



# Fact Sheet

## Impulsive noise

### HELCOM Indicators



#### Description

Sound waves propagate efficiently in water, which means that loud sources without noise mitigation measures may have far-reaching effects, up to tens of kilometres from the source. The most significant man-made sources of loud impulsive noise are explosions, pile driving, seismic explorations and low frequency sonars. Although noise does not persist in the environment, it may harm marine species if no measures are taken in order to mitigate adverse effects. Effects of loud impulsive sound ranges from behavioural effects (deterrence, disturbance) over impact on auditory systems (temporary and permanent hearing loss) to physiological injury and in extreme cases death.



#### What is already happening?

The indicator is based on the occurrences of impulsive noise-producing maritime activities reported by Contracting Parties to the regional HELCOM/OSPAR noise registry. Based on the available data, a broad range of impulsive sound events occurred in the Baltic Sea region during 2016-2021; however, no clear trends were observed for the prevalence of events related to any of the different types of source activity. Across the assessment period, the area exposed and disturbed with respect to displacement for harbour porpoise clearly remained below a fraction of 10% of the HELCOM area habitat per day. Several aspects are to be improved from this preliminary assessment (e.g., impact of mitigation measures and the identification of areas of high temporary impact).



#### What can be expected?

Future work is needed to further develop the threshold values and attain regional agreement on their application. Other pertinent issues that may support a more harmonised evaluation in the future, in addition to addressing the identified knowledge gaps, include a review and evaluation of data reporting, reporting on mitigation methods employed, and a more detailed confidence evaluation of the data and evaluation carried out. Also, it may be valid to discuss, the possible revision of the appropriate assessment scale for the indicator (e.g., link to 17 sub-basin or marine mammal management units) and even the value in carrying out an integrated assessment of underwater noise in which the overall pressure of impulsive and continuous noise can be presented overall.



#### Other drivers

Climate change and changes in management to respond or mitigate its impacts could have significant impact on noise levels in the marine environment. For example, coastal defence construction, changes in tourism or use of the marine environment and a move towards green technologies such as wind power may require construction and the by-product of such construction would be underwater noise. Accordingly, the noise impact from these developments needs to be managed and mitigated appropriately.



#### Knowledge gaps

There is a need for a stronger scientific understanding of the link between noise and marine mammals or key sensitive species (especially seals), including studies and evaluations across sensitive periods (e.g. breeding).



#### Policy relevance

Marine biodiversity is to be protected and prevented from any kind of pollution<sup>1</sup>. Although underwater noise is not a 'substance' but a form of 'energy', it is still considered as pollutant (MSFD, 2008). Underwater noise was and is one of the significant human impacts on in particular marine mammals, and especially because cetaceans are included in annex 4 of the European Habitats Directive, this led to the inclusion of noise in the evaluation of the impact assessments for offshore activities and prompted national regulatory actions. A lot has happened since then, and now, at regional level, the Baltic Sea Action Plan<sup>2</sup> through the HELCOM Regional Action Plan on Underwater Noise, works towards a Baltic Sea with "no or minimal harm to marine life from man-made noise" and to "minimize noise to levels that do not adversely affect marine life".

<sup>1</sup> UNCLOS (1982) [United Nations Convention on the Law of the Sea](#).

<sup>2</sup> HELCOM (2021a) HELCOM Baltic Sea Action Plan – Update 2021. <https://helcom.fi/wp-content/uploads/2021/10/Baltic-Sea-Action-Plan-2021-update.pdf>