

SUBMERGED MUNITIONS IN THE BALTIC SEA: FROM RISK ASSESSMENT TO PRACTICAL DECISIONS



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THE RISKS ARE MANAGEABLE — BUT THEY MUST FIRST BE ASSESSED, CASE BY CASE

The Baltic Sea contains **large quantities of old conventional and chemical munitions**. Some sites may pose significant risks; others may be suitable for continued monitoring.

The **risks are multi-dimensional**: submerged munitions might endanger the marine environment, affect fisheries or maritime safety, create security concerns, and delay offshore wind, cable, pipeline or other infrastructure projects.

Decades of HELCOM work, national monitoring and EU-funded research mean the issue is not unknown — but **more site-specific data is needed** to assess individual sites properly.

Scientists recommend moving from general concern to **site-specific risk assessment**: what should be remediated, what should be monitored, and what can be safely left in place.

Policy-makers can help turn knowledge into decisions by supporting **better data sharing, common criteria** for the Baltic Sea region and **early inclusion of munitions risk in maritime planning**, permit-granting procedures and Environmental Impact Assessments.

THE DILEMMA: NOT ALL MUNITIONS CAN BE REMOVED, SO SITES MUST BE PRIORITISED

The Baltic Sea floor still holds large quantities of conventional and chemical munitions left over from the World Wars – an estimated 40,000 tonnes of chemical warfare agents alongside over one million tonnes of unexploded conventional ordnance. Munition casings are corroding, and toxic compounds will be released into the marine environment, posing threats to ecosystems, human health, fishing, shipping and offshore infrastructure.

This is not a new or unknown problem. HELCOM has worked on dumped chemical munitions since 1993, and decades of monitoring, research cruises, national surveys and EU-funded projects have built a substantial evidence base. This long-term work shows that the problem is serious, but manageable: many threats areas are known, contamination can be measured, local conditions can be assessed, and different sites can be compared.

The next challenge is to turn this knowledge into practical decisions. Remediation (clearance, removal or other measures to reduce risk) is costly and may not be possible everywhere. Authorities therefore need a coordinated, risk-based framework for deciding which sites require urgent action, which can be safely monitored, and how munitions risk should be integrated into maritime planning and permit-granting procedures for activities affecting the seabed, including Environmental Impact Assessments (EIA).

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Corroded munition on the Baltic seabed. © GEOMAR

WHY IT MATTERS NOW: SECURITY, ENERGY AND ENVIRONMENT MEET ON THE SEABED

The Baltic Sea is entering a period of more intensive seabed use. Offshore wind, cables, pipelines, shipping and other maritime activities are expanding, while environmental protection and security concerns are increasingly linked.

At the same time, the EU Ocean Pact identifies the Baltic Sea as a test bed for integrated marine management, and the HELCOM Baltic Sea Action Plan already commits countries to addressing submerged munitions. As Member States move from commitments to implementation, they will need credible tools, comparable data and practical criteria for deciding where action is needed, where monitoring is sufficient, and how risks should be managed in maritime spatial planning, permitting and Environmental Impact Assessments. MUNI-RISK helps provide this basis by supporting transparent, comparable and practical risk-based decisions. The Baltic Sea approach may also offer useful lessons for other sea basins, including the Black Sea.

For offshore developers and permitting authorities, this is also an investment issue. Munitions risk can affect permits, timelines, insurance and public acceptance. MUNI-RISK promotes a more informed approach: assessing contamination, site conditions and possible consequences before action is taken, so that clearance or construction does not create avoidable environmental risks.

ABOUT THE MUNI-RISK PROJECT

MUNI-RISK (2024–2027) is an EU co-funded project helping Baltic Sea countries make better, risk-based decisions on submerged munitions. The project is led by Aarhus University (Denmark), with HELCOM, CBSS, GEOMAR (Germany), IOPAN (Poland) and Bornholm Regional Municipality (Denmark) as partners.

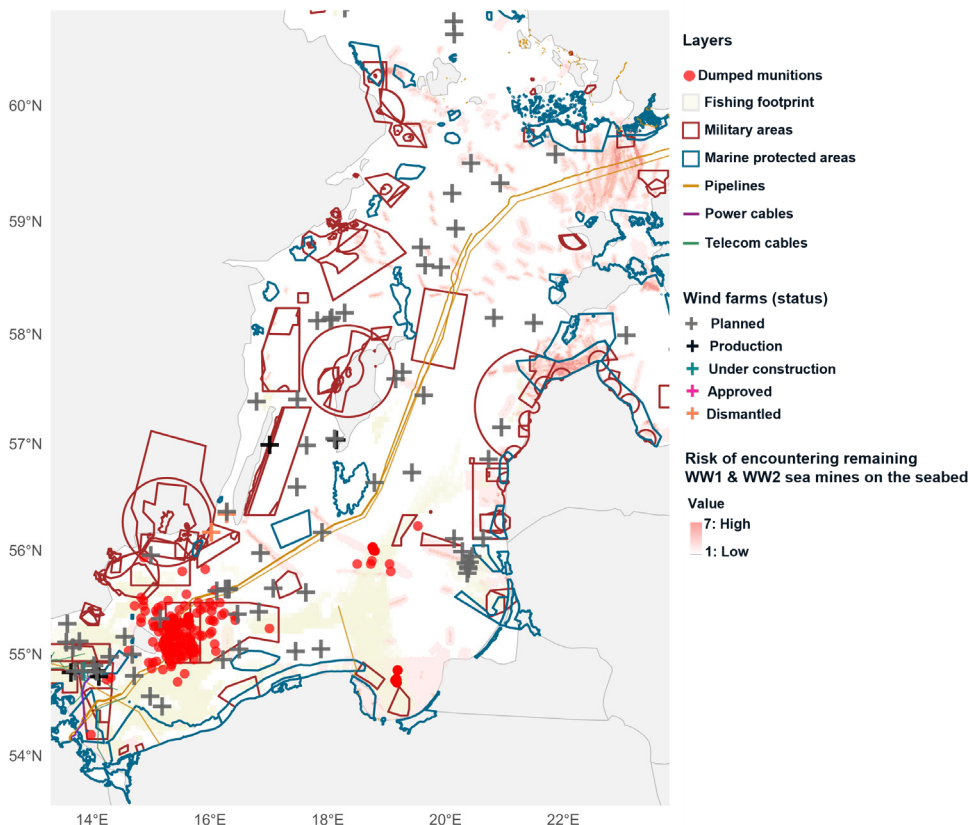
The project delivers two core tools: a risk-based prioritisation framework, including scored, layered risk maps (see example below) for deciding what to remediate, monitor or leave in place; and EIA integration guidelines for incorporating munitions risk into Environmental Impact Assessments for offshore energy. MUNI-RISK turns data and stakeholder knowledge into decision-support tools for authorities, planners and developers.

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Layered Baltic Sea map. © Aarhus University

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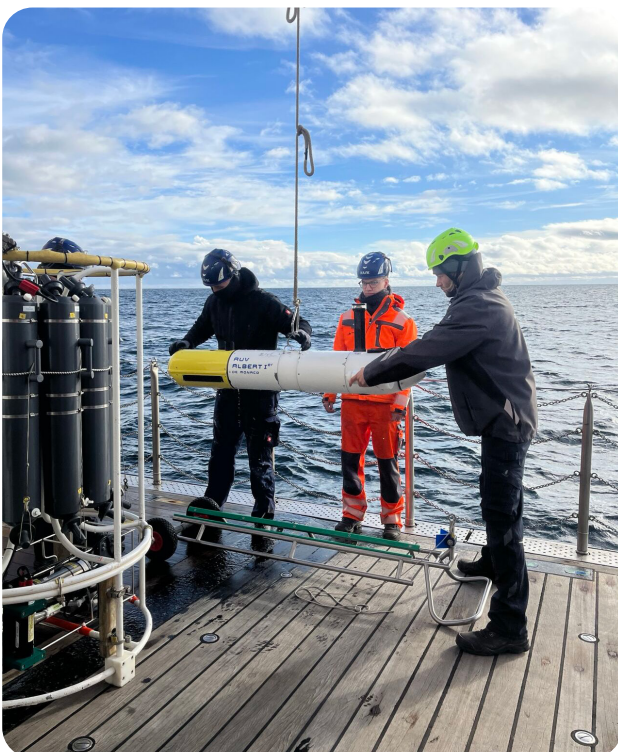


MEASUREMENTS SHOW THE RISK, DIALOGUE SHOWS HOW IT MATTERS

MUNI-RISK adds to the Baltic Sea knowledge base through both science and stakeholder dialogue. Partners are improving knowledge of where munitions are located, what substances are present, and how risks relate to local environmental and infrastructure conditions.

Engagement with more than 200 experts and stakeholders – including national and regional authorities, naval experts, offshore developers, environmental agencies, local communities, fishermen and divers – shows that submerged munitions are a multi-risk issue. Different groups prioritise different concerns: environment, security, infrastructure, fisheries, public safety or permitting procedures. Stakeholder polling ranked security risks highest, followed by environmental and infrastructure risks, while showing that environmental concerns often gain traction when linked to visible risks for security or critical infrastructure.

A recurring challenge is how to sustainably include munitions risk in Environmental Impact Assessments (EIA) without unnecessary delay or cost. MUNI-RISK is building guidance to help authorities and developers compare sites, assess risks transparently and choose responses that are environmentally sound and practically feasible.



Scientists deploying an underwater drone during fieldwork. © Garbiel Nolte/GEOMAR

WHAT POLICY-MAKERS CAN DO NOW

Policy-makers can help by ensuring that the project's findings are shared with relevant national authorities, discussed with representatives involved in HELCOM, CBSS and other Baltic Sea cooperation platforms, and followed up through the three practical steps below:

1. SHARE KNOWLEDGE

Historical records, scientific surveys and local expertise are still held in silos. Formalised **data-sharing agreements** across borders and institutions are a practical first step.

2. USE COMMON CRITERIA

Agree on **shared standards** for prioritising sites – combining environmental impact, security, critical infrastructure and socio-economic factors – so countries can compare and coordinate prioritisation and remediation activities.

3. INTEGRATE EARLY

Munitions risk should be **embedded in maritime spatial planning** and EIAs from the outset – not discovered as a last-minute complication.



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