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Background

The sufficiency of measures (SOM) analysis, carried out by the HELCOM ACTION project and the HELCOM SOM Platform, supports the update of the BSAP by assessing what kind and level of improvements in environmental state and pressures can be achieved with existing measures by 2030-2035, and whether these are sufficient to achieve good environmental status (GES) in the Baltic Sea. The methodology for the SOM analysis has been developed by the ACTION project with guidance from the SOM Platform, and endorsed by GEAR 22-2020 ([Outcome](#), para 4.21).

The first interim results of the analysis were presented to the BSAP UP workshops, and have been reviewed and commented by SOM topic teams, SOM Platform 4-2020 and Working Group meetings. The input data to the SOM analysis were validated by Working Groups and Expert Networks in September 2020. Changes were identified based on internal review and feedback received, and the model estimations to produce the final results of the SOM analysis were completed in October 2020.

The outputs of the SOM analysis include a methodology report, a main report summarizing the results, and nine topic-specific reports. HOD 58-2020 considered the proposed presentation of the SOM results and noted the importance of presenting the uncertainties related to the results. An example of the presentation of the results was prepared for review by GEAR 23-2020 ([Document 4-6](#)), as proposed by HOD 58-2020. GEAR 23-2020 took note of the need for topic-specific expert input to finalize the topic reports, and that especially for marine mammals and birds a review by national experts would be beneficial, since there are no topic teams for these topics ([Outcome](#), para 4.19). GEAR 23-2020 acknowledged that the uncertainties in the results have been sufficiently described, and commented that clear conclusions on the main results (and also the lack of results) would be valuable, potentially in the form of an overview table ([Outcome](#), paras 4.20-4.21).

This document describes the outputs from the SOM analysis, provides examples of the topic-specific reports, and discusses the potential uses of the SOM results.

Action requested

The Meeting is invited to:

- consider the results of the SOM analysis and their presentation and use in the BSAP update;
- consider including the SOM main report as background material to the 2021 Ministerial Meeting in the form of a BSEP.

Results of the sufficiency of measures analysis

Three outputs are planned from the SOM analysis (Figure 1). SOM results will be presented in nine topic-specific reports and a main report summarizing the results of the analysis. Topic-specific reports provide information on the background, structure and methodology for the analysis and results for the specific topic. The main report briefly explains the SOM approach and focuses on the results, conclusions, implications and lessons learnt. In addition, the methodology report describes in detail the SOM approach, methods and data. All outputs from the SOM analysis will be finalized by the end of this year, as both the ACTION project and HELCOM SOM work come to an end.

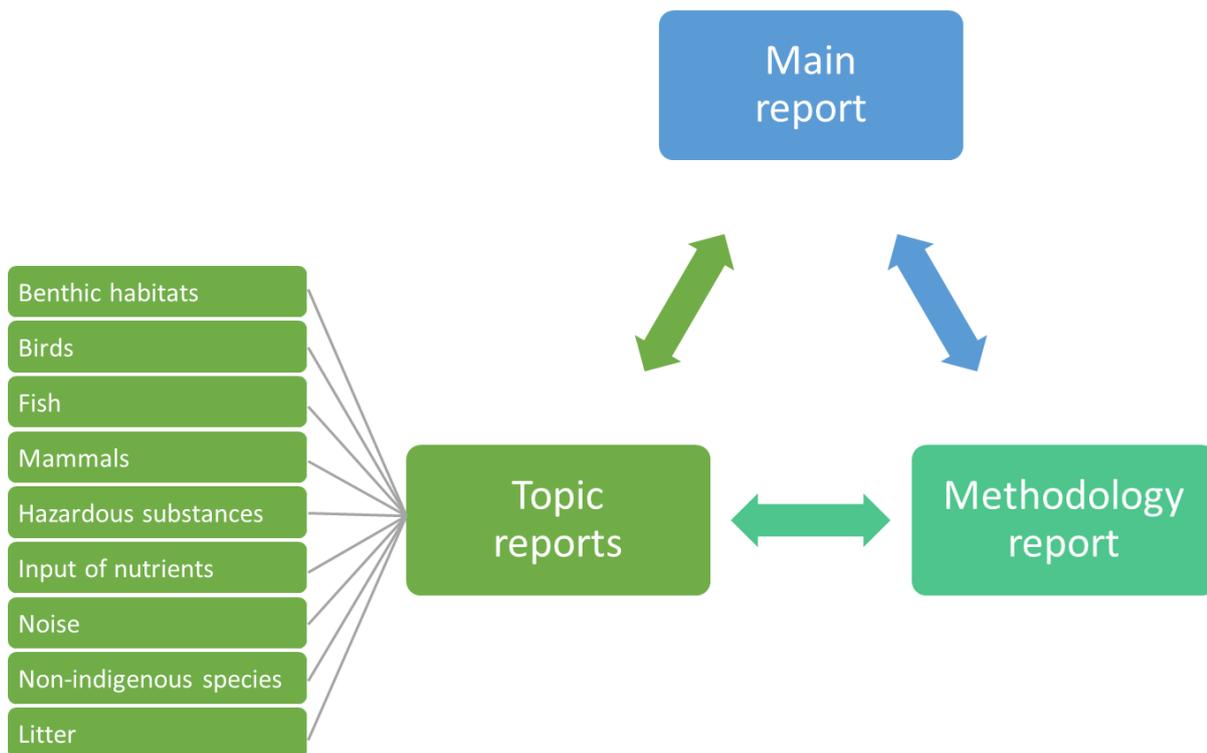


Figure 1. Planned reports from the SOM analysis

Format of presentation

The format the results are reported in (quantitative, qualitative/semi-quantitative, not presented) depends on the type of result and the number of participating experts. Further, for all results utilizing other SOM results as input data, reporting is done at the most conservative standard used in the input data. In practice this means that if one input data point is reported as 'insufficient data', all results using that data point will also be reported as 'insufficient data'; similarly for qualitative/semi-quantitative data points. Results that do not meet the data standards described here and in greater detail below are marked as 'insufficient data' in the topic reports.

Generally, results relying on less than 3 expert evaluations are excluded. Results based on 3-4 estimates may be excluded or reported qualitatively/semi-quantitatively, depending on the topic. Results with 5 or more contributing experts are reported quantitatively.

Methodology report

The methodology report describes in detail the SOM approach, model and data collection. It has been gradually developed and amended from the beginning of the project and is close to its final version. Some

editorial changes will still be made. The methodology for the SOM analysis has been developed by the ACTION project with guidance from the SOM Platform. The document has been reviewed in previous SOM Platform meetings, as well as GEAR meetings, and the methodology for the SOM analysis has been endorsed by GEAR 22-2020 ([Outcome](#), para 4.21).

The latest version of the methodology report is available [on the workspace](#).

Topic reports

Altogether nine topic reports will be prepared: benthic habitats, birds, fish, mammals, hazardous substances, input of nutrients, non-indigenous species, marine litter, and underwater noise. The general structure and contents of the topic reports were presented to SOM Platform 3-2020 ([Document 3-1](#)) and they have been followed when making the reports.

The suggestions and feedback from BSAP UP workshops, SOM topic teams, Working Groups and other HELCOM groups have been taken into account to the extent possible when developing the topic reports further (list of identified changes in [Document 4-6](#) to GEAR 23-2020). This has resulted in changes in the presentation of the results, additions that help interpret and contextualize the results, as well as topic-specific additions and revisions. Furthermore, input from SOM topic teams and additional topic experts is being requested to provide further interpretations and discussion of the results.

The format of the topic-specific report depends on the availability of data. Some topic reports present quantitative estimates for all result components, some present semi-quantitative or qualitative estimates, and some exclude certain results due to lacking or insufficient data. Thus, the topic reports differ somewhat in the presentation of the results.

Six examples of the topic-specific reports are currently available: hazardous substances, marine mammals, input of nutrients, benthic habitats, non-indigenous species and noise. They are made available in a dedicated [folder](#) in the SOM Platform workspace via the following links:

- [Topic report for hazardous substances](#)
- [Topic report for marine mammals](#)
- [Topic report for input of nutrients](#)
- [Topic report for benthic habitats](#)
- [Topic report for non-indigenous species](#)
- [Topic report for noise](#).

The results in the topic reports are based on the updated model estimations implemented in October. It should be noted that some sections or parts may still be missing and are marked with yellow placeholders. Some of them are dependent on input from SOM topic teams and other topic experts.

The topics have been chosen to provide an opportunity to consider all the elements of results and differing ways results may be presented, corresponding to the amount of data. The other three topic reports will follow the same general structure and approach.

Main report

The main report summarizes the findings of the SOM analysis. It provides a brief introduction to the approach and focuses on the results, interpretations and discussion on the lessons learned and knowledge gaps. The main report aims at avoiding the duplication of the work or contents of the topic reports, while providing a summary of the main findings of the analysis and new perspectives and insights not found in the topic reports. Further, the intention is to rely heavily on data visualizations to reduce the needed accompanying text. The report provides background information to support the BSAP update and further HELCOM work.

The outline and structure of the main report were presented to SOM Platform 4-2020 ([Document 3-1](#)). SOM Platform 4-2020 supported the overall focus of the main report. The suggestions from SOM Platform 4-2020

([Notes](#), paras 3.2-3.4) have been taken into account when developing the main report further. The final draft of the main report will be finalized by the end of this year. An outline of the main report is included in Annex 1.

The main report could potentially be included as background material to the HELCOM Ministerial Meeting in 2021 as a BSEP series report, as the main aim of the SOM analysis has been to support the BSAP update. The SOM work has been a shared effort between the ACTION project and the SOM Platform and Topic Teams, and has involved many HELCOM groups, networks and experts in the development of the approach, collection of expert data and presentation and interpretation of the results. The SOM work is of relevance to the BSAP update but can also support the implementation efforts. Moreover, the assessment framework can be further developed and utilized in later assessments, as outlined in the next section.

Should the publication of the main report in the form of a BSEP be supported, the draft BSEP will be submitted for review by GEAR 24-2021 and approval by HOD 60-2021, where approval of submission of the publication as part of the background material for the 2021 Ministerial Meeting would also be considered.

Potential uses of SOM analysis and results

The SOM analysis provides various data and results, and thus there are several ways the results can be used. The quality and information content of the results depend on the topic, and some results may not be available for certain topics due to lack and inconsistency of data.

The results can be used for the following purposes:

- Identify whether good status can be achieved with existing measures;
- Identify most significant pressures affecting state components;
- Identify pressure reductions from existing measures;
- Identify most impactful measure types for each pressure and associated existing measures;
- Identify main activities causing pressures;
- Link existing measures to activities and pressures;
- Identify the impact of changes in the extent of human activities to pressures and achievement of state improvements.

In addition to the use of the numerical results of the analysis, the overall approach and assessment framework can be further developed and utilized in later analyses of the marine environment. The conceptual approach and model can be used in estimating the effectiveness of new measures, and as a basis for cost-effectiveness analysis (as in done in ACTION WP 6.2). The framework can be improved by including additional linkages, topic-specific features and data to allow for more complete and accurate analysis of the effectiveness and sufficiency of measures. The business-as-usual (BAU) state, developed as part of the SOM analysis, can be used in assessing the cost of degradation and economic benefits from achieving good environmental status of the marine environment, as it provides the reference status to which GES can be compared to.

Annex 1. Outline of the SOM main report

Sufficiency of measures to achieve good status in the Baltic Sea

Summary

- *Where are the most important gaps in reaching GES?*
- *Which are the most important pressures in different areas?*
- *Where are the largest uncertainties and data gaps?*
- *Potentially an overview table that answers questions for all topics: whether GES can be achieved, which are the most important pressures, which activities cause pressures, links between existing measures, activities and pressures, and which measures are especially important to implement.*

1 Background

1.1 Background on SOM approach

Very general background on the topic. The aim is to provide a point of high accessibility where someone with little background in the subject could begin to interact with the results:

- a. What is a sufficiency of measures analysis?
- b. What is unique about this particular analysis?
- c. General limitations and assumptions.

1.2 Summary of SOM approach

Background covering the specifics of the SOM analysis. The aim is to provide the information necessary to understand the results presented in this report without needing to read any other document. However, the methodological details required to understand how these results were generated will be left in a separate methodology document.

- a. Reference to methodology document
- b. General structure and schematic of the approach
- c. Topics covered
- d. Reference to topic reports
- e. Data sources
- f. Existing measures register
- g. Development of human activities
- h. Time lags
- i. Uncertainty

1.3 How to use results

The aim of this section is to provide tools and context to read and utilize the results presented in both this report and the topic reports. Unlike other sections, this will also cover results only found in the topic reports and will serve as a listing of the results available across all the SOM reports:

- a. Overview of different types of results
- b. Relationship between each result
- c. Potential applications for results
- d. Reference to Annex 1: Practical guide to results presentation
- e. Reference to topic reports

2 Results

2.1 Likelihood of reaching GES

Qualitative assessment (e.g. very low, low, moderate, ...very high probability of achieving GES), presented alongside the range of expected pressure reduction and required pressure reduction

needed to reach GES. Information on the most recent assessment of status for context (generally HOLAS II/HELCOM indicator). Briefly describe time lags. Summary of results fully available in SOM topic reports.

2.2 Likelihood of reaching specific state improvements

Same presentation as likelihood of reaching GES (e.g. very low, low, moderate, ...very high probability to achieve a specific state improvement). Potentially only one of the three state improvement levels could be shown here to control the report length. The specific level could change between topics, based on input from e.g. topic teams or SOM Platform. Summary of results fully available in SOM topic reports.

2.3 Significant pressures across all topics

A joint ranking of pressures across all topics to give an integrated perspective of the top pressures in the Baltic Sea. Pressure rankings would be combined from all topics to create a single Baltic Sea ranking. New result for main report.

2.4 Top pressures for each state component

Table of top pressures for each state component in the SOM analysis. Additional grouping may be applied to limit the length of this section (e.g. all seals together or all populations of a seal species together rather than each population separately reported as in topic report). Summary of results fully available in SOM topic reports.

2.5 Activity-pressure input contributions

Two alternatives are suggested for this section. To manage both the length of this report and the project workload, it is recommended that only one of these options be selected.

- a. *Alternative 1: Projected activity-pressure input contributions for 2030 due to development of human activities and implementation of existing measures.

 - i. *This alternative shows the potential future relationship between activities and pressures to provide insights into which activities new measures might best be targeted. It could be presented in a table format. New result for main report.**
- b. *Alternative 2: Sankey diagrams for each multi-activity pressure input (a pressure input with more than one contributing activity).

 - i. *Large Sankey diagrams for many of the pressure inputs included in the SOM analysis to show the activities contributing to them and their strength. Provides a strong visual impact and an alternative look at data available from the topic reports.**

2.6 Most impactful measures

Table of most impactful measures for each pressure input in the SOM analysis. Impact is a metric combining effectiveness of measures and the activity-pressure contributions to identify measures that have a large influence on the environment rather than a large influence on the targeted activity. This alternative perspective acknowledges that less effective measures targeting a very important activity could be more important than a highly effective measure targeting a minor activity. For single-activity pressures (e.g. fish extraction which only results from fishing), effectiveness of the measure and impact are identical. Currently this result is not included in the topic reports. However, it is expected to be included at least as an annex to those reports.

3 Conclusions and discussion

3.1 Brief summary of approach and results

3.2 Evaluation of the process and results, lessons learned

3.3 Knowledge gaps and development opportunities

What are the limitations, what could be achieved and what not, and how to take the work forward in the future?

Annexes

ANNEX 1: How to read the results

Provides a visual walkthrough of each figure and table type and provides an example analysis.