



Baltic Marine Environment Protection Commission

Working Group on the State of the Environment and Nature
Conservation

STATE & CONSERVATION
13-2020

Online, 5-9 October 2020

Document title	Draft HELCOM Holistic Assessment Methodology Development Project (HELCOM MetDev), 2021. Rev.1
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This document has been revised based on further developments of the HELCOM BLUES project, as well as input and consideration by relevant Expert Groups. Changes are presented in track changes.

Background

In the approved preliminary plan for HOLAS III, in line with the wishes expressed by the Contracting Parties, all technical development work and improving of infrastructure needed to support the State of the Baltic Sea report takes place prior to the start of the actual HOLAS assessment process. This development work is clustered under a HOLAS III preparatory phase. The preparatory phase is structured along three distinct but interlinked projects outlining the main stands requiring further work (as illustrated in Figure 1 in this document):

1. consolidation and development of indicators,
2. establishing and improving data flows,
3. refining and further developments of the assessments

The preparatory phase is proposed to run from the beginning of 2020 to the first quarter of 2022, in a staggered structure (as presented in Figure 3 in this document). The project plans for the development of indicators and improving data flows have been approved in HOD 54-2018, and HOD 57-2019 respectively. Following the approval of the provisional plan for HOLAS III, which includes the preparatory work, at HELCOM 41-2020, the work on drafting the project plan for the third step of the preparatory phase has commenced, as contained in this document.

The outline and aim of the HELCOM Holistic Assessment Methodology Development (MetDev) Project as presented in this document constitutes the second draft and proposed structure of the project. The content of this draft has been presented for input to GEAR 22-2020 and to STATE&CONSERVATION 12-2020, as well as to HOD 58-2020 for information. Additional guidance provided by the WGs in the autumn meeting will be incorporated in the further development of the project proposal, prior to the proposals submission to HOD 59-2020 for approval.

Development of the content of the proposal has progressed, for spatial pressure and impact assessment, as included in Work package 1 of this document GEAR has established a three step process to identify further development needs and the second step, a Scoping Meeting, was held 8-9 September 2020. The output of the workshop has been used to guide the preliminary content of WP1, which will be further refined following the third and last step of the process, a technical development workshop planned for early November. Thus the WP1 work is still only partially covered by this version of proposal.

For WP 2, which looks at development and improved integration of ESA for the Third State of the Baltic Sea report, a section for exploring driver indicators has been included in this version of the document. This builds on support for including trend-based indicators (i.e. driver indicators as outlined in the draft HELCOM indicator manual), as presented in the causa framework for indicators endorsed by the [Second Indicator](#)

[Workshop](#) and [State and Conservation](#) 11-2019, to provide context for the state and pressure assessments. This task would utilize work done under similar initiatives under OSPAR, as well as explore using existing HELCOM fact sheet information and other trends as a basis for a more coherent approach to presenting trend based information. The tasks under WP 2 which deal with the economic benefits from marine protection and cost-benefit analysis under work package 2, have been proposed for inclusion in the draft HELCOM BLUES project proposal (EMFF/MSFD call 2020) and any overlap has been removed from the current version of this document.

Further development of the HEAT, BEAT and CHASE tools, included in WP3 in the original draft submitted to STATE&CONSERVATION 12-2020, have been partially included in the successful Baltic DataFlow project proposal (submitted to CEF Telecom in 11/2019) and these aspects have now been fully removed from the project proposal. A number of other tasks related to additional developments for BEAT have been proposed for inclusion in the draft HELCOM BLUES project proposal (EMFF/MSFD call 2020). These have currently been removed from the project, but may need to be included before final approval should the proposal not be successful, to ensure necessary development takes place prior to HOLAS III. (see Figure 3 for an overview of how the various projects feed into the priorities for HOLAS III).

A 'place holder' related to the MIME tool, the analytical tool that is applied prior to CHASE for the assessment of hazardous substances, has been included under WP 3 as there are further developments related to this tool that would be highly beneficial in the short- and longer-term. Further discussion with the developers and ICES is ongoing, with the aim to be able to provide a clear overview of expected outcomes and resource needs. As MIME is, to a large extent, a tool shared with OSPAR the Secretariat will initiate informal communication with the OSPAR Secretariat regarding possible synergies and explore possible financing options.

Currently funding has not been secured for the full project.

Action requested

The Meeting is invited to:

- review the updated project plan for MetDev and endorse it for submission to GEAR 23-2020 and following further development, e.g. based on outcome of CIA technical development workshop and HELCOM BLUES project proposal, to HOD 59-2020 for approval, thus enabling the work to begin in early 2021.
- consider providing national funding to support the work.

PROJECT DESCRIPTION

1. Title of Project

HELCOM Holistic Assessment Methodology Development Project (HELCOM MetDev), 2021

2. Project Manager(s)

HELCOM Secretariat, Professional Secretary.

3. Proposing Party

Contracting Party

Commission

Subsidiary body

Heads of Delegation

Executive Secretary

4. The body supervising the project

State and Conservation Working Group and Professional Secretary

5. Target and activities

Background

Early preparation for the HOLAS III process has been identified as important for the successful implementation of the next holistic assessment. The provisional plan for HOLAS III divides the work into two main work phases, the preparatory work and the holistic assessment. The preparatory work is intended to review and further develop the necessary components and improve infrastructure to support the next holistic assessment. This is required in order to ensure that critical components (indicators, dataflows and tools) are fit for purpose, and to maintain the continued policy relevance of the work.

The preparatory work has been structured along three distinct but interlinked projects: consolidation and development of indicators (HELCOM Indicators), establishing and improving data flows (HELCOM DataFlow), and refining and further developing the assessments (HELCOM MetDev) (as illustrated in figure 1). The preparatory phase has been agreed to run from the beginning of 2020 to the first quarter of 2022, in a staggered structure where each project provides information to and helps guide the consequent projects throughout the duration (as illustrated in figure 23).



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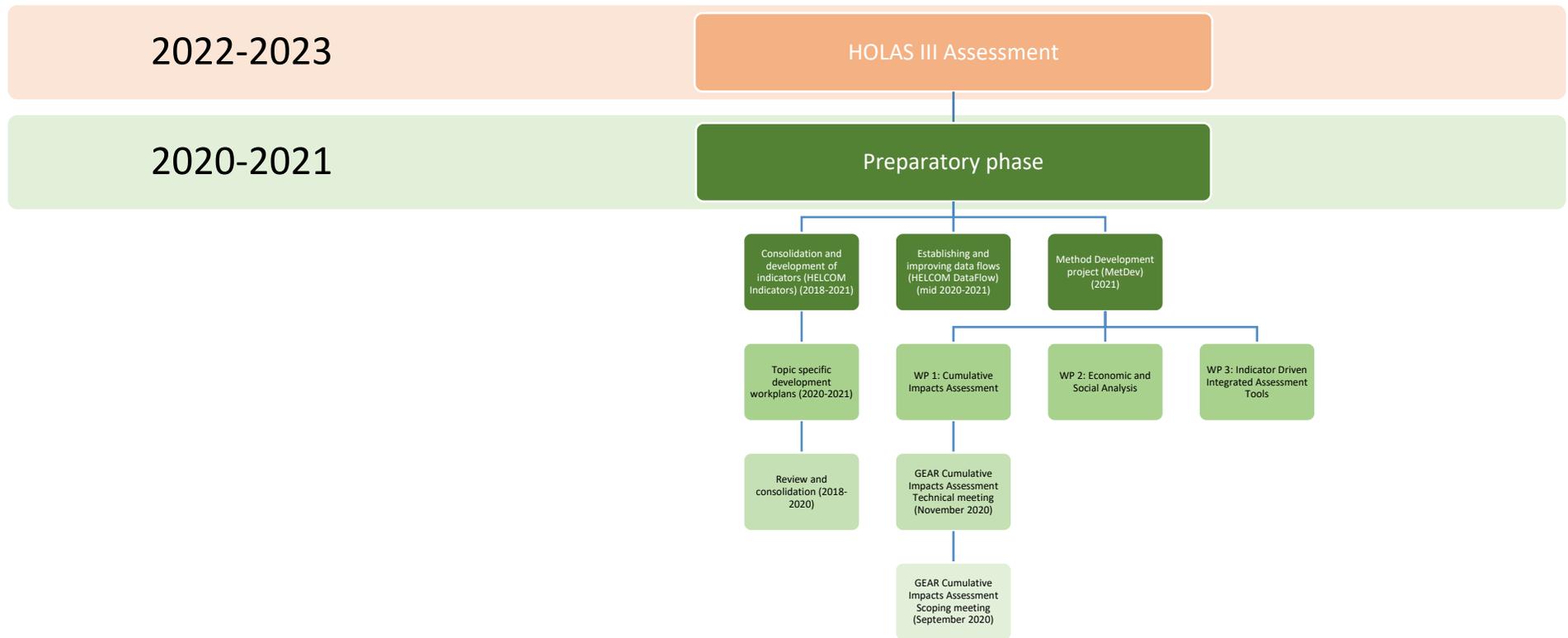


Figure 1. The preparatory work has been structured along three distinct but interlinked projects: consolidation and development of indicators (HELCOM Indicators), establishing and improving data flows (HELCOM DataFlow), and refining and further developing the assessments (HELCOM MetDev).

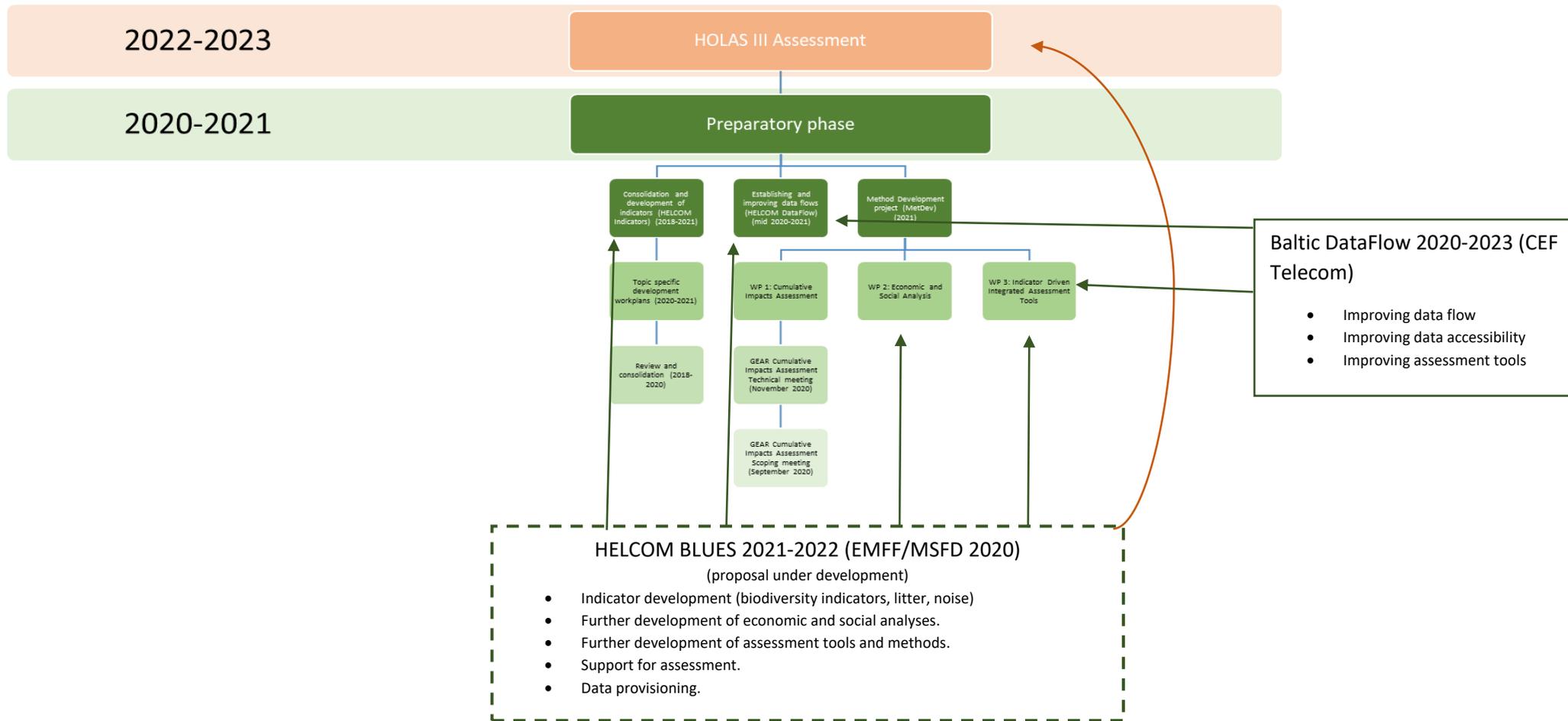


Figure 2. Visualizing the links between internal preparatory phase projects, the HOLAS III assessment and approved and proposed externally funded projects.



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	2020				2021				2022				2023			
	Q1	Q2	Q3	Q4												
Indicator development/consolidation (HELCOM Indicators)																
Establishing and ensuring dataflows (HELCOM DataFlow)																
Refining and further developments of assessments (HELCOM MetDev)																
HOLAS III Assessment																

Figure 32. The preparatory phase is proposed to run from the beginning of 2020 to the end of 2021, in a staggered structure where each project provides information to and helps guide the consequent projects throughout the preparatory phase

The MetDev project, as outlined in this document, would be targeting the third and final step of the preparatory phase, namely improving the indicator driven integrated assessment tools as well as other tools or methods such as cumulative impacts and methods used for analysis of economic and social aspects, which underpin the holistic assessment of the Baltic Sea environment. Consequently, the HELCOM MetDev project is proposed to consist of three distinct work packages, corresponding to the three work strands for which further development would be beneficial:

- **Work package 1: Cumulative Impacts Assessment**
- **Work package 2: Economic and Social Analyses**
- **Work package 3: Indicator driven integrated assessment tools**

The aim of the project is to ensure that the tools and methods used are fit for purpose and fully operational for the Third State of the Baltic Sea Assessment (HOLAS III).

The project will build on lessons learnt from the Second State of the Baltic Sea report (HOLAS II 2018) as well as link closely and contribute to the work done under the two already approved preparatory projects, HELCOM Indicators and HELCOM DataFlow. It is e.g. likely that modification and refinements of the integrated assessment tools are needed following the incorporation of new data strands stemming from step two (HELCOM DataFlow) and possible new or consolidated indicators stemming from step one (HELCOM Indicators). The project would also work closely together with organizations hosting and/or maintaining some of the HELCOM assessment tools, e.g. ICES, [as well as externally funded project aiming to support the HOLAS III preparatory and assessment work e.g. Baltic DataFlow and, if successful, HELCOM BLUES \(see Figure 2 for an outline of how the projects support the HOLAS III process\)](#). GEAR 20-2019 invited the Secretariat and the relevant Expert Groups to prepare more specific information on identified gaps and development needs for the various work strands not covered by the indicator work, as identified in the HOLAS II process or in subsequent work. This information, together with input received through the HOLAS II Lessons Learned survey have been considered when outlining the work under the respective work packages presented in this project plan.

Activities

Work package 1: Cumulative Impact Assessment

Project staff: project researcher (located at Secretariat), data developer

HELCOM Expert Support: HELCOM Expert Groups based on identified need

Review, guidance and approval: State and Conservation

Human activities in the Baltic Sea and its catchment area create a variety of potential pressures. To support ecosystem-based management of human activities and to provide a system that enables linking the quality of the environment to its management there is a need to identify relevant activities and quantify intensities and distribution of the anthropogenic pressures affecting the marine environment, as well as to identify and quantify their impacts on the Baltic Sea ecosystem.

If each of the pressures affecting the Baltic Sea is considered individually, they may appear to be at sustainable levels. However, at any given point multiple pressures are affecting the species and habitats of the marine environment and these pressures jointly cause cumulative impacts. When considered together, particularly when their temporal and spatial distribution overlap, the total impact of these pressures on the environment may be considerable and especially so when acting on sensitive habitats or species.

To bring together spatial information on the distribution and intensity of activities/pressures and their potential (cumulative) impacts on ecosystem components HELCOM has, for its previous holistic assessments HOLAS I in 2012 and HOLAS II 2018, developed and used the Baltic Sea Pressure Index (BSPI) and the Baltic Sea Impact Index (BSII).

GEAR 21-2020 started planning the HOLAS III process leading up to the publication of the Third State of the Baltic Sea report. As part of this planning process the question arose on how to tackle cumulative impact assessments (CIA) in the Baltic Sea region in future assessments and on the role of the Baltic Sea Pressure and Impact Indices (BSPI/BSII) in HOLAS III. The GEAR meeting concluded that BSPI/BSII should be included as part of HOLAS III, but in what capacity and format is still to be considered. GEAR 21-2019 concluded that further discussion is needed on how to tackle cumulative impact assessment for the purpose of HOLAS III, including, but not limited to

- identifying what is required from such an assessment
- what the current and possible use of the assessment outputs are
- considering the added value of such assessments
- the analysis and interpretation of results
- how to handle uncertainty and possibilities for validation of assessment results
- how to better link the assessment with the indicator evaluation.

GEAR agreed on a three step process to reach a shared view on these questions and by extension the development needs for HOLAS III. The first step was to collect national information on the view and potential use of cumulative impact assessments through a survey, to be used as a basis for further discussion at a CIA Scoping meeting. Contracting Parties also discussed to broaden the scope of the discussion with a view to discussing how pressure, impact and status information can be linked. The questions raised regarding CIA require clarification by autumn 2020 so that the development of agreed deliverables can be included the proposal for a project in preparation of HOLAS III, the MetDev project, for approval by HOD 59-2020 in December 2020.

HOD 58-2020 endorsed the arrangements for taking forward the CIA-work in a three step approach including a questionnaire, a scoping meeting and a technical workshop.

The first step was executed by distributing a survey to GEAR contacts. The questionnaire provides examples of policy contexts for HELCOM work on CIA and explores in two sets of questions The responses were collated and used as a basis for the discussion at the scoping meeting, the output of which includes an overview of envisioned used for pressure and impact assessment, provides long and short term priorities for further development and identifies how current challenges and barrier could be tackled.

At CIA Scoping 1-2020 the participants recognized spatial pressure and impact assessment as providing a good platform for regional cooperation and needed support for transboundary work.

Overall the meeting advocated a broader scope of pressure and impact analysis, one that supports ecosystem based management., e.g by supporting prioritization, planning and implementation of measures and management actions. To increase the added value of the further development planned to take place prior to HOLAS III an assessment tool must be able to:

1. Be used for subset analysis (e.g. analyses of specific species/pressures/activity combinations). Such subset analyses were recognized as providing valuable spatial support and context for status assessments.
2. An analysis should strive to show results at an ecologically relevant scale, and any tool developed should thus be scalable within the same analyses.
3. Separate between direct and indirect pressures
4. Include information regarding the scale of a pressures to the overall impact, by presenting proportional values, and linking back to the activity causing the pressure, by 1km² square.
5. Assign proportional values of impact to different sectors.
6. Present distribution of pressures and impact at 1km² resolution and identify "hot spots"/risk areas of high pressure.
7. Be very clear on the method, assumptions and data included. Consider how the significance of the uncertainty can be communicated, e.g. differences in quality of underlying data.
8. Allow for results to be validated.

The work on further development of the cumulative impact assessment approach is closely tied to data availability and as such Work Package 1 is especially tightly linked to the work done under the HELCOM DataFlow project and a dynamic and close cooperation between WP1 and a number of the activities under the DataFlow project are foreseen.

Based on the outcome of the scoping exercise the following priorities for further development for HOLAS III have been identified:

- A. Capacity for subset analyses of any activity/pressure/impact/ecosystem component combinations
- B. Proportional value of pressure to impact
- C. Linking back proportion of impact to the relevant human activity
- D. Differentiate between direct and indirect pressures
- E. Identify proportional value of impact by various sectors
- F. Improved confidence assessment and presentation of uncertainties and assumptions.
- G. Validation of results

Content outlining the technical development work will be developed in the technical development workshop (CIA Scoping 2-2020) which is planned for 3-4 November 2020.

Timeline WP1

Guidance
Review
Approval

Task	2021												2022			
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	
A. Capacity for subset analyses of any activity/pressure/impact/ecosystem component combinations																
B. Proportional value of pressure to impact																
C. Linking back proportion of impact to the relevant human activity																
D. Differentiate between direct and indirect pressures																
E. Identify proportional value of impact by various sectors																
F. Improved confidence assessment and presentation of uncertainties and assumptions.																
G. Validation of results																

Work package 2: Economic and Social Analyses

Project staff: Project researcher (located at Secretariat), supported by intersessional work of EN ESA experts

HELCOM Expert Support: EN ESA

Review, guidance and approval: GEAR

The aim of the work package on ESA within MetDev is to further develop regional methods and results for economic and social analyses (ESA) to support the holistic assessment of the marine environment by addressing some of the shortcomings and development needs identified in previous regional ESA work. It builds on previous HELCOM experiences and work on ESA for the State of the Baltic Sea report in HOLAS II ([TAPAS](#) and [SPICE](#) projects, 2016-2018), maritime spatial planning ([Pan Baltic Scope project](#), 2018-2019) and analyses of existing and new measures to support the BSAP update ([ACTION](#) project and SOM Platform, 2019-2020), as well as reflects the [ToR](#) for HELCOM EN ESA and [Roadmap](#) for continued HELCOM work on ESA. Implementing ESA for HOLAS III as proposed here would meet some of the aims of the ESA roadmap.

The economic and social analyses (ESA) for State of the Baltic Sea report in HOLAS II covered the entire Baltic Sea region but were limited to selected human activities (use of marine waters) and environmental themes/ecosystem services (cost of degradation). Furthermore, although a conceptual framework for linking the use of marine water and cost of degradation analyses was developed, they were conducted separately in HOLAS II due to lack of suitable data, approaches and resources, and the link between the environmental status assessment and ESA was missing. An important development area is the improved integration within the components of ESA, and between ESA and environmental assessments, which enables a meaningful evaluation of how the marine environment affects human welfare and ensures improved relevance of the assessment for future management.

Following an invitation from GEAR 20-2019 to prepare more specific information on identified gaps and development needs for HOLAS III, a proposal for ESA in HOLAS III was presented to GEAR 21-2019 ([Document 5-1](#)). GEAR 21-2019 supported the proposal and the integration of ESA to other work strands in HOLAS III, and took note that priorities and ambition level of the work needs to be adjusted depending on the resources ([Outcome](#), paras 5.29-5.31). The following is based on that earlier proposal for ESA in HOLAS III.

These have been identified as priority areas for ESA in HOLAS III:

- A. Improved integration of ESA and environmental assessments
- B. Improved implementation of the ecosystem services approach
- C. Pilot assessment of the prospects of marine ecosystem accounting

D. Driver indicators

Although listed separately, the priority areas are interlinked, and will be developed in parallel ([see timeline at the end of WP2](#)). The work entails some conceptual development, in particular related to items A and [CE](#), and development of approaches, data collection and analyses for regional assessments. In addition to regional approaches, the outcomes of the work are aimed to support national ESA assessments, e.g. related to EU MSFD Programmes of Measures.

There are two major changes compared to the previous version of ESA work package.

1. ~~1)~~Two activities have been removed: assessment of economic benefits due to marine protection and cost-benefit analysis of policy measures. These tasks are now planned to be implemented within the HELCOM BLUES project, provided that it receives funding. In addition, BLUES is planned to support implementing activity B on ecosystem services approach, as explained in the activity description.
2. ~~2)~~Activity D on exploring the possibilities of developing indicators for drivers has been added.

To achieve its objectives, the work package works closely together with the other work strands in MetDev and the two other preparatory projects, HELCOM Indicators and HELCOM DataFlow, as well as the HELCOM BLUES project, if successful. In addition, contribution from the HELCOM EN ESA is required in terms of concrete inputs, guidance and review of the work. This activity can also support the development and operationalization of the causal framework developed in the state/pressure indicators process.

A. Improved integration of ESA and environmental assessments (EN ESA, Project researcher)

Activity A establishes conceptual and operational relationships between the marine environment and human welfare by linking measures/actions, human activities, pressures, state, ecosystem services and human welfare in a causal framework. It is necessary for developing a connection between ESA and other components of HOLAS III, and the elements within ESA (e.g. use of marine waters and cost of degradation analyses). The activity enables assessing the connections between economic activities, current and future use of the sea, as well as human welfare and the state of the Baltic Sea. This activity is linked to developing the ecosystem services approach under activity B and uses inputs from the other activities in the work package and from the BLUES project.

Furthermore, activity A would directly support and provide added benefit for the application of the HELCOM indicators. The methodology would enable data collection that could be described and visualized to highlight trends and changes in human activities and drivers (i.e. supporting indicators) that help outline the root cause of the pressures or state changes monitored by HELCOM Contracting Parties. In doing so, the HELCOM indicator catalogue would be better integrated into a causal framework and build structures that would enable improved follow up for the BSAP in the future.

The activity builds on the development of concepts, approaches and data in the HELCOM SPICE, Pan Baltic Scope and HELCOM ACTION projects. The sufficiency of measures (SOM) analysis, carried out by the ACTION project and SOM Platform to support the BSAP update, can provide a partial basis for integrating ESA and environmental assessments in a causal framework. The SOM assessment links measures, activities, pressures and environmental state, but additional development is required for covering ecosystem services and human welfare, as well as linkages between the use of marine waters and cost of degradation analyses.

Although being a part of the ESA work package, the work is interdisciplinary in nature and requires the involvement of economists, marine scientists and experts from other fields for successful assessment. To that end, regular planning and working meetings between the Work Packages under MetDev, as well as the other preparatory projects HELCOM Indicators and HELCOM DataFlow, ESA, relevant HELCOM EGs and other experts involved in the preparatory work for HOLAS III are organized.

This activity would start at the beginning of the project and run until the end of the project.

B. Improved implementation of the ecosystem services approach (Project researcher)

Activity B entails developing approaches and collecting background information for identifying and assessing marine and coastal ecosystem services, including how the marine ecosystem contributes to the provision of ecosystem services, and what benefits and socioeconomic values people derive from these ecosystem services. The literature review of studies on the provision and value of marine and coastal ecosystem services is planned to be implemented in the HELCOM BLUES project. The aim of this activity would be developing an approach for incorporating the compiled information to the overall HOLAS III framework and assessment, including linking the existing information on marine ecosystem services to the other results of the holistic assessment and presented alongside them. This activity# is tightly linked to activity A and supports the integrated assessment of the marine environment by developing an approach and providing information on one of the linkages.

The activity builds on previous work on ecosystem services in HOLAS II and other assessments, such as BONUS projects. ~~It collects information from existing assessments on the provision and value of Baltic Sea ecosystem~~

~~services.~~ It advances the ~~use-application~~ of ~~the~~ ecosystem services approach in regional ESA, ~~and provides information on the interlinkages between the ecologic and social-economic systems by illustrating how human well-being is dependent on the ecosystem and services it provides.~~ The approaches and information will support the application of the ecosystem services approach for the regional assessment of the use of marine waters and cost of degradation.

C. Pilot assessment of the prospects of marine ecosystem accounting (Project researcher)

Activity E ~~builds on recent EU work on ecosystem accounting and~~ develops an approach for ~~conducting~~ a marine ecosystem accounting pilot ~~study for the Baltic Sea~~ to describe and quantify interactions between the economy and marine environment. It ~~considers the existing frameworks and methods for ecosystem accounting and examines how these could be applied to the Baltic Sea region to~~ describes how and to which extent the Baltic Sea provides benefits to people, as well as how social and governance factors affect the status and associated benefits. ~~The activity develops an approach for including the outcomes of ecosystem accounting to HOLAS III assessment.~~

~~The advancement of marine accounting approaches~~ ~~Ecosystem accounting~~ provides ~~an~~ additional information and perspectives for ~~describing and valuing the linkages between~~ ~~linking~~ the ecosystem and ~~social~~-economic system in activity A, ~~and thus supports the integration of economic and social analyses to the other components of HOLAS III.~~ The work builds on the data, methods and expertise in the HELCOM EN ESA.

D. Driver indicators (Project researcher)

Activity D explores the possibilities to develop indicators for drivers in the Baltic Sea region. Based on the DPSIR framework and its further versions (e.g. see the HELCOM indicator manual and the conceptual indicator framework endorsed by S&C 11-2019), these drivers could be considered as something that drive changes in human activities and sectors utilizing the marine environment, thus contributing to changes in pressures in the medium and long-term. The drivers may include population and urbanization trends, international trade, technology development, policies and institutions, environmental policies and regulation, land use, energy production, consumption patterns and lifestyles etc.. These drivers could be linked to activities and further to pressures and state via a causal framework to assess their effect on the state of the marine environment over time. This would provide further information on how societal changes affect the state of the Baltic Sea. The information could be linked to the economic and social analysis of the use of marine waters and also utilized in the development of future analyses of effectiveness and sufficiency of measures, as well as provide valuable context for presentation of the results of the state and pressure assessments.

~~The activity would use input from an ongoing project on driver indicators in Gothenburg University as well as similar work done under initiatives in OSPAR, as well as explore the use of information prepared for existing HELCOM Fact Sheets for use as the basis of driver indicators. The work in the activity would entail exploring ways to include the findings of the project to HOLAS III as part of the indicators and assessments and their presentation. This would contribute to the indicator development work on supporting indicators (so-called potential causative factors, HELCOM indicator manual).~~

Timeline WP2

~~Activity A would run the entire duration of the project. For activity B, the literature review in the BLUES project would be conducted in the first half of 2021, and the work in activity B would begin in April 2021. Activities C and D would run mainly in 2021. All activities would seek guidance from spring Working Groups and EN ESA meetings, and outcomes would be reviewed in the fall Working Group and EN ESA meetings. The approaches would be approved by HOD in December 2021. The efforts allocated for 2022 would entail work towards presenting the assessment results in HOLAS III.~~

Guidance
Review
Approval

Task	2021												2022		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
A. Improved integration of ESA and environmental assessments					Guidance from WGs and EN ESA				Review by WGs and EN ESA		Approval by HOD				
B. Improved implementation of the ecosystem services approach															
C. Pilot assessment of the prospects of marine ecosystem accounting															
D. Driver indicators															

Work package 3: Indicator driven integrated assessment tools)

Project subcontractors: xxxx.

HELCOM Expert Support: IN EUTRO, EN HAZ, species related Expert Groups based on identified needs.

Review, guidance and approval: State and Conservation

The foundation of the integrated assessments is the core indicators, which are based on the HELCOM coordinated monitoring programme and regionally agreed threshold values. Integrated assessments of biodiversity, eutrophication and hazardous substances, are made based on the core indicators using the BEAT, HEAT and CHASE assessment tools. The integrated assessments provide an overview of the status for major BSAP themes based on the independent indicator assessments by scaling all independent indicator results and building an overall assessment of status that integrates all the independent components. The integrated tools were also used in the initial holistic assessment in 2010 and were further developed in the second holistic assessment. The integrated assessments not only show whether good status is achieved or failed, but also indicate the distance to good status by use of categories; two representing good status and three representing not good status. The assessment is based on currently available core indicators. For some components or assessments, operational indicators are still lacking or limited. The further development of several core indicators, to reach a more complete assessment for the independent indicators is currently being advanced through the HELCOM Indicator project and the outcomes of these developments, and the other identified issues (e.g. identified during HOLAS II), need to be incorporated into developments of the integrated assessment tools in advance of HOLAS III. These integrated assessments help provide a broad overview of state that summarizes the overall Baltic Sea health and provides an opportunity to discuss the issue in the setting of a wider contextual scientific landscape

For the indicator driven assessment tools (HEAT, BEAT and CHASE) the need for further development is tightly linked to the inclusion of new data or new/modified indicators, and to the need for improved automation and transparency in the assessment process. The relevant HELCOM expert networks or experts have been invited to review the tools and have suggested further developments, as well as considered which of these are most urgently needed and feasible for HOLAS III. The developments of HEAT and BEAT is currently included in existing or proposed projects with external financing, however, most of the further development of CHASE is not covered elsewhere and thus this is included in Work Package 3.

A. CHASE (Possible external partner, EN HAZ, Secretariat)

Possible future work related to the MIME (and CHASE) tool that would add significant functionalities could also be viable by HOLAS III. These developments would support improvements, in particular in MIME, such as an automated errors evaluation (e.g. output on all excluded data and why), built in flexibility (i.e. possibility for users to adjust variables without requirement for underlying code re-design), increased automation of the assessment flow, increased user options (e.g. less reliance on single developer), and fully detailed description of assessment flow components. This would require a skilled software engineer with knowledge in R to work in close association with the developer.

As soon as more information is known on estimated costs and time requirements it can be made available. In addition, at least two other institutions that use the MIME script would likely find such developments useful and thus the possibility to explore co-financing is also valid.

Timeline WP 3

<u>Guidance</u>
<u>Review</u>
<u>Approval</u>

Task	2021												2022		
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>1</u>	<u>2</u>	<u>3</u>
<u>A.</u>					<u>Guidance from WGs and EN HAZ</u>				<u>Review by WGs and EN HAZ</u>			<u>Approval by HOD</u>			

6. Expected results

The expected results are in the form of documents and operational data flows supporting HOLAS III Assessment, more explicitly:

Work package 1:

The expected results are in the form of approaches, tools and methods that support HOLAS III assessment and analysis:

An improved, fit for purpose spatial presentation tool capable of:

1. dynamic scaling,
2. subset analyses
3. identifying proportional value of pressure to impact
4. linking back proportion of impact to the relevant human activity
5. differentiating between direct and indirect pressure
6. identify proportional value of impact by various sectors

Visual representation at 1km² resolution and improved confidence assessment and presentation of uncertainties and assumptions.

A method for validation of analysis results.

Work package 2:

The expected results are in the form of approaches, tools and methods that support HOLAS III assessment and analysis:

1. Improved approach for integrating ESA to other components of HOLAS
2. Improved method for regional ecosystem services approach
3. Approach for pilot marine ecosystem accounting assessment
4. Approach and data for driver indicators

Work package 3:

Improved operationalized indicator driven integrated assessment tools which incorporate any new or expanded data strands/types as well as consolidated or new indicators. Improved integrate assessment procedure to facilitate future assessment iteration.

7. Consistency with HELCOM priorities

yes no

8. Timetable (including number of Project Team meetings)

The project will start in Q1/2021 (January) and will finish in Q1/2022 (March).

9. Budget (taking into account financial year from 1 July to 30 June)

9.1 Total Costs

The planned ~~3018-3624~~ man months would require an estimated XXXXXX Euros funding.

This is intended to be divided as follows:

- 6-12 man months for cumulative assessment development (HELCOM);
- 12 man months for development of methods for economic and social analyses (HELCOM).
- ~12 man months for development of MIME and CHASE (if possible shared with other relevant organizations)

9.2 Sources of financing divided per financial year

Financial Year	Man Months
1/2021-6/2021	XX
7/2021-6/2022	XX

10. Additional requests (manpower, equipment, facilities, etc.)

10.1 From the Contracting Parties

The Project will possibly need specific information from and cooperation with national experts.

10.2 From the Secretariat

The Secretariat will ensure coordination of the project with other planned and ongoing HELCOM processes, including indicator development work, data flow development, facilities and equipment needed for the work, and in-house support for the development of tools and methods.

11. Procedure of nomination of the Project team members

Two project researchers and one data developer to be employed to the Secretariat.

The appointed staff will follow the HELCOM risk management procedure.

12. Signature of the Project Manager(s)

13. Opinion of the Chairs of the relevant body

14. Opinion of the Executive Secretary

15. Decision of the Heads of Delegation

(Reference is to be given to the relevant Minutes of the Heads of Delegation's Meeting)

_____ to establish _____ not to establish