Baltic Marine Environment Protection Commission

Response Working Group
Vejle, Denmark, 26-28 February 2020

RESPONSE 27-2020

Document title	Proposed new BSAP action
Code	3-2
Category	DEC
Agenda Item	3 - Update of the Baltic Sea Action Plan
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Submitted by	Secretariat
Reference	

Background

A request to submit proposals for new actions to the updated Baltic Sea Action Plan (BSAP) was circulated by the Secretariat to all HELCOM Working Groups, expert groups, networks, observers etc. in May/June 2019. The proposals were requested by the end of 2019 and to be developed as synopses, making use of a common format provided by the Secretariat.

One proposal relevant for the Response Working Group (Preparation for remediation of munitions dumps and munitions contaminated areas to support the achievement of conservation objectives) was submitted by the CCB, as set out in Annex 1.

In accordance with the BSAP Update Work Plan (see RESPONSE 26-2019 document 3-3 and 3-4) all HELCOM Working Groups are also invited to submit synopses on potential new actions for the updated BSAP, to be reviewed at Working Group meetings in spring 2020.

SUBMERGED 8-2020 noted that HOD 57-2019, when considering the update of the BSAP, had also discussed the relevance of submerged hazardous objects, including warfare materials like chemical weapons, munition and wrecks, which may affect the environment and other activities in the Baltic Sea. The Meeting agreed on the importance of addressing submerged hazardous objects in the updated BSAP. The Meeting considered and revised a draft proposal for a new BSAP action developed by Poland. Due to time limitations, however, the Meeting agreed to finalize the draft by correspondence, and circulate it to contacts and observers of Submerged for tacit agreement and subsequent submission to RESPONSE 27-2020. The proposed new BSAP action, as agreed by Submerged, is set out in the Annex 2 to this document.

Guidance for the review of the synopses is currently being developed by the SOM Platform, in order for all Working Groups to undertake the reviews of proposed actions relevant to their work by using the same criteria.

Action requested

The Meeting is invited to undertake a technical review of the proposed new BSAP actions set out in the annexes and take action as appropriate.

Annex 1

Title
Preparation for remediation of munitions dumps and munitions contaminated areas to support the achievement of conservation objectives

Submitted by:
Coalition Clean Baltic (observer)

Description of measure
Desktop study: historical and contemporary document research
Survey: investigations of munitions contaminated areas (e.g. sonar, underwater video, divers).
Documentation: GIS supported data collation: e. g., position, type, condition, salvage.
Decision support: processing of georeferenced information e. g., by DAIMON DSS, refer to DAIMON toolbox
Risk analysis and measures: Evaluation of hazardous objects on the seabed on the basis of decision support results.
Risk assessment, definition and, prioritisation of clearance requirements for munitions contaminated areas. Balancing associated risks of site-specific remediation options (e.g., leave as is, capping, monitoring, recovery).
Development of national contingency plans for dealing with munitions contaminated areas in an open transparent process based on best available science.
Continuous evaluation of technical and scientific progress.
Development of methods for low-noise and low-pollution salvage (e.g. robotic technologies).

Activity:
Military operations (infrastructure, munitions disposal)
Renewable energy generation (wind, wave and tidal power), including infrastructure
Restructuring of seabed morphology (dredging, beach replenishment, sea-based deposit of dredged material)
Extraction of oil and gas, including infrastructure (e.g. pipelines)
Transmission of electricity and communications (cables)

Pressure:
Input of other substances (e.g. synthetic substances, non-synthetic substances, radionuclides) — diffuse sources, point sources, atmospheric deposition, acute events
Physical loss (due to permanent change of seabed substrate or morphology and to extraction of seabed substrate)
Input of anthropogenic sound (impulsive, continuous)

State:
Hazardous substances
Seabed habitats
Noise
Fish
Birds
Mammals

Extent of impact:

Recent research has shown that substance from dumped munitions or munitions deployed during combat enter the marine environment and can be accumulated in the food chain. TNT and its derivates have been found in water, sediment, mussels and fish. Chemical warfare agents have been found in Norwegian lobster and fish. Occurrence of liver tumors in dab were elevated in a munitions dump site which is considered associated with substances leaking from corroded munitions. A simulation model shows that dissolved substances can disperse in the Baltic Sea with currents and affect the marine ecosystem elsewhere.

Effectiveness of measure

Survey, documentation, risk assessment and prioritisation are the basis for all respective measures. Remediation removes point source emitters and ultimatively prevents future contamination of the marine environment and introduction into seafood resources.

Cost, cost-effectiveness of measure:

High costs need to be considered for any responsive action. Considering the future costs of environmental damage as well as the benefit of expected technological improvements the systematic approach appears more cost-effective. If the contaminants have been introduced into water body and sediment it is unforseeable how these can be extracted at reasonable cost.

Feasibility:

The survey technology exists, monitoring methods are developed, common risk assessment techniques are available. Also a decision support system which organises available information for environmental managers and also makes use of artificial intelligence is currently being developed. Yet, the feasibility of remediation techniques has to be investigated in the frame of this measure.

Follow-up of measure:

Quality assured repeated assment of monitoring results if objects not recovered.

Background material:

In the 2013 Ministerial Declaration it was agreed that by 2015, a one-off HELCOM thematic assessment on environmental risks of hazardous submerged objects covering contaminated wrecks, lost or dumped dangerous goods (e.g. containers), and other objects, also utilizing the 2013 report on dumped chemical munitions be produced.

The HELCOM Expert Group on environmental risks of hazardous submerged objects SUBMERGED was formed in 2014 and is currently working on a draft document for an assessment.

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Annex 2

Title
Development of Best Environmental Practice and control of threats posed by munitions, wrecks and other hazardous submerged objects in the Baltic Sea

Submitted by:
SUBMERGED Expert Group

Description of measure
Dumped and abandoned conventional and chemical munitions corrode and subsequently release their toxic content to the Baltic Sea sea-floor. In addition, shipwrecks from the 20th century, containing oil and various cargo release hazardous substances to the surrounding water. Today, munitions and wrecks create uncontrolled diffuse plumes of toxic, carcinogenic and mutagenic contaminants. Besides being sources of pollution they also pose physical obstacles on the sea-floor. In summary, munitions and wrecks constitutes risks for offshore economy, fishing and tourism.

Risk assessment using decision support tools should be performed for conventional and chemical dumped munitions and wrecks (hazardous submerged objects). Measures should then be applied accordingly, to control the effects:

1. Completion of inventory andmonitoring of hot spots.

2. Development and selection of Best Available Techniques (BAT) and Best Environmental Practices (BEP) of environmentally friendly, secure and cost-effective practices and technologies for the remediation of hazardous submerged objects.

Hence, the proposed action includes the whole chain from archive research, surveys, object identification and assessment, to remediation. For future activities, connections between the private sector and responsible authorities should be established in order to promote technology development.

Activity:
Military operations (infrastructure, munitions disposal)
Offshore structures (other than for oil/gas/renewables)
Fish and shellfish harvesting (bottom-touching towed gears, professional, recreational)
Restructuring of seabed morphology (dredging, beach replenishment, sea-based deposit of dredged material)
Renewable energy generation (wind, wave and tidal power), including infrastructure
Non-renewable energy generation (fossil fuel and nuclear powerplants)

Pressure:
Input of other substances (e.g. synthetic substances, non-synthetic substances, radionuclides) — diffuse sources, point sources, atmospheric deposition, acute events
Input of anthropogenic sound (impulsive, continuous)
Disturbance of species: Other (e.g. barriers, collission)

State:
Hazardous substances – Constant diffuse leaking of explosive and other hazardous compounds can be reduced
Litter
Noise – Reduction of noise due to a decrease in in situ detonations during munitions clearance operations
Mammals – Improvement of protective measures for harbour propoise and seals during clearance efforts
Seabed habitats

Extent of impact:

The action will positively affect marine areas of chemical munition dumpsites in e.g., Bornholm Basin, Gotland Deep and Gdansk Deep, as well as Little Belt and Skagerrak as identified in the HELCOM MUNI report. Identified hotspots of conventional munition dumpsites will also benefit. These are located e.g. in German (Kiel Bight, Lübeck Bight, Flensburg Fjord), Polish (Pomeranian Bay, Gulf of Gdansk), Finnish and Russian waters (Gulf of Finland). Generally it will improve the state of the entire Baltic Sea, as the large numbers of point sources of munitions, wrecks and other hazardous submerged objects are widely dispersed throughout all HELCOM Contracting States' waters.

Effectiveness of measure

There is proof that there are adverse negative effects in the marine environment of uncontrolled releases of toxic substances from submerged objects. These substances can propagate through sediment and currents into the foodweb. By monitoring and risk assessment high risk areas can be identified. Remediation of high risk areas will then improve the state the Baltic Sea ecosystem by preventing the release and spreading of contaminants and thus reducing the contaminant load in the marine ecosystem.

Adherance to BAT and BEP will enable HELCOM Contracting States to perfom remediation while minimizing environmental impact.

Controlling the risk of submerged hazardous objects limits the effect on economic activies in the Baltic Sea, including offshore energy, tourism, fisheries etc.

The establishment of an entry point for the private sector will allow new technologies for remediation be tested in an environmentaly safe way.

Cost, cost-effectiveness of measure:

The estimated costs of continuous evaluation of existing data is low, it can be included in running costs of relevant authorities of Baltic Sea countries. At the moment the activities related to risk assessment of hazardous submerged objects are performed by various governmental agencies, however they do not produce a full picture. Required additional efforts are the consolidation and review of existing actions. Monitoring of compounds originating from hazardous submerged objects can be included into monitoring frameworks such as MSFD monitoring, and can be limited to several hotspots in the Baltic Sea. Risk assessment of shipwrecks still containing oil as bunker or cargo can performed using existing tools.

Deferred costs of doing nothing could by far exceed the costs for this action. For example, Sweden performed two operation during 2019 where 299 m^3 and 60 m^3 of oil respectively where removed from two shipwrecks. Removal costs per tonne of oil amounted to €6788 and €19531. This is in most cases on the same level as reported direct clean-up costs per tonne from known uncontrolled oil spills. In addition to the direct clean-up costs socioeconomic and environmental costs most also be included. Hence, a proactive approach is in the long run cost effective.

A number of institutions in the HELCOM area have been working on the issue on hazardous submerged objects. Hence, personnel and resources to continue the work are available, which ensures the sustainable and continuous use of experience, knowledge and established connections to ongoing scientific projects.

The private sector is interested in performing remediation, thereby generating Blue Growth, which has the potential to outweight the costs of this action. Establishment of entry points for partnernships between public authorities and private companies is based on existing administrative resources and is not associated with high costs.

Feasibility:

Munition dumpsites and wrecks in the Baltic Sea were surveyed by both military (i. e. Baltic Sea Ordnance Safety Board, BOSB) and scientific communities (MERCW, CHEMSEA, MODUM, DAIMON, UDEMM), although the exact location and inventory of munitions is often still missing. Tools for risk assessment were created, i. a. as decision aid, and are provided to stakeholders by DAIMON and DAIMON 2 projects, while monitoring schema and methods were developed by UDEMM, MODUM and DAIMON. Quality requirements for munitions clearance were developed by RoBEMM. Remediation strategies include blast in place operations (no longer considered safe for the environment), sediment capping, retrieval/destruction methods and in situ delaboration. The latter is still in development stage, while capping and recovery of munitions that are unsafe to handlehas not been done in the Baltic Sea, but experience exists from other areas. Therefore, there is a strong basis for the effective completion of an inventory, risk assessments and decision support.

Risk assessment tools also exist for wrecks. One of them is the existing VRAKA model developed and used in Sweden, while other methods are being developed in the INTERREG North Sea Wrecks project. Even though they are available for use, none of those tools are however currently be applied on a broad national and European scale.

There is strong and growing public support for applying control measures to hazardous submerged objects.

Successful execution of this action will promote economic growth in the Baltic Sea area in maritime and fisheries and tourist sectors. The measures both increase security for offshore workers while creating new employment opportunities in the region.

Follow-up of measure:

Proposed action includes several detailed recommendations that could be easily followed. Data compilation on hazardous object, as well as continued survey of suspected hotspot areas can be expressed with the content of resulting databases – namely size of the area surveyed and available data, also objects inventory and their identification. Establishment of entrypoints for clearing and new remediation technology companies can be reported by Contracting Parties during relevant HELCOM meetings. BAT and BEP can be included in the subsequent versions of HELCOM working group reports, namely the Submerged Expert Group, whereas their adoption by Contracting Parties would follow regular HELCOM processes.

Background material:

The action is based on experience of several EU programmes, such as MERCW, CHEMSEA and DAIMON, NATO SPS project MODUM outcomes and findings reported by national projects such as ROBEMM and UDEMM. It also includes facts published by the special adhoc working group HELCOM MUNI and a draft of report created by the HELCOM Submerged Expert Group. Need for an action regarding controlling of submerged hazards results from the fact, that approximately half a million tonnes of abandoned munitions and thousands of wrecks resting on the Baltic Sea bottom release harmful substances to the nearbottom water and adjacent sediments. This fact was confirmed by numerous publications, listed in the reference section. In the era of reduced anthropogenic emissions, reemission of past contaminants may be an important components of the pollution budget in the Baltic Sea. Moreover, variability of oxygen levels and enhanced input of organic matter caused by elongated growth season, which is the consequence of global climate change, may further promote inclusion of pollutants released from hazardous submerged objects into the food chain.

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