



Document title	Methodology and progress of the SOM analysis
Code	4-2
Category	CMNT
Agenda Item	4 - Update of the Baltic Sea Action Plan
Submission date	18.05.2020
Submitted by	Executive Secretary
Reference	Strategic Plan for the BSAP update, activity 2.5

Background

Sufficiency of measures (SOM) analysis is one of the activities agreed through the [Strategic Plan for the BSAP update](#) (cf. activity 2.5). It will support the identification of gaps in existing measures to reach good environmental status and contribute to identifying needs for new actions for the updated BSAP. The analysis is guided by the HELCOM SOM Platform, established by HOD 55-2018, and carried out through the HELCOM ACTION project and through the lead by Contracting Parties on specific topics covered by the analysis (see e.g. HOD 56-2019, [document 2-2](#)). HOD 56-2019 endorsed the overall approach for analyzing sufficiency of measures (SOM) and its use to support the BSAP update as contained in [document 2-3 to HOD 56](#). Details of and updates to the methodology have been considered by the [SOM Platform 2-2019](#) and [SOM Platform 3-2020](#) meetings. The preliminary results of the SOM analysis have been discussed at the SOM Platform 3-2020 ([Notes](#) from SOM Platform 3-2020). GEAR 22-2020 endorsed the methodology for the SOM analysis ([Outcome](#), para 4.21) and invited to include a timeline for the SOM analysis and results ([Outcome](#), para 4.23).

This document presents the general methodology, collection of input data and progress of the SOM analysis of existing measures, as well as a proposal on presenting the results of the SOM analysis. In addition, it outlines the analyses for potential new measures and presents a timeline for the analyses in 2020. According to the current timetable for the SOM analysis, data collection will be finalized in May 2020, data validated by the Working Groups in June–September 2020, and SOM results will be provided to the BSAP update workshops arranged in August–September 2020.

Action requested

The Meeting is invited to:

- take note of the methodology and progress of the SOM analysis;
- consider the proposed presentation of the results.

Methodology and progress of the SOM analysis

Aims and approach for SOM analysis

The aim of the sufficiency of measures (SOM) analysis is to assess improvements in environmental state and pressures that 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 SOM analysis is carried out for the main environmental themes in the HELCOM [‘State of the Baltic Sea’ report](#), including birds, mammals, fish, benthic habitats, non-indigenous species, hazardous substances, marine litter, underwater noise and input of nutrients. The same overall approach is applied across all of these topics to ensure comparability and coherence of the results.

The SOM analysis involves estimating the status of the marine environment at a specific future point in time, given measures in existing policies, their implementation status and projected development of human activities over time (Figure 1). The main components of the analysis are assessing the contribution of activities to pressures (Step 3), the effect of existing measures on pressures (Step 4), the effect of development of human activities on pressures (Step 5), and the effect of changes in pressure to environmental state (Step 6). The result is the state (in terms of pressure reductions or improvements in environmental components) in 2030-2035, which can then be compared to the threshold for good environmental status, when available (Step 7).

In addition to supporting the identification of gaps to good status, the analysis provides information, for example, on the relative contribution of activities to pressures, effectiveness of measures types in reducing pressures from activities, most significant pressures affecting state components, pressure reductions required to achieve GES/status improvements, status improvements/pressure reductions from existing measures, and time lags between measures and environmental state.

More information on the SOM analysis is available on a dedicated page at the [HELCOM website](#), as well as a [webinar](#) given in January 2020.

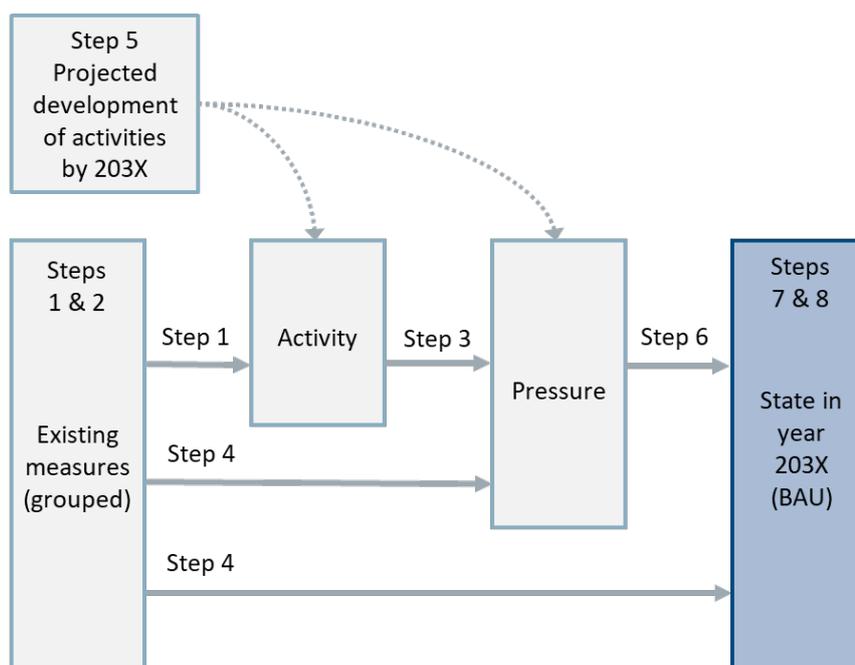


Figure 1. Recollection of the main components and steps of the SOM analysis

- Step 1. Existing measures and measure types, including activity-measure links
- Step 2. Time-lags for measure effects on pressures
- Step 3. Contribution of activities to pressures
- Step 4. The effects of measure types
- Step 5. Projected development of human activities
- Step 6. Effect of changes in pressures on state components
- Step 7. Comparison of business-as-usual and good status and gap assessment
- Step 8. Effect of time lags in the recovery of state components

Overview of collection of input data to the SOM analysis of existing measures

The collation of data for the SOM analysis has, for the main part, been finalized in the spring 2020. This includes data on activity-pressure contributions (Step 3), projections of human activities (Step 5) and state-pressure linkages (Step 6). Additional data collection for the effectiveness of measures (Step 4) takes place during April-May 2020. Expert responses on effectiveness of measures need to be reviewed and complemented by original respondents due to a problem in the survey software, which has led to a potential loss of data. This takes place in April-May after the software developer fixed the problem. Literature review on the effectiveness of measures has been finalized for several topics and those remaining will be finished by mid-May. All SOM input data are expected to be ready by the end of May 2020.

For the activity-pressure contributions (Step 3), a data-driven approach has been used for loss and disturbance to the seabed (data collated during HOLAS II project), introduction of non-indigenous species (based on entries to the AquaNIS database) and input of nutrients (ACTION WP4, based on PLC-6). For the remaining topics which require assessment of activity-pressure contributions, an expert-based approach has been employed and activity-pressure surveys have been distributed to relevant HELCOM expert bodies and SOM topic teams in 2019, with some additional responses sought also early 2020.

Expert surveys on effectiveness of measures (Step 4) and pressure-state linkages (Step 6) have been, for the most part, implemented in December 2019 – February 2020. The expert pool was formed from the representatives of the relevant HELCOM expert networks and groups, as well as additional experts nominated by Contracting Parties (representatives of HELCOM Working Groups and SOM Platform) specifically for the task. Additionally, the project received survey responses from experts not on the original invitation list. The majority of these experts are participating in a group response with an invited expert. It is proposed that the responses from these additional experts are treated the same as those of invited experts. Altogether, 469 experts (unique cases) were identified as potential respondents to the surveys, with 35-114 experts per topic. As indicated previously, expert data on the effectiveness of measures will be complemented with additional survey data collection in April – May 2020.

In addition to the SOM surveys, a literature review has been conducted by the ACTION project and the Secretariat to provide additional data on the effectiveness of measures (Step 4). The usability of such data depends on whether they can be linked to the measure types (i.e. generalized measures) employed in the expert surveys. The review considers data both for inclusion in the SOM model, which requires information on effectiveness as percent pressure reduction, and for use as external points of comparison that support the interpretation of the model outcomes.

Projected development of human activities (Step 5) is based on compiling relevant national and regional literature on the future development of human activities in the Baltic Sea region and converting the existing information to percent changes in the activities until 2030-2035. The approach includes constructing several alternative scenarios which cover the whole range of likely changes in an activity. These scenarios can be applied in the SOM model to examine how the different assumptions on the change in human activities impact the changes in pressures and further environmental state.

The data on activity-pressure contributions, effectiveness of measures and pressure-state linkages will be validated by HELCOM Working Groups in June – September 2020. The validation will take place intersessionally (via correspondence or online meetings) (see [detailed information on the validation](#)). Topic-specific summary statistics and distributions of the responses will be presented for validation. The data will also include summary information of the background of the respondents, i.e. their country, organization type, field and years of experience.

More detailed information on the SOM methodology and model is presented in [this document](#).

Analyses of potential new actions

In addition to analyzing the sufficiency of *existing* measures (SOM analysis), the work plan for the BSAP update includes analyses of potential *new* actions in the updated BSAP (costs and effectiveness). The aim is to re-run the analyses of sufficiency of measures including proposed new HELCOM actions and prepare analyses of cost-effectiveness of potential new HELCOM actions.

The cost-effectiveness analysis (CEA) builds on the SOM analysis of existing measures and examines how effective new measures are in closing the gap to good status, accounting also for the costs of new measures. This, in principle, allows defining optimal sets of measures from the perspective of economic effectiveness. An overall approach and steps for conducting the cost-effectiveness analysis have been outlined, as well as a template for collecting cost information. Data on effectiveness and costs of potential new measures is compiled through synopses, ACTION work packages, literature review, project reports and HELCOM EN ESA. In addition, information on the measure type effectiveness collected in the SOM analysis can potentially be applied also to estimate the effectiveness of new measures.

According to the provisional plan, the CEA model development starts in June and is aimed to be ready in August. More detailed information on the CEA of new measures is presented in [this document](#).

Timeline for SOM analysis and analyses of new measures in 2020

The following tables present the timeline for the analyses under the HELCOM ACTION project and SOM Platform for the sufficiency of *existing* measures (SOM analysis) and potential *new* actions for the updated BSAP (cost-effectiveness analysis). The work is carried out by the ACTION project, the SOM Platform, SOM topic teams and the HELCOM Secretariat, with input and guidance from HELCOM groups and networks.

Table 1. Timeline for SOM analysis of existing measures

Task	Responsible	Timing (month in 2020)
Finalizing data collection	ACTION/Secretariat	May
Analyses and results	ACTION	June
Formatting and providing input data for validation	ACTION/Secretariat	June-August
Providing results to BSAP UP workshops	ACTION/Secretariat	August
Providing results to SOM Platform 4-2020	ACTION/Secretariat	August
BSAP UP workshops	Secretariat, experts	August-September
Validation of input data	Working Groups	June-September
SOM Platform 4-2020 meeting	SOM Platform/Secretariat	September
Providing results to Working Group meetings	ACTION/Secretariat	August-October
Preparing overall and topic-specific reports to support BSAP update	ACTION/Secretariat	June-December
Potential SOM Platform 5-2020 meeting	SOM Platform/Secretariat	November

Table 2. Timeline for analyses related to potential new actions

Task	Responsible	Timing (month in 2020)
Collecting effectiveness data	ACTION	April-June
Collecting cost data	ACTION/HELCOM EN ESA	April-August
Analysis of sufficiency of potential new HELCOM actions	ACTION	August- September
Cost-effectiveness analysis of potential new HELCOM actions	ACTION	August-September
Providing effectiveness estimates of proposed measures to BSAP UP workshops	ACTION/Secretariat	August
Providing results to Working Group meetings	ACTION/Secretariat	August-October
Re-running cost-effectiveness analysis with updated information	ACTION	November-December

Proposal on presenting the results of the SOM analysis of existing measures

The preliminary version of the presentation of SOM results was prepared for the SOM Platform 3-2020 meeting ([Document 3-2](#)), using the data available at that point in time. Comments were received in the meeting and intersessionally on the presentation of the results, particularly for the BSAP UP workshops in August-September 2020. These comments have been considered in the current proposal. The proposal applies mainly to the SOM results provided to the BSAP UP workshops, and presentation of the SOM results in the BSAP update background material will be further discussed in the SOM Platform.

The following results are proposed to be included:

- a. Gap assessment
- b. Activity-pressure contributions
- c. Effectiveness and impact of measure types
- d. Required pressure reductions to achieve GES/state improvements
- e. Significance of pressures to state components
- f. Supporting information to gap assessment
 - where measures could potentially be needed (by area and activity/pressure/state component)
 - what types of measures have already been implemented, which measures could potentially be effective (based on the most effective measure types).

The main result from the SOM analysis relevant to the BSAP UP workshops is the gap assessment (a), i.e. whether good status will be achieved with existing measures. The gap assessment is only possible for those topics which have a GES threshold. For those topics without a gap assessment, it is possible to evaluate the state improvements or pressure reductions from existing measures.

Providing the other (intermediate) results (b-f) is important as background information and for evaluating the quality and reliability of the gap assessment. They include the results for the main components of the SOM analysis.

The results from the SOM analysis are proposed to be presented using both summary statistics and probability distributions, as requested by the SOM Platform 3-2020 meeting ([Notes](#), para 3.5). The summary statistics include the most likely (expected) values and their standard deviations. The distributions are presented in graphs which show how the responses are distributed. Both of these illustrate the variation in the responses. When standard deviation is high, values are spread over a wider range, and when it is low, values are closer to the most likely value. Probability distributions show the probabilities of occurrence of possible outcomes, i.e. which values are more likely than others.

The summary statistics are proposed to be presented in tables, which include the most likely value and its standard deviation. Color codes are used to categorize the most likely value into discrete categories, which indicate the magnitude of the value. For example, for the percent effectiveness of measure types, colors would be used to indicate whether the effectiveness is low, intermediate or high. Coloring or other visualizations could potentially be used also to show the level of certainty of the estimate.

In addition, when expert survey data has been used, expert's confidence in their own responses and the number of experts contributing to each estimate will be reported together with the results. This will provide supporting information for evaluating the certainty and precision of the results.

Distributions and graphs are proposed to be included as supporting material in annexes. They show the same results as the tables, but allow either more detailed information or a different way of presentation to ease understanding.

Tables and graphs will be complemented with text including interpretation, discussion, evaluation and conclusions of the results. The results will also include information on respondents' background (country, organization type, field, and years of experience).