



Baltic Marine Environment Protection Commission

Continuation of the project on Baltic-wide assessment of coastal fish communities in support of an ecosystem-based management

FISH-PRO III 1-2019

Helsinki, Finland, 12-14 February 2019

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Background

In spring 2018 the EU announced a call for application on "Marine Strategy Framework Directive - Second Cycle: Implementation of the new GES Decision and Programmes of Measures". GEAR 18-2018 discussed the call, supported the development of a HELCOM coordinated project proposal (cf. GEAR 8-2018 Outcome paragraphs 3.56 – 3.65) and agreed on the topics for the proposed regional project (at the GEAR online meeting on 2 May).

HOD 54-2018 approved the submission of the HELCOM-led project proposal to the EU call and took note that the HELCOM project under preparation has a general objective to contribute to the update of the BSAP and implementation of Programmes of Measures for Contracting Parties being EU members, and a specific objective to analyse the effectiveness and sufficiency of existing measures with particular focus on by-catch, impacts on the seabed, marine protected areas, and eutrophication. The Meeting further noted that the topical focus has been selected based on the identified priorities of the call for the Baltic Sea region (biodiversity, disturbance to the seafloor, impacts from fisheries), and the most prominent pressure on the Baltic Sea (eutrophication). Furthermore, how the natural conditions of the Baltic Sea influence the achievement of good environmental status (GES) is included as an integral part of the project.

The project has now been approved and is in the initial stages, with an internal project meeting kick-off taking place on 25-27 February 2019.

This document contains an extract of the full project application. For work packages that will consider the effect of measures the abstracts are included while for work package 6 that will focus on analysing sufficiency of measures the technical proposal is included in full.

Action requested

The Meeting is invited to take note of the approved HELCOM ACTION project application.

Summary of actions in the project

The HELCOM ACTION project is designed to contribute to the update of the HELCOM Baltic Sea Action Plan by 2021 and to support EU Member States in updating and implementing MSFD Programme of Measures and. This takes place through evaluating the effectiveness of existing measures with regard to by-catch of mammals and birds, impacts on the seabed, marine protected areas, and eutrophication.

The project will furthermore develop business-as-usual (BAU) scenarios for selected topics to identify potential gaps in measures to achieve GES and estimate cost-effectiveness of tentative new measures to fill the gap towards GES.

The supervision of the project takes place through the regular HELCOM working arrangements i.e. through guidance and review by HELCOM technical groups and expert groups during the course of the project (see Figure 3 and associated text). Through this arrangement the project results will also be directly available to national policy leads in the Baltic Sea region that can follow the project and ensure that it remains relevant for policy requirements.

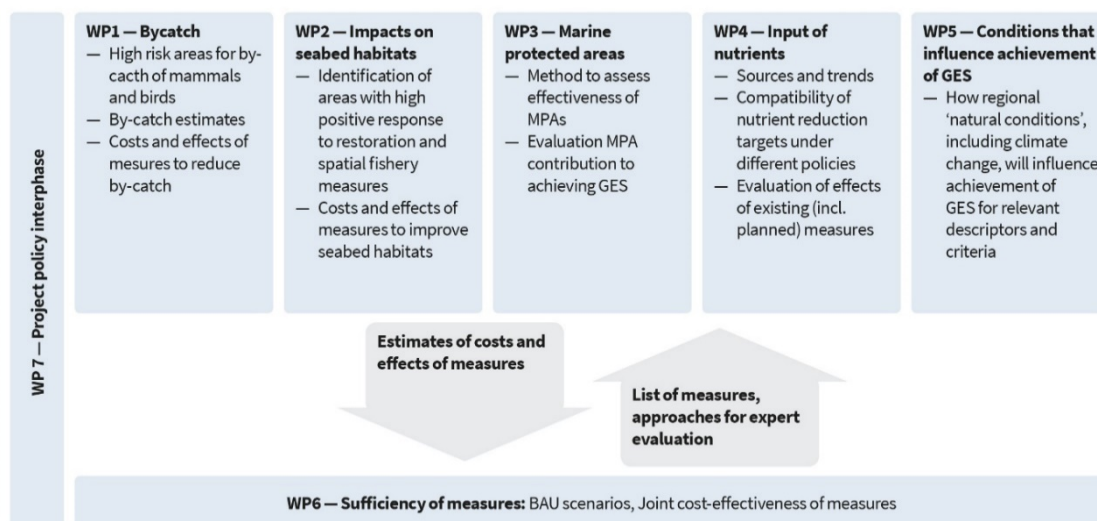
The methodological framework developed in the project is expected to be applicable also in other marine regions and dissemination through MSFD CIS and other Regional Seas Convention, in particular OSPAR, will take place during the course of the project.

Specific objectives: Analyse effectiveness and sufficiency of existing measures with particular focus on by-catch, impacts on the seabed, marine protected areas, and eutrophication

The application is built around seven work packages (WPs). WPs 1-5 will analyse the effectiveness of existing measures, provide information on tentative new measures, and deliver background information to WP6 which is an overarching activity focused on analysing sufficiency of measures to reach GES in the Baltic Sea region. WP7 is dedicated to project coordination and to provide a policy-project interphase. The links between WPs are further outlined in Figure 1 (see section b).

The topical focus has been selected based on the identified priorities of the Call for the Baltic Sea region (biodiversity, disturbance to the seafloor, impacts from fisheries), and the most prominent pressure on the Baltic Sea (eutrophication). All these topics are also clearly linked to gaps and major pressures identified in the 'State of the Baltic Sea' report (HELCOM 2017). How the natural conditions of the Baltic Sea influence the achievement of GES is furthermore included as an integral part of the project. The project has the aim to base as many activities as possible on data driven analyses but will also make use of expert-based evaluations where needed to complement gaps in data and assessments.

The individual WPs will in short focus on:



WP1 By-catch; high-risk areas and evaluation of measures to reduce by-catch

Drowning in fishing gear is a major pressure on Baltic Sea marine mammals and birds and for the harbour porpoise by-catch it is the greatest source of mortality.

WP1 will use available spatial and temporal data on by-catch as well as on fisheries activities and species density and distribution to define high-risk areas for by-catch of marine mammals and birds. The study will be covering mainly the south-western Baltic Sea, but also explore the possibility to evaluate marine mammal by-catch in other parts of the Baltic Sea. The project will also estimate the cost and effect of measures such as gear modifications and gear use restrictions.

Partners in WP1: National Institute for Aquatic Resources (DTU Aqua, Denmark – Lead partner), Swedish University of Agricultural Sciences (SLU, Sweden), Swedish Agency for Marine and Water Management (SwaM, Sweden), Finnish Environment Institute (SYKE, Finland), HELCOM.

WP2 Impacts on the seabed; relevant areas for measures and evaluation of those measures

Physical disturbance to benthic habitats has been identified as a wide-spread pressure in the Baltic Sea; about half of the seabed is potentially disturbed by human activities with the most wide-spread disturbance caused by trawling and shipping (HELCOM 2017). Also other human activities, such as dredging, sand and gravel extraction, and constructions, contribute to the disturbance as well as to permanent loss of benthic habitats.

WP2 will evaluate measures to restore coastal areas, identify where such measures would be particularly relevant along the Baltic Sea coast, and estimate the cost of such measures. The effect of spatial regulation of fisheries in offshore areas will also be evaluated, considering the impacts on seabed communities and habitats as well as on the fishery.

Partners in WP2: Finnish Environment Institute (SYKE, Finland – Lead partner), National Institute for Aquatic Resources (DTU Aqua, Denmark), Swedish University of Agricultural Sciences (SLU, Sweden), Swedish Agency for Marine and Water Management (SwaM, Sweden), HELCOM.

WP3 Marine protected areas; GES and effectiveness of the MPA network in the Baltic Sea

The designation of Marine Protected Areas (MPAs) has been an instrument for protection in the Baltic Sea for more than 30 years with the overarching HELCOM target to achieve a coherent and effectively managed network of MPAs in the Baltic Sea. While assessment of the ecological coherence of the MPA network has been carried out previously (HELCOM 2016) there is no common approach or regional compilation of effectiveness of management of MPAs.

WP3 will develop and apply a common approach for assessing management effectiveness in the Baltic Sea. The method will be developed so that the contribution of MPAs towards reaching GES at the Baltic Sea level can be assessed.

Partners in WP3: Klaipeda University (KU, Lithuania – Lead partner), Estonian Marine Institute (EMI, Estonia), Aarhus University (AU, Denmark), Finnish Environment Institute (SYKE, Finland), HELCOM.

WP4 Input of nutrients; effectiveness of measures

The 'State of the Baltic Sea' report shows that eutrophication remains the main pressure on the Baltic Sea environment. HELCOM countries have implemented numerous measures aimed at reducing input of nutrients both as a result of HELCOM instruments and initiatives but also in response to EU and national regulations. These measures appear to be reducing nutrient loads when assessed across the whole of the Baltic (HELCOM 2018c). However, there is wide variation between catchments as to the effectiveness of implemented measures and there remain knowledge gaps concerning whether HELCOM countries can meet their national commitments through existing measures.

WP4 will address these open issues and assess the effectiveness of existing measures to reduce input of nutrients to the Baltic Sea

Partners in WP4: Swedish Agency for Marine and Water Management (SwaM, Sweden - Lead partner), Finnish Environment Institute (SYKE, Finland), Swedish University of Agricultural Sciences (SLU, Sweden), Tallinn University of Technology (TTU, Estonia), Aarhus University (AU, Denmark), HELCOM.

WP5 Conditions that influence GES

Based on the results of the 'State of the Baltic Sea' report it can be concluded that the majority of descriptors and even indicators will not achieve GES by 2020/2021. This is partly due to an insufficient implementation of measures (HELCOM 2018b). However, natural conditions of the Baltic Sea have a significant impact on the time it will take for the ecosystem to recover from the current state. For topics such as eutrophication, existing estimates indicate that it will take decades after the targets for input of nutrients have been reached to reach GES for state related indicators (e.g. nutrients, chlorophyll in the sea). Furthermore, the projected change in climate is expected to change the Baltic Sea environment in the upcoming 8-9 decades, to an extent which will influence the effect of measures and the potential to meet GES.

WP5 will review the current knowledge and analyse how natural conditions influence the recovery of the Baltic Sea as well as how the projected future change in climate will affect the measures taken to improve the Baltic Sea.

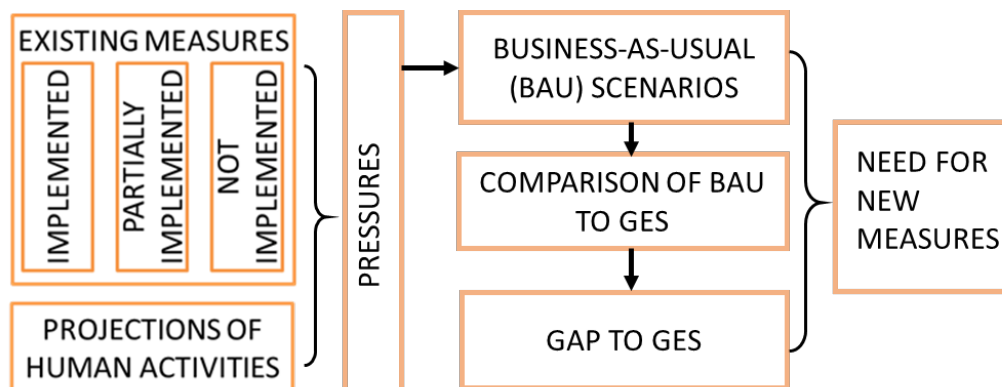
Partners in WP5: Tallinn University of Technology (TTU, Estonia), Aarhus University (AU, Denmark), HELCOM, *IOW in-kind*.

WP 6; Sufficiency of existing measures and cost-effectiveness of potential new measures

WP6 contributes to the update of the HELCOM Baltic Sea Action Plan (BSAP) and implementation of the EU MSFD by developing a regionally coordinated approach to assess the effectiveness of existing measures, the need for new measures, and the cost-effectiveness of the new measures (incl. non-implemented existing ones). The analyses will be limited to the topics addressed by WPs 1-5. The WP6 method is applicable at the regional level to support the update of the HELCOM BSAP and could also be used at the national level to support the update of PoMs under the MSFD required by 2022. In addition, the developed approach is agile in that the effectiveness and costs of measures can be estimated using models, data and expert opinions. WP6 draws upon work carried out in WPs 1-5 and supports a coherent formulation of the outputs to be usable for the analyses of business-as-usual (BAU) scenario (task 6.1) and cost-effectiveness of measures (task 6.2). WP6 will be developed under guidance of the HELCOM GEAR group and HELCOM expert groups as outlined in section e.

6.1 Regional business-as-usual (BAU) scenarios

Task 6.1 will operationalize the approach for the BAU scenarios in the Baltic Sea, based on the proposal developed in the HELCOM coordinated SPICE project, co-financed by the EU. The scenarios will be used to analyse the gap between BAU and Good Environmental Status (GES). Scenarios will be developed for eutrophication, by-catch of mammals and birds, and impacts on the seabed, taking into account results on relevant elements of biodiversity and seabed habitats from the assessment of effectiveness of marine protected areas (WP3). The scenarios will make use of data-driven models and a semi-quantitative, probability-based expert survey. The following diagram visualizes our approach in task 6.1.



The task 6.1 will consist of the following steps:

- Approach:** The first step develops a common method framework for the BAU and cost-effectiveness analysis in the tasks 6.1 and 6.2. The method framework will build on the previous works by Reinhard et al. (2012), Kontogianni et al. (2015), Börger et al. (2016), Oinonen et al. (2016) and the HELCOM SPICE project. This will ensure coherent outputs from all WPs contributing to the WP6 analyses (e.g. recording outputs from models and expert surveys into a comparable format). The method will be presented for review by the HELCOM Gear Group before implemented in the project.
- Linkage framework:** The link between human activities, pressures and state in the Baltic Sea region have been outlined in previous HELCOM projects (e.g. TAPAS) and the [ODEMM project](#). These linkage frameworks will be further developed in this project to include also the link between measures and human activities for each of the existing or new measure or group of measures considered in the project in order to (i) support evaluating the effectiveness of measures and (ii) identify new measures to reduce pressures and improve status. Whether BAU scenarios will be developed with respects to pressures or status will depend on the topic/descriptor in question. This step will also evaluate whether a measure is linked to more than a single pressure/state descriptor and what type of joint effects can be expected.
- List of existing measures and their status:** Information will be collected on relevant existing measures including in the MSFD PoMs and as compiled in WP 4 for nutrients e.g. under EU WFD. The status of the implementation in these measures will be established. In addition, information on the status of implementation of the existing HELCOM measures not reported in the HELCOM Explorer¹ so far will also be collected.
- Effectiveness of existing measures:** An evaluation of the effectiveness of the existing measures will be carried out based on input from other WPs of the project and published information. Quantitative indicators for the effectiveness of a measure and input from WPs 1-4 will be used as far as possible and complemented with expert-based evaluations as needed. The expert evaluation will build on a

¹ [HELCOM Explorer](#) is a web-based platform where the implementation of HELCOM agreements by the Contracting Parties is presented.

semi-quantitative survey with discrete probability categories among the project partners, HELCOM experts and invited experts (e.g. Uusitalo et al. 2015, Oinonen et al. 2016). These can also be supported by the numerical models used in other WPs.

- e) Projections of human activities or pressures: To estimate the development of human activities and/or the respective changes in the pressures, existing projections in the region will be used to the extent available, e.g. from the BONUS BALTICAPP project, and complemented with expert-induced scenarios in cases where projections are missing (by using the method described in step d).
- f) Gap analysis: Based on the steps a-e, the remaining reduction in pressures (or improvement in state) to reach GES will be evaluated by comparing the state in a BAU scenario with the GES. The potential impacts of natural conditions on the implementation of measures will be considered in this analysis (input from WP5) as well as possible synergetic and antagonistic effects between measures (step b).
- g) HELCOM ACTION Workshop 6: A workshop will be held to discuss the outcome of the gap analysis and come to a common view on how results should be interpreted to support the identification of new measures where this is needed.

6.2 Potential new measures and their cost-effectiveness

For those topics where a need for new measures is found and quantified between BAU scenario and GES under task 6.1, potential new measures will be identified by building on expertise in other work packages. Cost-effectiveness of these measures will be analysed following the steps and methods described by Kontogianni et al. (2015), Börger et al. (2016) and Oinonen et al. (2016), and using results from WP1-4 as relevant for proposals on new measures. The existing, but not yet implemented measures will also be added to the analysis. This work will be based on the estimated costs and effectiveness of potential measures. All the evaluations will include the aspect of uncertainty by using probability scales. Given natural conditions, certainty of the evaluation and effectiveness of the potential measures, sets of measures will be formulated.

The task 6.2 will consist of the following steps:

- a) Identification of potential new measures (incl. existing but non-implemented ones): Co-operation with WPs 1-4 will advise the WP6 to list the measures. Their feasibility is also estimated in co-operation with WP 1-5.
- b) Effectiveness of new measures: Building on the Task 6.1 method framework (step a), develop a common method for recording the effectiveness of measures for the themes (eutrophication, impacts on seabed, bycatch and marine protected areas). This follows Oinonen et al. (2016). Collect information on effectiveness of potential new measures from other work packages and outcomes of other projects. If necessary, targeted and facilitated interviews are carried out among the experts producing the results. The effectiveness will be estimated as % of the GES gap to be covered and it can be expressed on a probability scale.
- c) Joint effects of the new measures: Estimate the joint effects of new measures by evaluating possible additive, synergistic or antagonistic effects of all the measures on all gaps to GES. This will be collected by using the linkage framework (WP 6.1 b) and analysed following Saikkonen et al. (unpublished) from existing literature, projects and expert evaluation. Confidence of the estimation is expressed by probability (Uusitalo et al. 2015).
- d) Cost estimation: Develop guidelines for estimating costs of new (or not yet implemented) measures and collect this information from literature, sectorial organizations and selected experts by using broad categories. The broad categories allow for uncertainty and cross-region variability in the costs, but also probabilities can be applied to illustrate this uncertainty.
- e) Finding optimal sets of new measures: Run the cost-effectiveness analysis for all the new and not yet implemented measures. The method in Oinonen *et al.* (2016) is used as the basis, but inspiration is sought from Kontogianni et al. (2015), Saikkonen et al. (unpubl.) and on-going and recent projects. Identify and present the sets of new potential measures in terms of their cost-effectiveness, certainty and other relevant aspects. The set can be expressed over all topics or for each topic separately.

Project management

The project will be carried out by a team consisting of the HELCOM Secretariat and the eight additional partners. The HELCOM Secretariat will act as overall coordinator of the project activities, contribute to the work carried out as specified in the application, and ensure effective and timely communication and monitoring of progress with relevant HELCOM Working Groups and projects.

The ACTION project will be guided through the existing working arrangement in HELCOM (see Figure below). This includes guidance from the Working Groups HELCOM GEAR, State & Conservation, Pressure, Fish and Agri, each consisting of officially nominated representatives of the Baltic Sea countries and the EU. Regular reporting to and review by HELCOM Working Groups forms the quality control of the project. The project will be closely linked to the BSAP update process in HELCOM involving all Contracting Parties. Competent authorities in the Baltic Sea countries as well as the European Commission will thus act as an advisory board to the project and will be able to oversee that the project follows the agreed priorities and that it remains relevant for national work, including regarding MSFD as far as EU countries are concerned.



Figure 3. Management and supervision of the ACTION project.

HELCOM Working Groups to guide the project:

- AGRI: Group on Sustainable Agricultural Practices, focuses on reducing input of nutrient through development and application of sustainable agricultural practices.
- FISH: Group on Ecosystem-based Sustainable Fisheries, deals with fisheries in relation to the implementation of the ecosystem-based approach.
- GEAR: HELCOM Group on the Implementation of the Ecosystem Approach, works towards region-wide co-operation on all elements of national marine strategies.
- PRESSURE: Working Group on Reduction of Pressures from the Baltic Sea Catchment Area, provides the necessary technical basis to HELCOM work on inputs of nutrients and hazardous substances.

- STATE&CONSERVATION: Working Group on the State of the Environment and Nature Conservation, covers monitoring and assessment functions as well as issues related to nature conservation and biodiversity protection.

HELCOM expert networks and projects to be consulted in the project:

- ESA EN: HELCOM expert network on economic and social analyses (ESA) works to enhance regional collaboration to produce comparable information on the economic and social aspects of the Baltic Sea marine environment.
- EN-DREDS: supports reporting and validation of data on dredging/depositing operations at sea and facilitates the work of the Pressure Group in terms of assessment of environmental pressure caused by dredging/depositing operations at sea.
- CG FISHDATA: HELCOM Correspondence Group on fisheries data for operationalizing indicators used for the purposes of MSFD implementation.
- MPA Task Group: Group of national representatives that is activated ad hoc to support HELCOM work on marine protected areas.
- PLC project: Project that regularly compiles of pollution load data (PLC), focusing on annual and periodic assessments of inputs of nutrient and hazardous substances.