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<b>Document title</b>	Synopses of an action related to the Maritime Group
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<b>Category</b>	DEC
<b>Agenda Item</b>	3 – Update of the Baltic Sea Action Plan
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<b>Submitted by</b>	Secretariat
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## Background

This document contains the synopses of an action proposed by the EN-Noise related to the Maritime Group for consideration by the Meeting. Its inclusion on the list of synopses was omitted by mistake.

This action is to be considered together with those included in documents 3-2 and 3-2 Add.1 to this Meeting.

## Action requested

The Meeting is invited to undertake a technical review of the synopses for a proposed new BSAP action contained in the document using the guidance contained in document 3-3.



<p><b>Title: Identify and implement Best Available Technique (BAT) and Best Environmental Practice (BEP) to mitigate noise emitting activities</b></p>
<p>Submitted by: HELCOM EN Noise</p>
<p>Description of measure:</p> <p>Underwater noise can have a negative impact on individuals of noise sensitive species as well as on their whole populations. Effects of continuous noise range from chronic stress, masking, alteration of the activity budget to avoidance of the wider area. For impulsive noise, the upper scale of noise effects is hearing loss and physical injury. Technical and operational mitigation is a way to immediately reduce pressures by noise emissions on individuals affected. A number of noise mitigation measures have been developed in research and development projects or are already used by industry or the military. Not every measure used is suitable for each activity and under every circumstance, and there is a broad spectrum in their effectiveness, reliability and costs.</p> <p>This action aims at the identification and implementation of Best Available Technique (BAT) and Best Environmental Practice (BEP) for all activities which produce underwater noise and kick-starting research to improve their effectiveness and increase cost-benefit ratio. BAT and BEP can be a noise reduction at the source (primary noise mitigation), in the path of radiation (secondary noise mitigation) or low-noise/noise-free alternative technologies. For each technology considered as BAT and BEP, boundaries of operation conditions are to be defined.</p>
<p>Activity:</p> <p>Renewable energy generation (wind, wave and tidal power), including infrastructure Military operations (infrastructure, munitions disposal) Offshore structures (other than for oil/gas/renewables) Extraction of minerals (rock, metal ores, gravel, sand, shell) Restructuring of seabed morphology (dredging, beach replenishment, sea-based deposit of dredged material) Transport – shipping (incl. anchoring, mooring) Tourism and leisure activities (boating, beach use, water sports, etc.) Research, survey and educational activities (seismic surveys, fish surveys)</p>
<p>Pressure:</p> <p>Input of anthropogenic sound (impulsive, continuous) Disturbance of species: Visual, presence, boating, recreational activities, above-water noise</p>
<p>State:</p> <p>Noise Mammals Fish Red listed species and habitats</p>
<p>Extent of impact:</p> <p>Reduction of the source level, blocking the noise transmission or the use of alternative technologies would have an immediate effect on the pressure and number of animals affected. The effect ranges for the various impacts (e. g., masking, disturbance, injury) can significantly be reduced acting positively on the state of ecosystem components such as mammals. The effect of each reduced source is local but the</p>

combined/cumulative impact of sources can be reduced such that population impact is prevented. Killing of individual animals can be prevented.

#### Effectiveness of measure

In offshore windfarm construction, noise mitigation measures have already been implemented successfully by some countries. Legal standards were shown to be met. Possible noise reductions of impulsive noise are in the order of 10 to 20 dB. Several technical noise mitigation systems can already be viewed as BAT and BEP under certain circumstances (re: water depth, soil conditions). For underwater detonations which are the loudest anthropogenic point source of impulsive noise, also technical and operational measures are available which can immediately have a positive effect by not killing animals.

#### Cost, cost-effectiveness of measure:

Costs are involved in the installation of noise barriers (such as bubble curtains, isolation casings or hydro sound dampers). These systems can be rented which reduces the costs for individual projects. Integration in the construction process has already reduced costs for some of these mitigation measures. In the case of bubble curtains, a number of oil-free compressors must be operated which would involve additional operating costs. Other operating costs are the use of additional ships if required.

Benefits come from the reliability with which conservation objectives can be met. This reduces uncalculated costs of a closure of the construction site.

Some operational measures (such as speed limits for ships) result in savings by reduced fuel consumption. Possible further savings could be achieved if incentives are set such as a reduction in port fees for ships emitting less noise (such as in the Port of Vancouver ECHO Program).

#### Feasibility:

Noise reduction is already technically feasible and a number of mitigation measures (technical and operational) are available from which to choose BAT and BEP methods.

#### Follow-up of measure:

After BAT and BEP methods have been identified, they should be implemented nationally. A compliance monitoring is desirable in order to demonstrate the effectiveness of the measure and show options for future improvement. Research is needed to complement the measure but also continuously thereafter. For example, in recent years, the diameter of monopiles in offshore wind farms has been increasing considerably. If this continues, the effectiveness of noise mitigation measures must also be increased or the availability of alternatives improved in order to meet legal standards.

#### Background material:

The HELCOM Ministerial Declaration (2013) states that the level of ambient and distribution of impulsive sounds in the Baltic Sea should not have a negative impact on marine life. Further it was agreed that human activities that are assessed to result in negative impacts on marine life should be carried out only if relevant mitigation measures are in place.

#### References

BSEP 167: Noise sensitivity of animals in the Baltic Sea.

<http://www.helcom.fi/Lists/Publications/BSEP167.pdf>

Koschinski & Lüdemann (2020): Noise mitigation for the construction of increasingly large offshore wind turbines - Technical options for complying with noise limits. Report commissioned by the Federal Agency for Nature Conservation, Isle of Vilm, Germany. 40 pp.

Weilgart, L. (2018): The impact of ocean noise pollution on fish and invertebrates. OceanCare, Switzerland. 34 pp. [https://www.oceancare.org/wp-content/uploads/2017/10/OceanNoise\\_FishInvertebrates\\_May2018.pdf](https://www.oceancare.org/wp-content/uploads/2017/10/OceanNoise_FishInvertebrates_May2018.pdf)