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This document has been revised to include two additional topic report drafts (non-indigenous species, noise) as separate attachments and to update the topic report on benthic habitats in the section Topic reports. The additions are marked in red.

Background

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 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 outputs of the SOM analysis include a methodology report, a main report summarizing the results, and nine topic-specific reports. The methodology report describes in detail the SOM approach, methods and data, and the main report briefly explains the SOM approach and focuses on the results, conclusions, implications and lessons learnt. The topic-specific reports provide information on the background, structure and methodology for the analysis and the results for the specific topic.

The format of the presentation of the results has been developed based on discussions and comments from, in particular, the SOM Platform, Expert Network on Economic and Social Analyses ([Outcome of EN ESA 9-2020](#), Agenda Item 4) and ACTION project. HOD 58-2020 noted the importance of presenting the uncertainties related to the results. An example of the presentation of the SOM results was prepared for review by GEAR 23-2020 ([Document 4-6](#)), as proposed by HOD 58-2020.

The first interim results of the SOM analysis were presented to the BSAP UP workshops. They have been reviewed and commented by SOM topic teams, SOM Platform 4-2020 and Working Group fall meetings. In addition, the input data to the SOM analysis has been validated by Working Groups and Expert Networks in September 2020. Several points of development and improvement to the SOM results and their presentation were identified in these review processes. The model estimations and results of the SOM analysis were updated in October 2020 based on identified changes to the input data and model. Further, the topic reports are being revised based on the feedback received.

This document provides information on the planned reports, as well as the final results of the SOM analysis. Four examples of the topic-specific reports are provided: hazardous substances, mammals, input of nutrients and benthic habitats. The topic reports are available as attachments to this document in separate files. The document also briefly lists the potential uses of the SOM analysis and results.

Action requested

The Meeting is invited to:

- consider and comment the final results of the SOM analysis.
- discuss and provide guidance on the reports that present the results of the SOM analysis.

Reports on SOM 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.

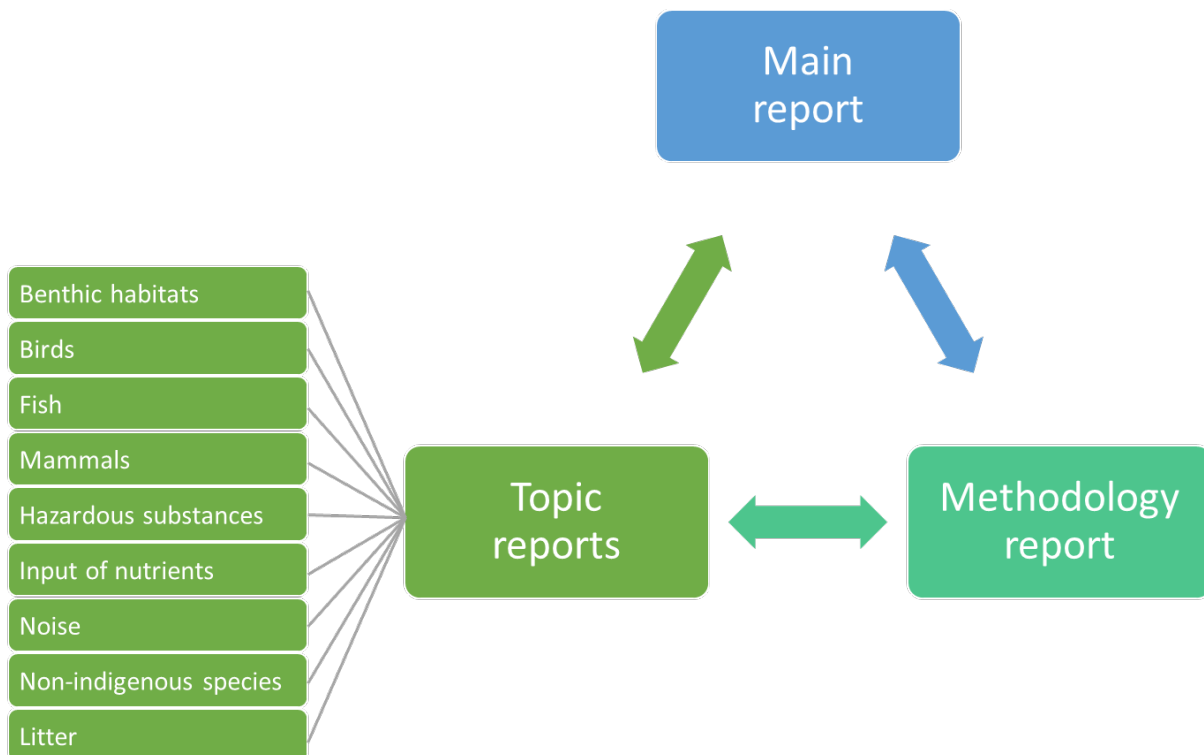


Figure 1. Planned reports from the SOM analysis

Format of presentation

The format the results are reported in (not presented, qualitative/semi-quantitative, quantitative) 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. However, note that this standard is only applied in the case of data points actively used to calculate another result. For example, many measure types are hypothetical or otherwise not implemented in the Baltic Sea and therefore do not factor into results on projected pressure reductions from existing measures. Insufficient data for such measure types does not affect reporting other results that rely on data for effectiveness of measure types. Results that do not meet the data standards described here and in greater detail below are marked with 'insufficient data' in the report.

For results concerning required pressure reductions and significance of pressures to state components, results with 2 or fewer respondents are not reported; results with 3 to 4 respondents will be either not

reported, or qualitatively/semi-quantitatively reported based on feedback from the SOM topic teams or other HELCOM expert body; results with 5 or more respondents are reported quantitatively. This standard allows flexibility for reporting on assessments that are of spatially limited areas and therefore have fewer experts available to survey, while also being somewhat conservative in reporting fully quantitative results.

For expert-based effectiveness of measures results, measure types with 5 or more respondents are reported quantitatively and those with 4 or fewer respondents are listed as having insufficient data.

For expert-based activity-pressure results, expert responses were primarily sought through the HELCOM expert networks in the form of national responses. Individual expert responses were accepted but were consolidated into average responses by country to conform to the format of other responses. Thus, the maximum number of responses is 9. This maximum is rarely reached due to responses typically only applying to areas adjacent to the specific country. Acknowledging this, activity-pressure relationships are reported if there are expert responses from 3 or more countries or if the number of countries providing expert responses is greater than 1/2 the number of countries bordering any given sub-area (see Table 1 below; responses from experts based in any HELCOM country will be counted toward the reporting threshold, i.e. the reporting assessment is not limited to responses from bordering countries).

Table 1. Required number of countries providing expert responses to the activity-pressure survey to meet the minimum data threshold for reporting.

Bordering countries	Required number of countries providing expert responses to meet minimum data threshold	Example areas
1	1	Western Gotland Basin
2	2	Bothnian Sea, Gulf of Riga
3	2	Gulf of Finland
4+	3	Eastern Gotland Basin, Baltic Sea

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 2-1-Rev.1](#) to SOM Platform 4-2020). 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 topic teams 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. The criteria for choosing which results to present and in which format are further described in the section “Format of presentation” in this document. Thus, the topic reports differ somewhat in the presentation of the results.

Four examples of the topic-specific reports are currently available: hazardous substances, marine mammals, input of nutrients and benthic habitats. They are made available as attachments to this document in separate files:

- Document 2-1-Att.1 Topic report for hazardous substances
- Document 2-1-Att.2 Topic report for marine mammals
- Document 2-1-Att.3 Topic report for input of nutrients
- **Document 2-1-Att.4-Rev.1 Topic report for benthic habitats (updated)**
- **Document 2-1-Att.5 Topic report for non-indigenous species**
- **Document 2-1-Att.6 Topic report for noise.**

The results in the topic reports are based on the updated model estimations implemented in October and the presentation takes into consideration the suggested changes to the presentation and amendments to the results. Note 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 report for hazardous substances provides an example of a topic report which presents all results in a quantitative format, and where the focus of the analysis is to assess the sufficiency of measures to achieve GES for environmental state. The report for mammals illustrates the case in which certain results are excluded due to lacking data, according to the criteria for the format of presentation. The analysis for the input of nutrients is based the most on existing literature, data and models of the nine topics. It provides an example where projected pressure reductions are compared to nutrient reduction targets to assess the sufficiency of measures. The report for benthic habitats illustrates a case where no GES threshold has been available, and some results have been removed due to lack of data. **Additionally, the report has been reviewed by topic experts who have made a recommendation concerning pressure-state results with 3-4 contributing experts (see Format of presentation section). The reports on non-indigenous species and noise illustrate the case when the SOM assessment stops at pressures.** Together, the reports provide examples of the contents and structure of the final topic reports, taking into consideration the amount of data.

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. Other 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.

SOM Platform 4-2020 proposed to:

- more clearly aim to answer where are the most important gaps in reaching GES, which are the most important pressures in different areas, as well as where are the largest uncertainties and data gaps
- highlight what are the lessons learnt in the process, what are the limitations, what could be achieved and what not, and how to take the work forward in the future

- change the order of chapters so that section 9 (Activity-pressure input contributions) could be placed before section 8 (Most impactful measures).

These suggestions 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.

In addition, SOM 4-2020 pointed out that an analysis on how well the proposed new measures are aligned with the gaps identified by the SOM analysis would be useful. It is still unclear whether such analysis can be conducted.

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
- implementation status of existing measures
- 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.