

POLICY BRIEF

Europe's energy challenges: security and infrastructure in a dangerous landscape

Introduction

The safeguarding of critical offshore energy infrastructure has assumed a heightened level of urgency in the wake of the Nord Stream pipeline explosions in September 2022 and the suspected sabotage of the Baltic Connector in the summer of 2023. While the discourse on infrastructure protection has been prevalent since the 2001 terrorist attacks in the United States, the emphasis on maritime zones has only recently become pronounced. The ramifications of sabotage, as well as unintended incidents of force majeure in these zones, can profoundly impact Europe's grid-bound energy markets, disrupting both electricity and gas sectors.

This paper posits that, despite recent advancements in initiatives and the strengthening of legal frameworks, the protection of critical energy infrastructure remains fraught with significant challenges. It advocates for the integration of a strategy for measures of protective and surveillance for offshore grid-bound energy infrastructure into the European Sea Basin Strategy. This strategy represents a dynamic and innovative policy approach, designed to bolster cooperation and foster innovation across various European maritime zones. A key component of this policy framework is the emphasis on prioritizing the development of offshore wind energy and enhancing inter-state connections through maritime cables and gas pipelines. Current policy evolutions indicate a strategic shift in the role of maritime infrastructure, acknowledging the emergence of new security risks. While onshore energy infrastructure protection is undeniably crucial and demands focused efforts at the national level, the protection of maritime infrastructure necessitates a coordinated approach at the EU level.



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Drawing from these observations, the Policy Brief suggests relating the voluntary efforts in protection and surveillance of offshore grid-bound energies by stimulating insurance mechanisms against risks and by ensuring back-up solutions for existing infrastructure.

This way, market incentives will increase effectiveness of monitoring and surveillance, while inter-state cooperation will be framed by the European Sea Basins Strategy.

To address this set of issues, the Policy Brief will initially review recent developments in policy literature on this subject. It will then provide an overview of the existing and latest initiatives undertaken by the EU and NATO, aiming to conduct a comprehensive policy gap analysis. The paper will conclude by delineating the primary policy challenges associated with the protection of critical infrastructure, offering insights into potential policy responses.

Highlights

- The recent Nord Stream pipeline explosion and Baltic Connector pipeline damage have catapulted the protection of critical infrastructure in maritime areas into the spotlight, underscoring its paramount importance.
- In the past, several academic and policy studies have pointed out the urgency of this issue, highlighting the necessity for enhanced measures in protection, monitoring, and surveillance at a strategic level.
- The realm of infrastructure protection now crucially encompasses cybersecurity, acknowledging the growing reliance on digital tools for the efficient management of energy infrastructure and flow.
- Recent policy initiatives within the EU and across the Transatlantic alliance emphasize the imperative for inter-state, bottom-up cooperation, focusing on cross-border efforts to safeguard offshore infrastructure.

There exists a pressing need to align energy policy objectives with the security of critical infrastructure, advocating for their integration into a unified policy goal with higher regional cooperation within European Sea Basins Strategy.

1. Evolving expert Discussions on offshore energy infrastructure protection

In the first decades of the 20th century offshore oil production became a pivotal factor for energy supplies. Oil markets have evolved into highly diversified and globally traded commodities, making it easier to mitigate disruptions by establishing alternative supply chains. The development of grid-bound electricity and gas markets has brought new dimensions to the reliance on the infrastructure. The issue of protection has been primarily a focal point in expert discussions in the US specially since the 11 September 2001 terrorist attacks. The dramatic event brought up a debate about increasing control over ports, maritime commercial flows, liquified natural gas (LNG) facilities, and bridges with the objective to prevent "possible avenues that could be used to illegally introduce weapons, explosives, and other contraband as well as to penetrate terrorists into the American homeland." 1

Later, experts have outlined that maritime areas are at a greater risk due to their typically lower level of control compared to on-land infrastructure.² It was noted that offshore areas include "vulnerable facilities, installations, and critical infrastructures such as: navigation infrastructure, cranes, berths, pipelines, railways, bridges, roads, water supply systems, fuel storage and hazardous cargoes, container terminals, pilot ships and more. Bridges are particularly vulnerable to explosives or explosives associated with chemical-biological agents."³ Effective command and control measures in maritime zones have been also in focus of expert discussions in the US drawing on lessons learned from the existing experience of

¹ N.O. Bakir, "A Brief Analysis in Threats and Vulnerabilities in the Maritime Domain" in I. Linkov et al. (eds), *Managing Critical Infrastructure Risks*, Conference Proceedings, Springer, 2007, pp. 17-51.

² T. Prodan, "Maritime Terrorism and Resilience of Maritime Critical Infrastructure", *National Security and the Future*, 1-2/18 (2017), p. 103. pp. 103-122.

³ T. Prodan, Op. Cit., p. 103

onshore infrastructure surveillance.4 This further implies an assessment of surveillance for what was defined as Safety Critical Maritime Infrastructure (SCMI) systems.⁵ In the meantime, in the EU, the need for the critical infrastructure protection was stipulated by the EU Directive 2008/114/EU on the identification and designation of European critical infrastructures and the assessment of the need to improve their protection. Yet, the Directive did not focus specifically on infrastructure located in the maritime zones. Importantly the Directive provides a definition of the European critical infrastructure being "located in Member States the disruption or destruction of which would have a significant impact on at least two Member States. The significance of the impact shall be assessed in terms of cross-cutting criteria. This includes effects resulting from cross-sector dependencies on other types of infrastructure." 6

Both in the EU and the US, the development of digital tools for monitoring infrastructure and managing energy flows triggered a shift towards assessing cybersecurity risks. In maritime zones, cybersecurity primarily concerns operations in harbours. Indeed, harbours are central to ensuring the passage of cargoes and tankers, as well as the operation of offshore wind parks; all these activities require additional efforts in surveillance⁻⁷

This short overview of policy debates still reveals that in Europe the issue of protecting infrastructure lagged behind other energy security concerns for a long time. However, as security relations with Russia began to deteriorate from 2014 onwards and incidents involving Russian military planes occurred in the Baltic Sea, policy discussions shifted their focus to offshore infrastructure.

The concerns surrounding Russian possible detrimental actions in the Baltic Basin triggered pri-

oritization of the offshore infrastructure protection. In this context, in 2019, a policy think tank the International Centre for Defense and Security (ICDS) emphasized the need for new national approaches to infrastructure protection in the Baltic Sea area. National strategies would emphasize the links between their own command, control, communications, computer, intelligence, surveillance and reconnaissance systems networks and visiting NATO warships to provide for better training opportunities in the region. ICDS also recommended to enhance national maritime situational awareness, including through more presence at sea.⁸ Besides, the think tank also provided a list of recommendations for NATO activities in the protection of infrastructure and surveillance:

- continue to monitor Russian naval developments;
- place greater emphasis on the threats posed by hybrid maritime operations and explore possible means to counter them;
- place greater emphasis in their strategic messaging on Russia's substantial economic dependence on the Baltic Sea, and its vulnerability to the disruption of trade flows in the region;
- continue to deploy and exercise principal surface combatants on the Baltic Sea;
- enhance its overall naval presence in the Baltic, in particular in the eastern Baltic;
- ease force generation problems for deterrence operations by reorganising its exercise programme;
- increase the number of naval staff officers at Joint Force Command Brunssum;

⁴ R. B. Watts, "Maritime Critical Infrastructure Protection. Multi-Agency Command and Control in an Asymmetric Environment", *Homeland Security Affairs* 1/2, 2005, Article 3.

⁵ A. John and T C Nwaoha, "Safety Critical Maritime Infrastructure Systems Resilience. A Critical Review", *Trans RINA* Vol. 158 part A3 Jul-Sep 2016, pp. A-209-A-217.

⁶ Council Directive, 8.12.2008, eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32008L0114, L. 345

⁷ B. Farah et al., "Information | Free Full-Text | Cyber Security in the Maritime Industry: A Systematic Survey of Recent Advances and Future Trends (mdpi.com)", 13/22, 2022.

⁸ H. Lange, B. Combes, T. Jermalavičius, T. Lawrence, To the Seas Again Maritime Defence and Deterrence in the Baltic Region, International Centre for Defense and Security, April 2019, p. V.

 regularly exercise the augmentation of Maritime Command and the deployment of its deployable elements.⁹

There are also associated costs with the higher surveillance. The ICDS noted a need in investing into "multi-purpose naval vessels to provide capabilities for anti-submarine and antisurface warfare, command and control, and enhanced maritime situational awareness".¹⁰ It can easily be noticed that the authors' recommendations focus on hard security ensured by NATO rather than on broader politico-economic strategies which can be ensured by the EU.

Two years later, in 2021, a conference titled 'Critical Infrastructure in the Baltic States and Norway: Strategies and Practices of Protection and Communication' was conducted to ensure a policy dialogue on the matter. This joint effort of different public bodies of the Baltic States and Norway gives an overview of the different national strategies regarding critical infrastructure and their relation the respective countries' public.¹¹ Subsequently, a publication came out at the Latvian Institute of International Affairs, where the topic equally received a vivid attention.¹²

Yet, the policy debate remained within the limited geographic area in the EU. Even more, despite positive steps in enhancing regional security, the incident with the Nord Stream pipelines in Baltic Sea near Bornholm, Denmark. The explosion unveiled the inadequacy of the existing measures. In summer 2023, a Lithuanian expert affiliated to the NATO Energy Security Center further pointed out a need of better surveillance mechanisms, while recognizing that critical infrastructure is an inherent part of the energy security discussion.¹³ It may further be argued that the Baltic region may provide an example for other sea basins in Europe

in prioritizing safety concerns for offshore energy infrastructure in electricity and gas.

There is a growing recognition that safeguarding infrastructure in maritime zones may warrant increased attention beyond the natural gas sector, particularly given the EU's commitment to expanding reliance on offshore wind parks as part of its decarbonization strategy. As maritime zones can be subject of important vulnerabilities, ensuring safety and reliability of undersea cables may become the key concern in the context. For instance, right in the aftermath of the incident with the Baltic Connector, disruptions of the undersea cables occurred and it has been argued that subsea cable incidents might be linked to the earlier gas pipeline alleged sabotage.¹⁴ The issue triggers broader concerns for the Baltic electricity markets as they are connected to Nord Pool via under-sea interconnections with Finland (from Estonia) and Sweden (from Lithuania). For instance, in January 2024, one of the cables connecting Estonia to Finland suffered an outage provoking power price spikes in the markets.¹⁵

With the projected importance of offshore wind parks in the European power supply, the critical infrastructure in offshore areas gains additional importance also in relation to non-intentional accidents. The recent collision of the drifting bulk carrier Julietta D34 with an offshore wind turbine foundation in the Hollandse Kust Zuid wind farm accentuates the pressing concerns surrounding these installations. With the development of new energies, ports will also play a pivotal role in monitoring operations and maintenance of offshore wind parks. As wind farms expand further offshore deeper waters, operational risks increase altogether with possible security risks.

Drawing from the expert discussions about the increasing geopolitical tensions and emergence of

14 M. Page, Opinion, <u>OPINION | Russia, a Chinese cargo ship and the sabotage of subsea cables in the Baltic Sea - Baird</u> <u>Maritime</u>, 1 November 2023

15 Estlink 2 Estonia-Finland electricity cable suffers outage | News | ERR

⁹ Ibid, p. V

¹⁰ Ibid, p. VI

¹¹ ICDS, <u>Watch now! Critical Infrastructure in the Baltic States and Norway: Strategies and Practices of Protection and Com-</u> munication - ICDS, Tallinn, 2021

¹² Critical infrastructure in the Baltic states and Norway: strategies and practices of protection and communication (liia.lv)

¹³ L. Trakimavicius (2023), "The Baltics Will Have to Ramp Up their Offshore and Maritime Energy Infrastructure Protection Efforts", *Baltic Times*, 16.07.2023

new risks and vulnerabilities, maritime energy infrastructure protection gains a particular importance in the era of decarbonization and offshore wind development. Policy actions would need to follow the identification of vulnerabilities and risks.

2. Evolving policy frameworks

The EU energy security priorities have traditionally been focused on ensuring diversification of supplies and well functioning internal energy market. The foregrounding priorities of energy security were defined by the EU Green Paper published in 2000.¹⁶ Safety of offshore oil and gas operations was part of the EU legislative framework since 2004 with the objective to reduce risks of major accidents in offshore oil and gas operations; the most recent amendments of the Directive took place in 2013.¹⁷

As according to the primary EU law, energy security is a prerogative of the Member States, the existing EU policy frameworks refer to the national security plans. For example, Council Directive on the identification and designation of European critical infrastructures and the assessment of the need to improve their protection of 8 December 2008¹⁸ refers to Operators Security Plans (OSP) for European Critical Infrastructure (ECI). OSP are defined by "risk assessment and the identification, selection and prioritisation of counter measures and procedures [which] should be in place in all designated ECIs"19 and the Council Directive requires that "each Member State [...] assess whether each designated ECI located on its territory possesses an OSP or has in place equivalent measures".20

Specific reference to the protection of critical energy infrastructure (with implicit focus on grid-bound

sectors) appeared in the Communication "European Strategy for Energy Security" published in 2014. The text refers to the need for a broader "debate on the protection of strategic energy infrastructure such as gas and electricity transmission systems which are providing a crucial service for all consumers".²¹ The same year saw an adoption of the EU Maritime Security Strategy based on four principles: cross-sectoral cooperation, operational integrity, respect for rules and principles, and maritime multilateralism.

This short overview of policy mechanisms reveals that the protection of offshore critical infrastructure has already been addressed in several policy documents. However, the emergence of new security threats necessitates the enhancement of policy frameworks, measures, and the effectiveness of their implementation.

Recent years marked by increasing tensions with Russia saw new policy initiatives taken. First, the Critical Entities Resilience Directive was adopted in 2022, aiming to enhance resilience to risks that could impact the provision of essential services, indispensable to the proper functioning of the society and the economic system. The EU cybersecurity rules introduced in 2016 were updated by NIS2 Directive that came into force in 2023. The Digital Operational Resilience Act (DORA) creates a regulatory framework on digital operational resilience. Council recommendations were also agreed on a Union-wide coordinated approach to strengthen the resilience of critical infrastructure.²² The Council Recommendations are non-binding and rely on voluntary initiatives and actions driven by the political will of Member States to collaborate in ensuring better protection for infrastructure.²³ Recommendations imply joint cooperation and actions

- 20 Ibid, Article 5, p. L 345/79
- 21 European Commission, European Energy Security Strategy, 28.5.2014 COM(2014) 330 final, p. 6
- 22 Council Recommendation of 8 December 2022 on a Union-wide coordinated approach to strengthen the resilience of critical infrastructure (Text with EEA relevance), *Official Journal of the European Union*, 2023/C 20/02 (4) <u>pdf (europa.eu)</u>
- 23 Council Recommendation of 8 December 2022, 2023/C 20/01 (2).

¹⁶ Green Paper - Towards a European strategy for the security of energy supply - Publications Office of the EU (europa.eu)

¹⁷ Directive 2013/30/EU of the European Parliament and of the Council of 12 June 2013 on safety of offshore oil and gas operations and amending Directive 2004/35/ECText with EEA relevance (europa.eu).

¹⁸ Council Directive, 8.12.2008, eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32008L0114

¹⁹ Ibid, L 345/76

to protect the critical infrastructure.²⁴ Particular importance is allocated to the critical infrastructure that lays outside of the counties' territories, such as offshore energy infrastructure.²⁵ The emphasis on national measures in protecting offshore infrastructure has shown a certain level of success in the past, particularly concerning the protection of offshore oil and gas fields. However, the effectiveness of these measures is entirely contingent upon the capabilities of individual Member States in implementing them.

On the grounds of the Council's recommendations, three priority levels can be outlined: preparedness, response and inter-state coordination.²⁶ These areas are drawn out in a detailed way to convey concrete steps that are recommended to be taken at a Member State and Union levels.²⁷

In March 2023, the European Commission and the High Representative adopted a Joint Communication on the update of the EU Maritime Security Strategy and its Action Plan.²⁸ The Joint Communication takes notes of the increased security risks since the adoption of the first draft of 2014, briefly referred to above, and aims "at ensuring the capacity to act promptly and effectively in the maritime domain, and in other operational domains (i.e. land, air, cyber and outer space)."²⁹

The level of challenges implies a need for closer EU and NATO cooperation. On January 11, 2023, President von der Leyen and NATO Secretary General Stoltenberg announced the launch of the EU-NATO Task Force on the resilience of critical infrastructure in response to recent acts of sabotage against the Nord Stream gas pipelines.³⁰ The Final Assessment Report of the Task Force makes it very clear that critical infrastructure and its protection play a fundamental role in societies and economies.³¹

The EU-NATO Task Force will "share best practices, enhance shared situational awareness, develop key principles to improve resilience including mitigating measures and remedial actions"32 and will allocate resources³³ focusing on protecting energy and transport infrastructure and on reinforcing cyber-security. The objective consists in mitigating risks to operations stemming either from human action (e.g. sabotage) or natural force majeure. The energy sector's real-time requirements, cascading effects on many different sectors, and its mix of old and new technologies are specific characteristics that make it especially vulnerable to risks.³⁴ The Report issued by the Task Force refers to the vulnerability of undersea structures and the EU's new reliance on renewable energy and subsequent supply chain vulnerabilities.35

The EU has clearly strengthened its legal and policy framework for the protection of critical infrastructure. However, the protection of facilities remains the national prerogative and the actual impact of the EU recommendations still depend on effectiveness of national measures. Without challenging the basis of these arrangements, the failure to protect Baltic Connector and difficulties to identify the perpetrators of Nord Stream explosions demonstrate

- 24 Council Recommendation of 8 December 2022, 2023/C 20/01 (1).
- 25 Council Recommendation of 8 December 2022, 2023/C 20/01 (3).
- 26 European Commission (2023): Critical Infrastructure Resilience.
- 27 Council Recommendation of 8 December 2022, 2023/C 20/06 et sqq.)
- 28 Maritime Security: EU updates strategy (europa.eu)

- 31 EU-NATO_Final Assessment Report Digital.pdf (europa.eu) Final Assessment Report, 2023, p. 3
- 32 European Commission Launch of the EU-NATO Task Force (europa.eu), 2023
- 33 EU-NATO_Final Assessment Report Digital.pdf (europa.eu) Final Assessment Report, 2023, p. 8
- 34 Ibid., p. 6
- 35 Ibid., p. 5

²⁹ Joint Communication of the Commission and of the High Representative on the update of the EU Maritime Security Strategy and its Action Plan "An enhanced EU Maritime Security Strategy for evolving maritime threats, Brussels, 10.3.2023 JOIN(2023) 8 final, p. 4

³⁰ European Commission, Launch of the EU-NATO Task Force: Strengthening our resilience and protection of critical infrastructure, Brussels: 2023. Statement/23/1705

that the protection of critical infrastructure offshore remains a serious issue and additional measures need to be considered.

3. Way forward

Current and emerging policy measures are focused on enhancing protection capabilities in various domains, particularly in strengthening cybersecurity and surveillance over offshore infrastructure. A blend of initiatives from the EU and NATO significantly bolsters Europe's capacity to safeguard critical energy infrastructure within maritime zones. The primary challenge lies not in devising new security measures, but in augmenting the effectiveness of existing ones. The burgeoning development of offshore wind parks underscores the necessity for heightened efficacy in safety measures. Without this, Europe's energy systems are at risk of encountering significant vulnerabilities in the future. As we progress towards decarbonization, it becomes imperative to fortify the protection of offshore energy infrastructure.

Despite the existence of various policy frameworks dedicated to the protection of critical infrastructure, there is a discernible lack of alignment with other maritime strategy-related policy frameworks, such as the EU Sea Basin Strategies. The comprehensive development of all sea-related activities necessitates a coherent policy framework, one that involves the participation of all relevant stakeholders. Integrating recent resilience initiatives with the EU Sea Basin Strategies would pave the way for a more unified approach to the protection and surveillance of energy infrastructure. The EU Sea Basin Strategies, emerging from the Blue Economy concept, also encompass policy cooperation in the realms of energy innovation and infrastructure. Now, several action plans for maritime cooperation have been adopted from the Atlantic to the Baltic and the Adriatic seas, with a minor exception of more mild Black sea cooperation framework. The EU Sea Basins Strategy may further contribute to the uniformization of inter-state cooperation on the topic of maritime infrastructure cooperation.

Since January 2024, the EU Belgian Presidency has underscored the importance of these strategies in bolstering both energy security and the transition to sustainable energy. As the European Sea Basin Strategies are currently under refinement, there is an opportunity to include new dimensions, specifically those enhancing the safety of offshore energy infrastructure. Incorporating security measures into broader policy frameworks will foster incentives for critical backup solutions in both the gas and electricity sectors, a move increasingly pertinent as the interlinking of these sectors grows with the ongoing energy transition.

With the rapid expansion of offshore energy infrastructure, operators should be incentivized to adopt advanced protection and surveillance technologies and incorporate threat assessments into the design of new energy infrastructure. Regulatory incentives for technological innovation should be established to support this.

The measures should focus on creating financial incentives and penalties to encourage the implementation of the most efficient security measures for offshore energy infrastructure. One vital aspect involves assigning responsibilities for compensating damages through meticulously formulated insurance policies. Insurance premium might stimulate the incentives to implement the recommendations of surveillance more effectively. While insurance may elevate operational costs, it should also be regarded as a fundamental element of overall energy security expenditures. Another aspect concerns the establishment of backup solutions for potential disruptions; presumably, encouraging backup solutions will motivate market players to invest more in infrastructure.

Focusing on economic measures will aid in the seamless integration of infrastructure protection into the broader objectives of EU energy policy. This strategy requires existing market participants to incorporate potential infrastructure risks as a key factor in their decision-making processes. Market incentives will be instrumental in designing the most effective protection measures and technologies. European Sea Basins Strategy might offer an effective framework to ensure coordination and uniformization of norms.

Conclusion

An overview of academic and policy discussions highlights the importance of prioritizing maritime surveillance, monitoring, and cybersecurity as key components of energy security. Amidst Russia's ongoing aggression in Ukraine, it remains crucial at this stage to continue and even escalate targeted operations by NATO naval forces to support the protection of offshore infrastructure. While it is impossible to protect all infrastructure, these operations play a vital role in deterrence.

In this context, integrating recommendations into the new European Sea Basin Strategies policy framework is logical, as decarbonization and cross-border cooperation in maritime zones necessitate robust security measures.

The latest policy initiatives continue to emphasize bottom-up approaches for ensuring infrastructure security. However, existing measures have not prevented incidents like those involving the Nord Stream and Baltic Connector pipelines. Therefore, it is essential to consider additional regulatory measures and market adaptations, especially as the offshore infrastructure is projected to experience exponential growth amidst escalating geopolitical tensions.

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