



## Outcome of the ninth meeting of the HELCOM – Baltic Earth Expert Network on Climate Change (EN CLIME 9-2021)

### Introduction

- 0.1 The ninth Meeting of the HELCOM/Baltic Earth Expert Network on Climate Change (EN CLIME 9-2021), was held as an online meeting on 9 September 2021.
- 0.2 The Meeting was attended by participants from Baltic Earth and HELCOM. The List of participants is contained in **Annex 1**.
- 0.3 The Meeting was chaired by Markus Meier, and Jonas Pålsson, Co-Chairs of the Expert Network. Petra Kääriä, HELCOM Secretariat, acted as secretary of the Meeting.
- 0.4 The aim of the Meeting was to agree on future work for EN CLIME and information dissemination for the Climate Change Fact Sheet.

### Agenda Item 1 Adoption of the Agenda

- 1.1 The Meeting adopted the Agenda as contained in document 1-1.

### Agenda Item 2 Matters arising from HELCOM/Baltic Earth work of relevance to the network

- 2.1 The Meeting noted that the Climate Change Fact Sheet was published on 3 September in a media event and can be accessed via this HELCOM website: <https://helcom.fi/ccfs>.
- 2.2 The Meeting further noted that the work of EN CLIME and the CCFS has been presented at the following events:
- XXI International Environmental Forum “Baltic Sea Day” in a special session,
  - the Baltic Sea Parliamentary Conference Special Working Group on Climate Change,
  - the Baltic Sea region virtual workshop on climate challenges in the Baltic Sea region organized by the Copernicus Climate Change Service (C3S),
  - 4<sup>th</sup> Baltic MSP Forum.
- 2.3 The Meeting took note of the plans for organizing a HELCOM Workshop on Blue Carbon in the Baltic Sea region on 17-18 November 2021 in cooperation with Germany (document 2-1), as presented by the HELCOM Secretariat.
- 2.4 The Meeting invited the EN CLIME members to provide possible comments on the plan to the HELCOM Secretariat ([petra.kaaria@helcom.fi](mailto:petra.kaaria@helcom.fi)) **by 30 September**.
- 2.5 The Meeting took note of a ‘Sea for society’ blue carbon project ongoing in Germany.
- 2.6 The Meeting took note of the plans for organizing an online HELCOM Stakeholder Conference on climate change in the Baltic Sea region in cooperation with Baltic Earth and Germany, to be held during week 10 in March 2022 (document 2-2), as presented by the HELCOM Secretariat.

2.7 The Meeting invited the EN CLIME members to contribute to the stakeholder conference agenda (e.g. how to make it good, whom to invite, event format etc.), inform on their possibility to participate in a panel discussion and to provide this information to HELCOM Secretariat ([petra.kaaria@helcom.fi](mailto:petra.kaaria@helcom.fi)) and the Co-Chairs ([jonas.palsson@havochvatten.se](mailto:jonas.palsson@havochvatten.se) and [markus.meier@io-warnemuende.de](mailto:markus.meier@io-warnemuende.de)) **by 30 September**.

2.8 The Meeting took note of the plans for how to use the EN CLIME Climate Change Fact Sheet and the key messages to directly support the Baltic Sea Action Plan and the next Holistic Assessment of State of the Baltic Sea (document 2-3), as presented by the HELCOM Secretariat.

2.9 The Meeting discussed the climate change work integration to the HELCOM indicator evaluations and noted that this work will commence by the HELCOM Secretariat prefilling indicator templates during spring 2022 and will be done together with the indicator leads. The Meeting agreed that an intersessional meeting of EN CLIME could be organised to review the connections between indicators and climate parameters. The Meeting also noted that several EN CLIME members are also involved in the HELCOM indicator work, especially regarding ecosystem dimension indicators, and noted that a document (from May 2021) on the indicator leads is available via the HELCOM website.

2.10 The Meeting also noted the view from the indicator lead on metals that it would be crucial to receive support on climate change aspects from EN CLIME in the indicator work.

2.11 The Meeting also noted the suggestion to prepare a HELCOM Recommendation on greenhouse gas emissions.

### Agenda Item 3 Information dissemination for Climate Change Fact Sheet

3.1 The Meeting welcomed the nine infographics on the CCFS designed by the HELCOM Information Secretary for informing about the Baltic climate facts in social media, invited the HELCOM Secretariat to share the material with the group and invited the organizations to repost the infographics posted in HELCOM social media.

3.2 The Meeting discussed the preparation of a poster and a communication kit based on the Climate Change Fact Sheet (CCFS) to disseminate the information in different conferences and meetings.

3.3 The Meeting welcomed that the HELCOM press release on the Climate Change Fact Sheet has been translated into German by Baltic Earth, which might have resulted in the Fact Sheet being referred to in several German newspapers after its launch on 3 September.

3.4 The Meeting welcomed that the press release will also be translated to Polish by the Institute of Oceanology of the Polish Academy of Sciences.

3.5 The Meeting noted that the 13<sup>th</sup> Baltic Sea Science Congress will be held in Århus, Denmark on 18-22 October 2021 and that it is still possible to submit an abstract and a poster on the Climate Change Fact Sheet to this event and welcomed that Baltic Earth Secretariat will take the lead in preparing and submitting the poster.

3.6 The Meeting noted the following upcoming events in which the CCFS will/could be disseminated:

- Joint ICES/HELCOM Working Group on Integrated Assessments of the Baltic Sea (ICES WGIAB)
- HELCOM/Baltic Earth Stakeholder Conference March 2022
- Baltic Earth Science Conference 30 May-3 June 2022
- UN Oceans Conference, Lisbon, 27 June- 2 July 2022
- Stockholm plus 50 Conference, June 2022

3.7 The Meeting noted that the CCFS information on uncertain projections for salinity changes in the Baltic Sea has not yet been well spread around the region and needs to be better disseminated.

3.8 The Meeting was of the opinion that it would be highly relevant that HELCOM work, such as press releases, would be available also in the national languages of its Contracting Parties to improve knowledge exchange between policy and science, as well as to better inform the general public.

3.9 The Meeting noted that presentation slides prepared by the Co-Chairs and HELCOM Secretariat can be used when presenting information about the CCFS and invited the members to contact the Co-Chairs and Secretariat regarding this when relevant.

3.10 The Meeting invited the HELCOM Secretariat to consider preparing a short video on the Climate Change Fact Sheet.

#### Agenda Item 4 Future work

4.1 The Meeting took note of the latest approved draft actions under the updated Baltic Sea Action Plan related to climate change (document 4-2), as presented by the HELCOM Secretariat.

4.2 The Meeting considered the draft updated Terms of Reference and Work Plan of EN CLIME (document 4-1-Rev.1), revised the document as included in **Annex 2**, and agreed to submit it to State and Conservation WG for approval.

4.3 The Meeting agreed to organize the next meeting of the Expert Network as an online meeting in February 2022 and invited the HELCOM Secretariat to distribute a doodle poll to find a suitable date.

4.4 The Meeting agreed that the next meeting will contain a workshop session to scope future possibilities and ideas for EN CLIME (e.g. via Padlet).

4.5 The Meeting welcomed the willingness of Baltic Earth Secretariat to co-host the next meeting and prepare the workshop session together with HELCOM Secretariat and invited the HELCOM Secretariat to set up a planning meeting.

4.6 The Meeting emphasized that the next CCFS should be based on the different mitigation actions.

4.7 The Meeting considered the topics not included in the first CCFS and noted the need to refine the list of missing topics to ensure they don't overlap.

4.8 The Meeting invited the EN CLIME members to provide contact suggestions for people that might be able to lead the production of key messages for topics that were left out from the CCFS (Harmful algal blooms, Pollution and hazardous substances, Ecotoxicology, Human health, Pathogens) and to provide this information to the HELCOM Secretariat ([petra.kaaria@helcom.fi](mailto:petra.kaaria@helcom.fi)) and Co-Chairs ([jonas.palsson@havochvatten.se](mailto:jonas.palsson@havochvatten.se) and [markus.meier@io-warnemuende.de](mailto:markus.meier@io-warnemuende.de)) **by 30 September 2022**.

4.9 The Meeting invited the HELCOM Secretariat to prepare a simple online survey on *Dos and Don'ts* in the process of preparing the first CCFS as basis of a guidance document for the next iteration in 2028. The guidance document will be submitted for review to EN CLIME 10-2022.

4.1 The Meeting agreed that future EN CLIME meetings will be mainly organized online and occasionally as hybrid meetings and noted that future meetings could possibly be organized back-to-back with scientific conferences which many of the experts will attend.

4.10 The Meeting agreed on the following topics to be discussed at the next meeting (EN CLIME 10-2022):

- Preparation of the stakeholder conference (e.g., finetuning questions)
- Brainstorming session on missing topics in the CCFS
- How to generate an update of selected key messages
- Information sharing on adaptation and mitigation activities carried out by the EN CLIME organizations/countries
- Presentation for a strategy for producing mitigation-based information for the Baltic Sea as basis of the next Climate Change Fact Sheet

#### Agenda Item 5 Any other business

5.1 The Meeting did not have any other business to discuss.

## Agenda Item 6 Outcome of the Meeting

6.1 The Outcome of the Meeting was approved via correspondence and is available at the EN CLIME 9-2021 Meeting Site on the HELCOM Meeting Portal, together with documents considered by the Meeting.

## Annex 1 List of participants

Representing	Name	Organization	Email
<b>Co-Chairs</b>			
Co-Chair	Markus Meier	Leibniz Institute for Baltic Sea Research Warnemünde (IOW), Germany, and Swedish Meteorological and Hydrological Institute (SMHI), Sweden	meier@io-warnemuende.de
Co-Chair	Jonas Pålsson	Swedish Agency for Marine and Water Management	jonas.palsson@havochvatten.se
<b>Baltic Earth</b>			
Germany	Jürgen Holfort	German Federal Maritime Agency	juergen.holfort@bsh.de
Germany	Matthias Gröger	Leibniz Institute for Baltic Sea Research Warnemünde	matthias.groeger@io-warnemuende.de
Poland	Karol Kulinski	Institute of Oceanology of the Polish Academy of Sciences	kroll@iopan.pl
Germany	Gregor Rehder	Leibniz Institute for Baltic Sea Research Warnemünde	gregor.rehder@io-warnemuende.de
Baltic Earth Secretariat	Marcus Reckermann	International Baltic Earth Secretariat	marcus.reckermann@hereon.de
<b>HELCOM</b>			
Denmark	Anders Galatius	Aarhus University	agj@bios.au.dk
Finland	Sanna Kuningas	Natural Resources Institute Finland	sanna.kuningas@luke.fi
Germany	Jan H. Reißmann	Federal Maritime and Hydrographic Agency	jan.reissmann@bsh.de
Lithuania	Arturas Razinkovas-Baziukas	Klaipėda University, Marine Research Institute	arturas.razinkovas-baziukas@ku.lt
Poland	Tamara Zalewska	Institute of Meteorology and Water Management - National Research Institute	tamara.zalewska@imgw.pl
Sweden	Oleg Savchuk	Stockholm University Baltic Sea Center	oleg.savchuk@su.se
Sweden	Jens Olsson	Swedish university of agricultural sciences	jens.olsson@slu.se
Sweden	Markus Ahola	Swedish Museum of Natural History	markus.ahola@nrm.se
Sweden	Örjan Östman	Swedish university of agricultural sciences	orjan.ostman@slu.se
HELCOM Secretariat	Petra Kääriä	Helsinki Commission	petra.kaaria@helcom.fi

## Annex 2. Revised ToRs for Joint HELCOM/Baltic Earth Expert Network on Climate Change (EN CLIME)

### Background

HELCOM and Baltic Earth joined forces in late 2018 through the establishment of a climate change network (EN CLIME), which encompasses scientists from a vast field of disciplines related to climate change in the Baltic Sea area. The network produced the first Climate Change Fact Sheet summarizing recent research on climate change impacts on the Baltic Sea, published in 2021. The Climate Change Fact Sheet is the first publication of iterative reports, and the planned interval for publishing the Fact Sheets is about seven years.

Prior to the establishment of EN CLIME, HELCOM released two major thematic climate change assessments in cooperation with Baltic Earth (formerly called BALTEX): the first in 2007 followed by one in 2013.

Characterisation of different pressures on the natural and human-shaped environment of the region, such as climate change, and synthesis of the state of scientific knowledge about their causes and impacts, has been a core goal of BALTEX in their climate change assessments (BACC I and II). BALTEX was succeeded by [Baltic Earth](#), which in turn inherited the scientific legacy and researcher network. Baltic Earth represents a new, more holistic perspective on the Baltic Sea region, encompassing processes in the atmosphere, on land and in the sea, as well as processes evoked by and feeding back on human activity.

The Baltic Earth Grand Challenges (GCs) are the central topics around which the science encompassed by Baltic Earth revolves. These topics reflect current issues which scientists feel have a strong relevance for the scope and vision of Baltic Earth. Dedicated Working Groups form the working level of the Grand Challenges focusing on the following overarching topics:

1. Salinity dynamics in the Baltic Sea
2. Land-Sea biogeochemical linkages in the Baltic Sea region
3. Natural hazards and extreme events in the Baltic Sea region
4. Sea level dynamics in the Baltic Sea
5. Regional variability of water and energy exchanges
6. Multiple drivers for regional Earth system changes

In addition, Working Groups on the “Coupled Regional Climate System Models”, “Outreach and Communication” and “Education” are in place within the organization. New Baltic Earth Grand Challenges and updates to existing ones shall be implemented in the course of 2022, while regional climate change and its impacts will remain a central topic in Baltic Earth.

Baltic Earth Assessment Reports (BEARs) are comprehensive assessment reports for the Grand Challenge topics. A special case is the publication on “Climate Change in the Baltic Sea Region: A summary”, which represents what generally is expected to be BACC III. This, however, would largely follow the format of the other BEARs, i.e., not a full book format, but a comprehensive assessment of new information on the subject since BACC II, in the format of a peer-reviewed article in a scientific journal *Earth System Dynamics*. The BEARs are expected to be published in 2021/2022.

The Baltic Earth Science Steering Group (BE SSG) and the Baltic Earth Science Advisory Board (BE SAB) have taken note of the HELCOM plans, and further participation of Baltic Earth in the proposed expert network on climate change was very much endorsed by both groups.

Following the HELCOM 2013 Ministerial decision to make the assessment of regional climate change and its implications on the Baltic Sea ecosystem a regular activity and based on the groundwork work by the State and Conservation Working Group and Baltic Earth through 2017-2018, the HELCOM HOD 55-2018 approved the proposed work process, the establishment of the Expert Network on Climate Change and its ToRs.

### Purpose

The purpose of EN CLIME is to function as a coordinating framework and a platform to harness the expertise of leading scientists on both direct and indirect effects of climate change on the Baltic Sea environment, and to make this expertise available to and open up for closer dialogue with policy makers. Through this, the aim is to ensure that new scientific findings on climate change and its impacts on oceans and seas should be visible in HELCOM, as well as find their way into HELCOM decision-making and the day-to-day work.

The main goal is to condense the large body of scientific research into a form that is directly utilizable in developing HELCOM core indicators, updating and implementing the BSAP, and in preparation of future HELCOM assessments on climate change.

The Expert Network will handle the operational production and delivery of the scientific products of the dedicated work on climate change, e.g., the iterative climate change fact sheets and supporting material, as well as other tasks agreed by the HELCOM State and Conservation Working Group and the Baltic Earth Science Steering Group.

### Scope

The overall scope of the group is to facilitate the regional cooperation in relation to climate change and its impacts, including transferring quality assured science to end users, and to provide clear guidance on the level of confidence in the presented information. The work can also vicariously support the identification of knowledge gaps and identification of possible future research priorities.

### Benefits

The principal benefits of EN CLIME are to have:

- a) stronger links between leading partners on climate change in the region, and a recognized authoritative voice on marine climate change issues
- b) improved transfer of valuable information
- c) a clear mechanism for demonstrating organizational commitment to addressing climate change
- d) a swift transfer of research results and products between partners and to the policy level
- e) improved advice on necessary actions and measures and on how HELCOM's policies could be adapted in order to support the climate change resilience of the Baltic Sea

### Objectives

The objectives of EN CLIME are to:

1. Develop concepts for scientific products as requested or identified by the HELCOM State and Conservation WG and Baltic Earth Science Steering Group
2. Oversee the production of HELCOM climate change science outputs (fact sheet; supporting material)
3. Identify, where needed, additional scientific experts who are most appropriate to provide input to the scientific evidence base for products
4. Develop ideas for the format and style of final deliverables
5. Develop briefing material for contributing authors

6. Ensure that the messages provided in the scientific products are concise and easily understandable by the intended target audience
7. Contribute to proof reading of final products
8. To collaboratively frame user requirements for the next set of regional climate projections, and ensure their usability in the policy context

### Reporting

The Co-Chairs of the EN CLIME will report back to the State and Conservation Working Group and the Baltic Earth Science Steering Group on the activities of the network. For State and Conservation WG this will take the form of an agenda item at WG meetings. For all scientific products, EN CLIME will present a production plan for sign off by the State and Conservation WG and the Baltic Earth Science Steering Group. Once the production process is completed, State and Conservation WG and the Baltic Earth Science Steering Group will be requested to endorse the final products for publication.

### Membership

The EN CLIME consists of representatives of HELCOM and Baltic Earth in the form of topic experts. The membership is based on nominations from both organizations.

Baltic Earth nominations primarily consist of the assigned lead authors for the Grand Challenges.

The involvement of other expertise is further explored as the work progresses. The HELCOM Secretariat together with the EN CLIME Co-Chairs evaluate the coverage of required technical expertise and communicate with the respective organisation on any additional need for expertise in the group. The aim is to ensure sufficient expertise for all tasks to be covered. The Expert Network will work in close collaboration with relevant other HELCOM Working Groups, such as Pressure and Maritime, and Expert Groups, as well as potential other partners. The network is open to Observers according to HELCOM procedures.

The EN CLIME lead authors and Co-Chairs will liaise with the outside experts for the peer review process to provide quality assurance to scientific products, ensuring they are based upon the best available science and presented in a balanced way.

The Co-Chairs of EN CLIME will commit to assisting the HELCOM and Baltic Earth Secretariats and partaking in dissemination activities.

### Workplan

A separate workplan, in the form of a living document, is developed in parallel with the ToRs and Annexed to this document. The work plan is valid for a three-year period at a time. The workplan is to be subjected to review and, as appropriate, revision by the expert network.

The workplan, as well as any consequent changes to an approved workplan are to be subjected to review and approval by the HELCOM State and Conservation Working Group and the Baltic Earth Steering Group.

### Validity of ToRs

The work of the group is open ended. The Terms of References were approved by the Baltic Earth Steering Group and HELCOM Heads of Delegations in 2018 [and updated in 2021].

The revised ToRs are to be subjected to review and, as appropriate, revision by the expert network, and approval by the HELCOM State and Conservation Working Group and the Baltic Earth Steering Group.

### Organization of work

The network will report to and receive guidance from the State and Conservation Working Group and the Baltic Earth Science Steering Group. The EN can request inputs from the State and Conservation WG and the Baltic Earth Science Steering Group as appropriate.



The mode of work for the expert network will include correspondence and online meetings facilitated by the HELCOM Secretariat, with physical meetings taking place as needed. Sub-groups have been established and Lead Authors nominated in order to work more thematically. Co-Chairs will be elected by the members of EN-CLIME every three years. The products will be handled at HELCOM Meeting Portal workspaces dedicated to this purpose. The HELCOM Secretariat will provide administrative support to the network and will design and publish the fact sheets.

In the current plan no additional resources are foreseen to be required at the HELCOM Secretariat. This could require re-evaluation once the next iteration of the fact sheet will commence.

## Annex 1: Work Plan of EN CLIME, 2022-2024

This work plan is valid for a three-year period (beginning January 2022) and is to be reviewed and revised by the network and approved by the HELCOM State and Conservation Working Group and Baltic Earth Science Steering Group.

Action	2022				2023				2024			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Annual meeting, online in February The meeting will elect co-Chairs and have a specific workshop session for scoping needs and ideas for future work of EN CLIME.												
Online HELCOM Stakeholder Conference on climate change in the Baltic Sea region in cooperation with Baltic Earth and Germany Online during week 10 in March												
Dissemination of the CCFS												
Baltic Earth Science Conference 30 May-3 June, possible side event on advancing missing parameters from the CCFS (such as Pelagic habitats, Harmful algal blooms (HABs) Pollution and hazardous substances, Ecotoxicology, Human health, Pathogens)												
Possible contribution to HELCOM work (e.g., potential MPA project, Red List work, reviewing BSAP actions related to climate change, etc.)												
Annual (thematic) meeting, physical in February  (sharing knowledge on recent research, mitigation and adaption measures, planning update of selected key messages etc.)												
Annual (thematic) meeting in February  (sharing knowledge on recent research, mitigation and adaption measures,												

planning update of selected key messages etc.)													
Update of selected and preparation of additional (e.g. harmful algal blooms) key messages of the CCFS, steered by dedicated WSS													