective: bottom trawling

It is important to keep this discussion in perspective. Our expert interviewees, alongside a substantial body of research, have pointed out that the primary driver of ecological deterioration in the North Sea is not offshore energy infrastructure, but unsustainable fishing practices — especially bottom trawling.[125] This practice remains legally permitted across much of the designated MPAs, including the Dogger Bank, which is formally protected for its sandy sediment.[126] Nature-inclusive design and investment in habitat restoration can deliver ecological benefits, but only if accompanied by meaningful regulatory action by the Dutch government to restrict the most damaging fishing practices. Without such measures, the ecological gains of any energy island mitigation strategy will remain small compared to the continuing damage caused by ongoing trawling.

As Dutch policies inspire those of other North Sea countries, the Netherlands has a responsibility to integrate ecological considerations into offshore wind tenders. We therefore recommend reinstating ecological tender criteria that incorporate nature-inclusive design principles, while maintaining public investment in ecological research and monitoring.

Private developers often have weak incentives to share data openly, making public funding essential to ensure that knowledge remains accessible and that mitigation strategies can continue to improve over time. A balanced approach is needed in which both governments and market actors contribute to innovation without compromising data accessibility.

Revenue reinvestment and strengthening MPA regulations

It should be noted that nature-inclusive designs and mitigation measures often do not weigh up against the ecological damage caused by the construction of an energy island. If energy islands improve the efficiency of offshore energy production, they may reduce the total area of seabed required for wind development, potentially relieving pressure on sensitive areas such as the Dogger Bank. Nonetheless, a portion of the revenue generated by energy islands should be directed towards marine habitat restoration projects and improving the monitoring and enforcement of MPA regulations in the North Sea.

In conclusion, if the Dutch government is serious about achieving its net-zero goals and about transforming the North Sea into a regional renewable energy hub, investing in ambitious long-term projects such as a North Sea energy island is essential. The Dutch government should take a leading role in developing, supporting, and implementing such projects. Doing so would accelerate not only the Dutch energy transition, but also the energy transition of the EU as a whole.

From Bonn to better.

3

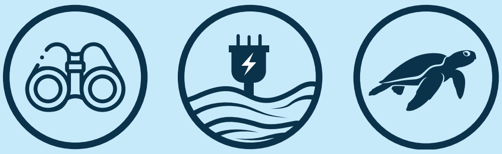
Adopt a joint “One Incident, One Response” approach to marine and shoreline incidents.

The Netherlands should...

3

reform its national marine and shoreline incident response governance to adopt a unified 'one incident, one response' framework, and advocate for reforms — including annual full-scale crisis exercises — within the Bonn Agreement.

Addresses Key Challenges



The issue of 'shared' responsibility

When a maritime incident occurs in the Dutch North Sea — for example, an oil spill, a subsea cable rupture, or an act of sabotage — no single authority currently holds an overriding command mandate. Five ministries feed into Coast Guard governance, and responsibilities between the Coast Guard and Rijkswaterstaat are not formalised under a unified command; beyond twelve nautical miles no civilian enforcement responsibility is formally assigned. The result is that response is slow, coordination is ad hoc, and private infrastructure operators lack a clear first point of contact. This domestic fragmentation also weakens the Netherlands' credibility as a partner in international cooperation.

NB8 countries, particularly Sweden and Finland, have developed governance models that resolve this problem through national coordination centres integrating ecological, security, and onshore response under a clear command structure. We propose that the Netherlands draw on these models domestically, and use the resulting credibility to lead reform of the Bonn Agreement internationally. The Netherlands' coordination of the Bonn Agreement's Super CEPCO exercise in 2025 provides an immediate reputational basis for this effort.[127]

Concretely, our recommendation has a national and international dimension. Nationally, the Netherlands should establish an incident coordination centre designating the Coast Guard as the statutory first responder and single point of contact across the full prevent–detect–protect–respond cycle.[128] This framework must explicitly include the onshore dimension — following the Swedish model, in which municipalities responding to shoreline consequences have access to national-level coordination and resources — and should incorporate private infrastructure operators into the national exercise framework.

Embassies at play

Dutch embassies in Stockholm and Helsinki should initiate working-level exchanges with Swedish and Finnish counterparts on the arrangements underpinning their coordination centres.

Embassies in Copenhagen, Stockholm, and Oslo should conduct preparatory consultations on Bonn Agreement reform ahead of forthcoming plenary discussions, so that proposals arrive with coalition support in place.

Do not build from scratch, but formalise already functional working relationships into a clear command structure.

Internationally, the Netherlands should advocate within the Bonn Agreement for annual full-scale exercises modelled on HELCOM's BALEX framework, a common security incident reporting format comparable to POLREP, and broadened exercise participation to include non-state actors. Risk assessments underpinning Bonn Agreement preparedness planning should be updated to account for shadow fleet activity and offshore infrastructure expansion.[129]

The problem at home: fragmented national governance

The Dutch governance system is currently unable to produce a 'one incident, one response' approach to maritime incidents. Expert interviews and policy advice from HCSS confirm that this fragmentation runs deep.[130]

The Coast Guard — the only authority with a mandate spanning the full Dutch maritime domain — is an interdepartmental network organisation managed under the Ministry of Defence, but governed through a board structure drawing on five ministries. This produces five distinct strategic inputs without any organ holding an overriding command mandate, generating policy friction and competing priorities at the strategic level without the executive capacity to act.[131] Beyond the twelve-nautical-mile territorial limit, no formal enforcement responsibility is assigned to any civilian organisation; the Navy operates in these waters but cannot and should not intervene in civil matters.[132] There is also persistent ambiguity about whether offshore energy infrastructure is formally classified as critical infrastructure, which means the formal basis for coordinated incident response remains unclear.

The ecological dimension illustrates this fragmentation concretely. Rijkswaterstaat handles ecological incidents largely separately from the Coast Guard, yet already cooperates actively with the Coast Guard through the annual services plan.[133] The structural conditions for integrated ecological-security coordination thus exist informally but have not been formalised. Consider a pipeline rupture that produces both an oil spill and evidence of sabotage: Rijkswaterstaat holds the ecological response, the Coast Guard the security dimension, and no single authority decides how to prioritise resources or share situational awareness. The onshore dimension compounds the problem. Unlike Sweden, where national coordination centres ensure that coastal municipalities have access to national resources, the Dutch North Sea has no equivalent of the onshore veiligheidsregio's, leaving shoreline response disconnected from offshore operations.

The reform required is therefore not to build from scratch, but to formalise already functional working relationships into a clear command structure. The key step is to enable the Coast Guard to function as an unambiguous first point of contact. Under the current system, it is genuinely unclear to a private infrastructure operator which authority to contact when detecting a potential security incident. That ambiguity is itself a failure of the 'one incident, one response' principle.[134] A reformed Coast Guard would investigate and escalate as needed, providing the kind of clarity that makes private stakeholder integration substantive rather than cosmetic. Port security under the International Ship and Port Facility Security (ISPS) Code already involves private operators in structured threat reporting, suggesting that a comparable framework for offshore infrastructure operators is an extension of existing practice rather than a novel institutional requirement.[135] The current geopolitical momentum — reflected in the EU's CER Directive and the *Wwke* — provides a favourable legislative context for this expansion.

The Bonn Agreement: context and limitations

The Bonn Agreement, the oldest regional agreement for maritime pollution response. It was originally signed in 1969 by eight North Sea states in the aftermath of the Torrey Canyon oil spill disaster of 1967, which saw 117,000 tonnes of oil discharged off the coast of Cornwall in Western Europe's first major maritime pollution incident.[136] The Agreement was subsequently broadened to include other harmful substances (1983), surveillance cooperation (1987), and additional contracting parties. Today, it comprises ten states (Belgium, Denmark, France, Germany, Ireland, the Netherlands, Norway, Spain, Sweden, and the United Kingdom) together with the EU.[137] Its core functions are threefold: contracting parties are obliged to conduct aerial surveillance of the North Sea (divided into designated surveillance zones), to inform one another of pollution incidents, and to provide mutual assistance in combating pollution from shipping and offshore installations.[138]

The Bonn Agreement was designed for an era of *accidental* maritime pollution, not for the current security landscape.

A distinctive feature of the Bonn Agreement, compared with the HELCOM framework in the Baltic, is that it operates under binding international law. Once contracting parties agree to a reform, compliance is legally expected rather than voluntary. This gives agreed reforms genuine weight, but also means that change requires political effort and coalition-building.

Despite its strengths as a legal framework, the Bonn Agreement's operational mechanisms have not kept pace with the evolving threat landscape. Its stated strategic objectives include responding to marine pollution through a coordinated regional approach and encouraging coordination with shoreline response for integrated incident management.[139] In practice, however, full-scale international exercises involving all contracting parties — the Super CEPCO format — take place only once every five years.[140] The latest exercise, Super CEPCO 2025, achieved a combined aerial surveillance flight time of 32 hours as its primary outcome, but did not test command structures, cross-border escalation, or shoreline coordination — precisely the dimensions most critical to a 'one incident, one response' approach. The exercise framework has not been adapted to account for shadow fleet activity, offshore infrastructure expansion, or the broader hybrid threat environment. In short, the Bonn Agreement's risk assessments and exercise regime were designed for an era of accidental maritime pollution and do not adequately reflect the current security landscape.

The HELCOM model: what works in the Baltic

Within HELCOM, Sweden and Finland are regarded as the most advanced contracting parties in integrated incident response.[141] Both have established national coordination centres that ensure ecological, security, and onshore response are addressed under a single command structure. When an oil spill reaches shore, local responders — often municipalities with limited resources — have access to national and, if needed, HELCOM-wide resources and expertise.[142] Where an incident may involve both pollution and sabotage, coordination between forensic services, the coast guard, and cleanup agencies is built into the system rather than improvised.

HELCOM's annual BALEX exercises underpin this capability. These scenario-based exercises are planned years in advance, involve substantially more participants and observers than Bonn Agreement equivalents, and build the predictability that practitioners identify as central to maintaining operational readiness.[143] The contrast with the Bonn Agreement's five-year cycle is significant: annual exercises sustain institutional memory and cross-border familiarity in a way that episodic exercises cannot. Fragmented domestic command structures do not become coherent at the international level; they replicate nationally siloed behaviour at a larger scale. Dutch domestic reform and Bonn Agreement reform are therefore not separate projects but two dimensions of the same objective.

Where to start?

» Reforming the national command structure.

The Netherlands should establish a national incident coordination centre following the Swedish model, with the Coast Guard as the statutory first responder. The mandate should extend explicitly to the onshore dimension, and the existing Coast Guard–Rijkswaterstaat cooperation should be formalised into a legally grounded command structure. Private infrastructure operators should be incorporated into the national exercise framework.

» Strengthening Bonn Agreement exercises.

The Netherlands should advocate for annual full-scale Bonn Agreement exercises, replacing the current five-year cycle. More frequent exercises would build shared procedures and mutual familiarity, and help address recurring practical challenges such as coordinating Tour d'Horizon aerial surveillance missions when one country's assets are temporarily unavailable.[144]

» Broadening participation.

Following the HELCOM multi-actor model, the Bonn Agreement should expand participation to include environmental NGOs, private contractors, and trained volunteer networks. The Netherlands should invest in training and coordinating volunteers for shoreline response and integrate private contractors to address capacity gaps.[145]

» Post-exercise evaluation and forward-looking risk assessments.

The Netherlands should advocate for structured post-exercise evaluation within the Bonn Agreement, and promote risk assessments that account for offshore wind expansion, shadow fleet activity, and increasing shipping traffic, drawing on HELCOM's BRISK II methodology.[146] Oil spill response considerations should be systematically incorporated into maritime spatial planning.[147]

Our eyes and ears at sea.

4

Involve private stakeholders in maritime monitoring and crisis management, in particular through partnerships with fishing companies.

The Netherlands should...

4

restructure its offshore tender process to include life-cycle ecological monitoring and incorporate local maritime services — particularly fisheries — into the security and monitoring of offshore assets.

Addresses Key Challenges

Eyes and ears at sea

The Netherlands should move towards a socio-ecological governance model in which offshore wind projects structurally integrate local maritime actors, particularly fisheries, into monitoring and coordination systems. Fishers already act as informal "eyes and ears at sea," as illustrated by cases where suspicious vessels were documented, but not acted upon.

Integrating fisheries as part of a broader monitoring network can significantly enhance situational awareness. However, an interview we conducted with a marine expert highlighted that this potential is currently underutilised due to low trust and weak institutional follow-up. Without addressing trust issues, efforts to formalise fishers' role as monitoring entities would likely fail. Therefore, the added value lies not only in contracting vessels, but in building a credible reporting and response chain. This effectuates a whole-of-society approach by leveraging the fishers' intimate knowledge of familiar waters to ensure vessels do not cross strategic or safety boundaries, providing a reporting capacity that does not require additional military or state-funded vessels.

Designing the Dutch model

The government should promote flexible, modular contract structures, where vessels can be deployed for monitoring or coordination tasks on a rotational or on-demand basis. This allows fishers to combine traditional fishing activities with offshore service provision, rather than forcing a full transition - an important distinction, as contractual integration should not rely on rigid, long-term commitments for individual fishers. Our expert interviewee argued that fishers are unlikely to support models that restrict their ability to respond to profitable fishing conditions.

Second, policy should target vessel owners and fishing companies (rederijen) rather than individual crew members. Decision-making power lies primarily with vessel owners, who weigh opportunity costs at the fleet level. Embedding requirements at this level increases feasibility.

Third, the model should include formal institutional recognition of fisheries as stakeholders in offshore governance. Interview evidence shows that fishers currently feel excluded from decision-making processes and are hesitant to cooperate with authorities such as the Coast Guard due to a lack of trust and perceived lack of follow-up (e.g., reported suspicious activity not being acted

Case study

Baltic Power

The Baltic Power offshore wind project in Poland demonstrates a governance model that combines large-scale renewable energy production with structured ecological oversight. Local fishing vessels were not only compensated for spatial exclusion, but also contracted through a private offshore services company (MEWO) to perform maritime coordination and safety functions during the construction phase. These vessels operated as part of a broader Marine Coordination Centre architecture, responsible for traffic monitoring, communication with passing vessels, and supporting safe installation operations.

upon).[148] A contractual model must therefore be complemented by clear feedback loops, defined reporting protocols, and visible follow-up actions to build credibility. Fisheries should be involved early in the design phase of wind parks, particularly in discussions on spatial layout, transit corridors, and potential co-use. This includes exploring options such as transit access through wind parks during pre-construction phases and designing infrastructure in ways that allow for partial coexistence where feasible.

Towards a socio-ecological tender model

By incorporating continuous life-cycle ecological monitoring, and giving a role to vulnerable fisheries that are placed under pressure as new infrastructure is developed offshore, the Dutch tender model - already a leader and example in its field - moves towards considering offshore infrastructure projects as an asset within a socio-ecological ecosystem, rather than an isolated energy hub. Through the use of civilian guard vessels and Environmental and Social Action Plans (ESAPs) the Dutch tender system can operationalise sustainability and security by design, ensuring that vulnerable stakeholders in the maritime socio-economic-strategic ecosystem are supported and integrated into securing this ecosystem.

Baltic Power conducted an extensive Environmental Impact Assessment (EIA) prior to construction and implemented a comprehensive ESAP, which includes continuous monitoring of ecological impacts, mitigation measures during construction and operation, and regular reporting. These ESAPs ensure that the damage to the local ecosystem is minimised, balancing the interests of offshore energy development for strategic autonomy with ecological protection of marine environment.

Both of these requirements should be operationalised through offshore wind tender criteria and site decisions (e.g., for the future Doordewind zone). Developers must demonstrate a comprehensive "Socio-Ecological Concept" that details reporting protocols, training standards for local contractors, and integration with the Coast Guard and nautical authorities using standardised communication systems like POLREP.[149]

The case for change

This recommendation addresses a critical governance gap between offshore energy expansion, maritime security, and fisheries policy by aligning operational needs with stakeholder realities. The current Dutch model relies heavily on compensation and regulation, which reinforces a perception among fishers that they are being excluded rather than integrated. Our interviewee confirmed that fishers seek recognition as legitimate stakeholders, not just financial compensation. Moving towards contractual participation, if designed flexibly, can shift this dynamic and improve policy legitimacy.

From an economic perspective, the assumption that long-term contracts provide sufficient incentive does not fully hold in the Dutch context. Fishers value operational autonomy and the ability to capitalise on favourable fishing conditions. Rigid contracts may therefore reduce participation. A flexible system lowers this barrier while still enabling developers to access local knowledge and capacity.

The costs of coexistence belong in the tender, not in a transition fund.

From a marine spatial planning (MSP) perspective, early involvement of fisheries in wind park design can reduce conflict and improve spatial efficiency. The interview suggests that current restrictions (e.g., early exclusion during seabed surveys) are perceived as disproportionate, contributing to resistance. Addressing these issues through co-design and improved access arrangements can reduce friction.

Finally, regarding cost allocation, the Baltic Power case demonstrates that integration of these functions within the private project delivery chain is feasible. This remains valid, but the Dutch case requires a more nuanced implementation: costs should still be internalised by developers, but contracts must be designed in a way that reflects the operational realities of the fisheries sector.

This new approach effectively resolves the dilemma of who foots the bill — an issue that has historically slowed practical cooperation between the energy and maritime sectors in the Netherlands. By embedding socio-ecological requirements directly into the tender criteria, the costs associated with maritime coordination, guard-vessel operations, and ecological monitoring are internalised from the outset, ensuring that the "costs of coexistence" are factored into the project risk and tender price calculation rather than left to separate, often contentious, public transition funds.

Guard vessels

While there are many means and ways of converting a fisheries vessel into a guard vessel, it is crucial to consider that more sophisticated equipment requires additional crew training, as well as even higher maintenance costs. We therefore recommend that guard vessel conversion emphasises equipment that is relatively economical, and requires little to no additional training.

For instance, equipping a beam trawler with a hydrophone, basic maritime CCTV, and upgrading their marine VHF radio and AIS transponder, keeps retrofitting costs around the €15,000-30,000 range.[150] While equipment like drone bays and additional sensors may increase the capacity of one vessel, these come with an additional price tag and a training requirement that is not feasibly achieved in the short term.

The retrofit cost estimation, however, does not include any structural costs that arise from the additional equipment, which using the maintenance rule of thumb for vessels, is around 20% of the total vessel CAPEX (capital expenditure).[151] It may be possible in certain cost scenarios, that a vessel may actually become cheaper to maintain, as a significant cost of beam trawler maintenance lies in upkeep for the beams and nets, which are no longer in use on a guard vessel.[152]

The wage costs for staffing the guard vessels is another variable cost that comes on top of the costs aforementioned, giving fishers the security of a median income (approx. €48,000 yearly in 2026) would be an indicative figure to have a wage premium that can convince fishermen to become guards.[153] The contract duration for such a guard vessel lasts for the project duration (ca.10 years) in the Baltic Power case. It may be useful to, further down the line, also consider whether civilian guard vessels could be structurally employed after the windpark itself is fully constructed.

ESAPs

Unlike traditional one-off EIAs, the ESAP framework ensures that ecological protection is a structural, active component of project governance. This allows for installation and construction to be phased over time, limiting cumulative ecological pressure on bird migration routes and marine mammals. This phased nature with the continuous monitoring also allows the developer to adjust construction activities if ecological thresholds are exceeded. Including these ESAP requirements structurally ensures that environmental protections remain embedded as a priority even as geopolitical and energy security narratives begin to dominate the policy discourse.

Putting the model to the test

Strengths

The Dutch tender model is already leading within the world. Many countries, such as Denmark, use Dutch criteria and calculations as a blueprint for their own offshore tenders. Making the Dutch model more aligned with a socio-ecological system-based approach may cause ripple effects in other countries, allowing for a positive impact outside of the Netherlands.

Opportunities

The conversion of fisheries vessels into multi-purpose guard vessels increases civilian monitoring capabilities at a relatively low entry cost. The fact that these vessels are explicitly civilian in nature, may lower the risk of escalation in case of incidents.

Weaknesses

The Dutch socio-economic environment differs from the Polish one in the Baltic Power case study. Where the average worker in Polish fisheries earns around 75% of the median income, in the Netherlands, this is much higher, at an average of 90% of the median income.[154] This may make the lever of longer-term income for fisheries less appealing. We strongly recommend polling fisheries workers or organisations to find out whether they would support the implementation of such a model. Low trust between fisheries and authorities, combined with governance fragmentation, limits the effectiveness of cooperation mechanisms.

Threats

Adjusting the tender model and making it more integral effectively increases the regulatory pressure on offshore developers, which may put their business case at risk. Treating these new criteria as element of a CfD approach, rather than a hard non-price requirement, may alleviate pressures on the market, as this extension of guidelines is then not mandatory for developers, but nonetheless encouraged; developers who implement these criteria are given a fictive discount on the total project cost, creating an incentive to include these criteria in the tender application.

From immediate tactical adjustments, to longer-term strategic transformation.

Conclusions

Integrating sustainability and security in the North Sea demands a pragmatic yet ambitious strategic vision. This means structural governance shifts at the national and international level, investment in technological and operational capacity, and closer partnership with private industry.

The overarching goal is to move from fragmented and reactive management to a proactive, security-by-design framework - inspired by the NB8 countries' approach to the Baltic Sea. As described below, our recommendations require sustained political effort in the short and long term.

Short-to-mid term efforts (3–5 years)

Several of our recommendations can be implemented relatively quickly, as they build on existing institutional relationships and emerging political momentum.

First, involving private stakeholders in maritime monitoring and crisis management (recommendation 4) is among the most immediately actionable measures. The government currently lacks the capacity to fully monitor the North Sea's predominantly privately held infrastructure. Reliable communication lines between private operators and enforcement agencies, harmonised SOPs for incident reporting, and joint exercises simulating hybrid threats and ecological disasters can all be initiated within existing policy frameworks. These measures strengthen security and environmental resilience, and give private actors a greater stake in national preparedness.

Second, improving monitoring at critical points through investments in new technologies (recommendation 1) can begin within this timeframe. Procurement and tender regimes are too slow and restrictive for rapidly evolving defence technologies, particularly USVs and UUVs. Reforming procurement — including broader use of exception provisions and pre-financing for innovative firms — and strengthening private sector obligations along the lines of Norway's Sikkerhetsloven would deepen private sector involvement in North Sea security. Denmark's experience illustrates what is possible: two drones recorded over 170,000 ships in six months, including AIS-dark vessels. Deployments should target high-risk areas where critical infrastructure overlaps with MPAs, and joint procurement with NB8+ countries could accelerate deployment.

Third, the diplomatic groundwork for reforming international incident response (recommendation 3) should begin immediately, even though its full realisation spans a longer horizon. The Netherlands coordinated the Bonn Agreement's Super CEPCO exercise in 2025, which positions it well to lead reform. Drawing on the HELCOM model of annual BALEX exercises and structured POLREP reporting, Dutch embassies in Stockholm and Helsinki should initiate exchanges with Swedish and Finnish counterparts on their 'one incident, one response' models, while embassies in Copenhagen and Oslo should begin consultations on annual Bonn Agreement exercises ahead of forthcoming plenary discussions.

These short-to-mid term measures lay the operational and diplomatic foundations for the deeper structural reforms described below. The partnerships forged through joint exercises will be needed for energy island governance; monitoring technologies deployed now will inform spatial planning for large-scale offshore infrastructure; and the diplomatic coalitions built through Bonn Agreement reform will be the same ones required for binding cross-border energy agreements.

Mid-to-long term efforts (5–10+ years)

Structural adjustments to multilateral governance, ministerial and agency operations, and the development of new infrastructure are positioned on a much longer timescale of at least 5–10 years to implementation.

The most ambitious recommendation is the development of one or more energy islands in the North Sea (recommendation 2). The Bornholm Energy Island and Princess Elisabeth Island demonstrate feasibility, but also the scale of the undertaking: roughly €7 billion each, years of intergovernmental negotiation, and complex financing through PCI designation and Special Purpose Vehicles (SPVs) (see appendix). The concept embodies the integration of security and sustainability: addressing grid congestion and enabling Power-to-X conversion while serving as a dual-use platform for maritime surveillance through radar, sonar, and AIS base stations.

The reform of national maritime incident response governance (recommendation 3) is equally far-reaching. Designating the Coast Guard as the statutory first responder and single point of contact, extending its mandate to the onshore dimension following the Swedish model, and establishing a national incident coordination centre all require legislative adjustment and sustained investment. This domestic reform is a precondition for credible international partnership: the HELCOM experience shows that effective cross-border coordination rests on coherent national command structures.

Long-term investment in public-private partnerships can further strengthen North Sea monitoring. The Baltic Power case study demonstrates that local fishing vessels can be contracted for maritime coordination and safety functions during offshore wind construction. Embedding guard vessel costs in tender criteria could create livelihood opportunities for fishers displaced by offshore wind expansion while increasing monitoring capacity — provided Coast Guard capacity is expanded in parallel.

Finally, reinstating and strengthening of ecological tender criteria for offshore wind, coupled with public investment in ecological research and knowledge exchange through initiatives such as the Greater North Sea Basin Initiative (GNSBI), requires sustained commitment across political cycles. The Netherlands has been a frontrunner in integrating ecological considerations into tenders, but the shift to CfD has weakened incentives for ecological innovation. Reversing this trend is essential to embed nature-inclusive design in energy islands and future wind farms.

Key Findings: Lessons from the NB8

In this report, we set out to answer the question: ***how can the Netherlands better integrate security and sustainability in the North Sea, using lessons from the NB8-approach in the Baltic Sea?*** Our comparative analysis of governance structures in the Baltic and North Sea regions, supported by expert interviews and policy document analysis, reveals four overarching lessons.

First, security and sustainability go hand in hand. NB8 countries treat energy infrastructure as a multi-purpose asset: offshore installations serve the energy transition while providing platforms for monitoring, surveillance, and the protection of critical subsea infrastructure. The Russian shadow fleet illustrates this interdependence from the threat side; the same vessels that undermine sanctions enforcement also pose severe environmental risks through ageing hulls and absent insurance. USVs and UUVs can detect and document illegal fishing in MPAs, and simultaneously identify AIS-dark vessels posing hybrid threats. This multi-purpose logic should be the organising principle of Dutch North Sea policy.

Second, meso-regional cooperation outperforms fragmented multilateralism. The NB8 functions as a politically aligned network that is smaller and more agile than broader international frameworks, enabling faster decision-making and more concrete coordination. HELCOM's annual BALEX exercises, structured POLREP reporting, and coordinated enforcement actions by Finland and Sweden against shadow fleet vessels all show that smaller coalitions of like-minded states can produce operational results that broader forums struggle to achieve. The North Sea's governance landscape, with its nearly 250 overlapping bodies, stands to benefit from a similar approach.

Third, unified national command structures are a precondition for effective international coordination. Sweden and Finland have demonstrated that a 'one incident, one response' framework - integrating ecological, security, and onshore response under a single coordination centre - produces coherent domestic action and international credibility. The Netherlands currently lacks such a structure: five ministries feed into Coast Guard governance without any organ holding an overriding command mandate, meaning incidents trigger consultations over responsibility rather than immediate response. Fragmented domestic systems do not become coherent at the international level; they replicate nationally siloed behaviour at a larger scale.

Fourth, systems integration is essential to the offshore energy transition. The deteriorating business case for offshore wind is not primarily a problem of subsidy design but of infrastructure architecture. The Bornholm Energy Island shows that hybrid interconnectors, cross-border grid integration, and Power-to-X conversion can resolve grid congestion, prevent price cannibalisation, and reduce the physical footprint of subsea cabling - achieving both economic viability and reduced ecological impact. The Netherlands cannot reach its offshore energy targets through radial connections alone.

The priority recommendation

On the basis of integrality, impact, and strength of argument, we identify improved monitoring through new technologies and partnerships as the priority recommendation for Dutch North Sea policy. Reforming procurement and investing in partnerships with innovative firms will give the Netherlands access to cutting-edge technologies that strengthen capacity to address both hybrid threats and ecological damage. Strong public-private partnership structures pave the way for broader policy improvement, promoting a system in which public and private actors work

Tensions and caveats

These recommendations should be read with an awareness of several unresolved tensions. Energy island construction carries ecological costs that nature-inclusive design can mitigate but not eliminate. The NB8 model operates in a more geographically contained and politically homogeneous context than the North Sea, and direct transplantation will require adaptation. Finally, the cumulative ecological effects of offshore wind expansion remain poorly understood, meaning that some long-term trade-offs between energy ambitions and marine ecosystem health cannot yet be fully assessed.

Taken together, these recommendations chart a path from immediate tactical adjustments to longer-term strategic transformation. What connects them is the conviction, supported by our comparative analysis, that security and sustainability in the North Sea are not competing demands to be balanced but complementary objectives to be integrated — in monitoring systems, in infrastructure design, in crisis response, and in the diplomatic coalitions that underpin all of these. The NB8 countries have demonstrated that this integration is achievable. The Netherlands is well positioned to apply these lessons, but doing so will require a sustained commitment to the cross-ministerial, cross-border, and public-private coordination that this report has outlined.

Stakeholder mapping and financing an energy island.

Appendix

Clarification of Stakeholder Mapping

1. Monitoring & Control

The monitoring and control map reflects the operational and institutional landscape for maritime surveillance, enforcement, and incident response in the Dutch North Sea. The Coast Guard is positioned at the highest interest and near-maximum power as the primary operational actor for surface surveillance and maritime law enforcement. The Navy follows at high power and high interest due to its exclusive capability for subsea surveillance and its role in hybrid threat response. The Ministry of Defence holds the highest formal power as the parent ministry, with the NCTV close behind for its coordinating role in national security. The MIVD is included at high power and high interest for its intelligence assessment function regarding hybrid threats to North Sea infrastructure; threat analysis helps shape monitoring priorities. The Marechaussee and maritime police are positioned at medium power and medium interest, reflecting their supporting roles in enforcement. BZ is placed at medium power and medium interest, reflecting its diplomatic role in Bonn Agreement reform and bilateral exchanges with Nordic counterparts on incident response models - important, but one step removed from operations. Rijkswaterstaat and the ILT/MSA are included for their operational roles in maritime safety and pollution monitoring. TenneT holds medium power and interest from this perspective: it is a consumer of monitoring data rather than a provider, but its infrastructure is among the primary objects of surveillance.

The technology and USV/UUV supplier industry is positioned at low power but high interest: these firms have no formal authority but stand to benefit significantly from expanded procurement. Offshore wind developers and the shipping industry hold low-to-medium power but medium interest, as their operations generate monitoring requirements (vessel traffic, AIS compliance) without directly controlling surveillance capacity. The fishing industry sits at low power and medium interest, reflecting the strong role of the fishing lobby in maritime affairs in general, as well as fisheries scepticism of increased maritime enforcement.

At the international level, NATO MARCOM is at high power and medium interest for its role in allied maritime security coordination. The Bonn Agreement is included at medium power and interest as the primary multilateral framework for pollution incident response, and HELCOM is included as a reference model at low power - it has no direct authority over the North Sea but its operational practices (annual BALEX exercises, POLREP reporting) are a valuable benchmark, and HELCOM also helps to harmonise maritime spatial planning practices through e.g. the GNSBI. EMSA is positioned at medium power and high interest in this map. This is a higher interest than in the critical infrastructure map because monitoring and surveillance are at the core of EMSA's operational mandate. EMSA provides EU-wide maritime situational awareness through its Integrated Maritime Services, offers CleanSeaNet satellite imagery for pollution detection, and has been expanding its drone services to support member state coast guards. Its power is medium rather than high because it operates in a supporting role to national authorities rather than holding enforcement powers of its own, but its technical and operational contributions to North Sea monitoring are substantial and growing.

2. Critical Infrastructure

The stakeholder map for critical infrastructure reflects the institutional landscape governing the protection of subsea cables, pipelines, and offshore energy assets in the Dutch North Sea. Power is assigned on the basis of formal legal authority, budgetary control, and operational mandate; interest is assessed by the degree to which an actor's core mission is directly affected by infrastructure resilience. I&W and EZK are positioned at high power and high interest because they hold primary policy responsibility for maritime infrastructure and energy security respectively. EZK additionally oversees the transposition of the CER Directive through the Wwke. The Ministry of Defence and the NCTV hold high power due to their roles in threat assessment and national security coordination, though their interest is somewhat lower since critical infrastructure protection is one of several competing priorities.

TenneT and Gasunie, as the transmission system operators for electricity and gas, are placed at the highest interest levels: they own and operate the assets at stake, and are likely to be designated as critical entities under the Wwke. Their power is high but below government ministries, as they operate within a regulatory framework set by the state. The Coast Guard, Navy, and Police are positioned at high power but medium interest, reflecting their enforcement and patrol mandates, which are essential but shared across multiple domains. Cable maintenance firms and offshore wind developers are placed at medium power and high interest: they are directly affected by infrastructure disruptions but lack regulatory authority.

The fishing industry and environmental NGOs hold low power but high interest, as their operations are affected by infrastructure development and protection measures without having formal decision-making authority. Insurance regulators sit at medium power and medium interest, as their role in risk assessment and liability frameworks is indirect but structurally important. NATO and the European Commission are positioned at high power but medium interest: both have significant authority over allied security frameworks and EU resilience directives respectively, but the Dutch North Sea is one theatre among many. The ILT/MSA is included at high power and medium interest for its role in port state control and maritime safety enforcement. EMSA is positioned at medium power and medium-to-high interest: while it lacks direct regulatory authority over member states, it provides critical operational capabilities - notably CleanSeaNet satellite surveillance for pollution detection and SafeSeaNet for vessel traffic monitoring - that directly support infrastructure protection. EMSA's expanding role in deploying drones for member state coast guards makes it an increasingly important enabler of the surveillance capacity that the report identifies as lacking.

3. Ecology

The ecology map captures stakeholders relevant to the environmental governance of the Dutch North Sea, including biodiversity protection, cumulative impact assessment, and the integration of ecological considerations into offshore wind development. The Ministry of LNV is positioned at the highest power and interest as the lead ministry for nature conservation, the designation of MPAs, and the implementation of EU biodiversity obligations - it replaces EZK as the primary actor in this domain. I&W retains high power for its spatial planning authority but slightly lower interest than in other maps, as ecology is a secondary rather than primary mandate. EZK is positioned at high power but medium interest: its energy transition priorities can conflict with ecological objectives. Rijkswaterstaat holds high interest due to its operational role in monitoring North Sea ecology and managing Natura 2000 sites, while RVO administers ecological requirements within tender procedures. Offshore wind developers are placed at medium power and medium-to-high interest. They are directly affected by ecological tender criteria and nature-inclusive design requirements, and some have invested in voluntary mitigation measures.

The fishing industry holds low formal power but the highest interest: fisheries are the most directly affected sector by both ecological regulation and spatial competition with offshore wind. Oil and gas operators and the dredging/construction industry are included at lower levels, as their ecological impact is significant but their engagement with ecological governance is more passive. Environmental NGOs and Stichting De Noordzee are positioned at low power but maximum interest: they are the most active civil society advocates for ecological protection in the North Sea and have influenced policy through litigation and public campaigns, though they lack formal decision-making authority. The Commissie m.e.r. holds medium power and high interest as the independent advisory body that reviews Environmental Impact Assessments for offshore projects.

At the international level, the OSPAR Commission is placed at medium power and high interest as the primary treaty framework for protecting the marine environment of the North-East Atlantic. ICES provides the scientific advice underpinning fisheries management and ecosystem assessments. The Greater North Sea Basin Initiative is included as an emerging multilateral platform for knowledge exchange on cumulative ecological effects, through this body, we also see some HELCOM best practices being disseminated to the North Sea. Among research institutions, WOZEP (the government's offshore wind ecological research programme) is placed at medium power and the highest interest, as its findings directly inform permit decisions. WUR/NIOZ and Deltares hold low formal power but high interest, providing the foundational marine ecology and hydrodynamic research that underpins evidence-based policy across all four challenges.

4. Offshore Energy Transition

The offshore energy transition map captures the stakeholder landscape around the Netherlands' ambition to scale offshore wind to 21 GW by 2030 and develop energy islands with cross-border interconnection. EZK is positioned at the highest power and interest as the ministry responsible for energy policy, tender design, subsidy frameworks (including the shift to CfD), and the proposed energy island programme. I&W follows closely due to its authority over maritime spatial planning and the Noordzeeakkoord. TenneT holds near-maximum interest and power as the entity responsible for offshore grid connections - our finding that the deteriorating business case for offshore wind is fundamentally an infrastructure architecture problem places TenneT at the centre of this challenge. RVO is included at high power and high interest as the implementing agency for wind tender procedures and subsidy administration. Rijkswaterstaat sits at medium-to-high levels for its role in spatial planning and permitting. Gasunie is positioned slightly lower than in the critical infrastructure map, reflecting the fact that its hydrogen ambitions (offshore Power-to-X) are still emerging rather than operational.

Offshore wind developers are placed at medium power but the highest interest: they are the most directly affected by policy decisions on tender criteria, grid connections, and energy island design, but they operate within a framework set by the government. Oil and gas operators hold medium power and interest; they retain legacy infrastructure and decommissioning responsibilities relevant to the energy island concept. Port authorities are included for their logistical role in offshore wind construction and operations. The fishing industry and environmental NGOs are at low power but very high interest, as both are directly affected by spatial competition and ecological impacts of offshore wind expansion. ACM holds medium power as the market regulator overseeing energy market competition and grid access.

At the international level, the European Commission is positioned at high power and high interest due to its authority over PCI designation and state aid frameworks that shape the energy island business case. ENTSO-E is included for its role in cross-border grid planning, and the North Seas Energy Cooperation forum for its function as the primary multilateral platform for coordinating offshore energy development among North Sea states. TNO/ECN and WUR/NIOZ are positioned at low power but high interest as the key research institutions whose work on wind energy technology and marine ecology underpins evidence-based policy.

Financing a North Sea Energy Island

Developing an energy island in the North Sea will require capital on a scale that a single government is unlikely to finance alone. The Bornholm Energy Island provides a useful benchmark: the project has an estimated total cost of approximately €7 billion, of which the European Commission contributed €645 million through the CEF-E, covering roughly 9% of total project costs.[155] The remainder is shared between the Danish and German transmission system operators, Energinet and 50Hertz, with state-backed guarantees supporting the investment.

The Princess Elisabeth Island in Belgium is also approaching €7 billion in total costs.[156] This is a more fitting comparison for a potential North Sea Energy Island, since it is also built on a caisson-based structure.

For a comparable North Sea project, the Dutch government should pursue a cost-sharing structure similar to that of the Bornholm Energy Island. An intergovernmental coalition involving the Netherlands, the UK, Norway, Germany and Denmark could jointly finance the project, with costs distributed proportionally according to each country's share of electricity received. At the same time, the Dutch government should seek CEF-E support at an early stage of development. Access to CEF-E funding requires a project to obtain PCI status, which in turn demands early diplomatic engagement and close cross-border coordination with European partners.[157]

However, the composition of this coalition introduces important financing asymmetries that must be addressed. Norway, as an EEA member, participates in the CEF framework and can in principle contribute and benefit from PCI-designated projects alongside EU member states. The UK, following its departure from the EU, is not formally eligible for CEF-E funding as a PCI partner, though it can participate in PMIs - a separate category under the revised TEN-E regulation covering cross-border projects with third countries.[158] As a result, the coalition cannot be financed through a single shared framework. Instead, two parallel financing tracks are needed: one in which the Netherlands, Denmark, and Norway jointly pursue CEF-E funding through a PCI application; and a separate bilateral investment agreement between those countries and the UK, through which the UK contributes its share of project costs outside the EU framework. The Dutch Ministry of Foreign Affairs will need to negotiate both tracks simultaneously - one within EU institutions, and one directly with the UK government and its TSO, the National Energy System Operator.

The Dutch government should pursue CEF-E designation for any future North Sea Energy Island at the earliest possible stage of development. Since the European Commission updates the PCI list every two years, the next application window, expected around November 2027, should be targeted immediately.[159] Early PCI or PMI designation is essential not only for accessing EU co-financing, but also for anchoring the broader intergovernmental coalition within a clear institutional framework.

To manage the high capital intensity and the international complexity of a North Sea energy island, the Dutch government should adopt a project finance model via an SPV.[160] This is a separate legal entity that allows the Dutch government and its partners to raise capital specifically for the project without placing the full debt directly on national balance sheets, thereby helping preserve sovereign credit ratings. In this way, the SPV isolates project-specific risks (e.g., construction delays in the caisson placement) from the parent entities (the Ministeries, TSOs). Finally, the SPV can serve as "neutral ground" where the Netherlands, UK, Denmark, and Germany can all hold equity. Since the SPV is governed by a long-term contract (typically 20-25 years), it ensures stability regardless of shifting political climates in the participating countries.

Securing government-backed financial guarantees will be equally important on the domestic side. TenneT, the Dutch TSO and the most likely lead operator for the Dutch component of any North Sea energy island, has faced significant capital pressures in recent years.

List of abbreviations

ACM	Netherlands Authority for Consumers and Markets
AIS	Automated Identification System
AUV	Autonomous Underwater Vehicle
BZ	Ministry of Foreign Affairs
CEF-E	Connecting Europe Facility for Energy
CER	Critical Entities Resilience
COTS	Commercial off-the-shelf
ECN	Energy Research Centre of the Netherlands
EEA	European Economic Area
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EMSA	European Maritime Safety Agency
ENTSO-E	European Network of Transmission System Operators for Electricity
ESAP	Environmental and Social Action Plan
EZK	Ministry of Economic Affairs and Climate
GNSBI	Greater North Sea Basin Initiative
GW	Gigawatt
HELCOM	Helsinki Commission
ICES	International Council for the Exploration of the Sea
IDON	Interdepartmental Directors North Sea Consultative Body
ISPS	International Ship and Port Facility Security
IUU	Illegal, unreported and unregulated
I&W	Ministry of Infrastructure and Water Management
LNV	Ministry of Agriculture, Fisheries, Food Security and Nature
LCCC	Low Carbon Contracts Company
MIVD	Military Intelligence and Security Service
MPA	Marine Protected Area
MSA	Maritime Safety Authority
MSP	Marine spatial planning
MW	Megawatts
NATO	North Atlantic Treaty Organisation
NB8	Nordic-Baltic Eight
NCTV	National Coordinator for Counterterrorism and Security
NGO	Non-governmental organisation
NSEC	North Seas Energy Cooperation
NSWPH	North Sea Wind Power Hub
PCI	Project of Common Interest
P&I	Protection and Indemnity
PMI	Projects of Mutual Interest
PPP	Public-private partnership
RVO	Netherlands Enterprise Agency
SOP	Standard operating procedure
SPV	Special Purpose Vehicle
TNO	Netherlands Organisation for Applied Scientific Research
TSO	Transmission System Operator
UNCLOS	United Nations Convention on the Law of the Sea
USV	Unmanned Surface Vehicle
UUV	Unmanned Underwater Vehicle
Wwke	Wet weerbaarheid kritieke entiteiten (transposition of the CER Directive)
WUR	Wageningen University and Research
NIOZ	Royal Netherlands Institute for Sea Research

List of Interviewees

A special thank you to the total of 26 experts from various backgrounds we have interviewed.

The following have given their consent to be mentioned in this policy advice. Some of them wish to remain anonymous.

Name	Organisation	Date
Sybilla Dekker	Noordzeeoverleg	14 - 1 - 2026
Ben Bekkering	Clingendael, Atlantische Commissie	14 - 1 - 2026
Daniël Scholten	Wageningen University & Research; Clingendael	23 - 1 - 2026
Just van der Endt	Witteveen + Bos	27 - 1 - 2026
Jan Stockbruegger	Institute for the Protection of Maritime Infrastructures	4 - 2 - 2026
"Policy Officer"	Embassy of the Netherlands in Denmark	20 - 2 - 2026
"Policy Officer"	Embassy of the Netherlands in Norway	12 - 2 - 2026
Louise van Schaik	Clingendael	27 - 2 - 2026
Kees Schellens	Ministry of Defence	27 - 2 - 2026
Mariken Betsema	De Burgemeester van Jouw Noordzee	2 - 3 - 2026
Joris Koornneef	De Burgemeester van Jouw Noordzee, TNO	27 - 3 - 2026
"Project Researchers & Coordinators" (3)	HELCOM	13 - 3 - 2026 27 - 3 - 2026
"Professional Secretary"	HELCOM	27 - 3 - 2026
Tomas Jermalavicius	International Centre for Defense and Security	27 - 3 - 2026
"Policy Officer"	Ministry of Infrastructure and Water Management	29 - 3 - 2026
Jelle Kaptijn	Fisheries sector expert	1 - 4 - 2026
Maria Lind Arlaud	State of Green	13 - 4 - 2026
"Legal Officer"	Ministry of Foreign Affairs of the Netherlands	20 - 4 - 2026

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