



Document title	Addendum to Annotations to the Provisional Agenda for HELCOM 40-2019
Code	1-3
Category	CMNT
Agenda Item	1 - Adoption of the Agenda
Submission date	07.02.2019
Submitted by	Executive Secretary
Reference	

Background

This document contains an addendum to the Annotations to the Provisional Agenda for HELCOM 40-2019, and specifically Agenda Item 2 “Update of the Baltic Sea Action Plan” and the thematic session regarding the latest scientific knowledge of relevance for the update of the BSAP.

The addendum provides further information on the thematic session including its tentative programme. **Annex** provides background information on the projects to be presented.

The aims of the session are to:

- Inform of the newest BONUS research projects funded under the BONUS call 2017: Synthesis and the BALTic and NOrth Sea Coordination and Support Action (BANOS CSA) ‘Towards a Baltic and North Sea research and innovation programme’;
- Provide examples of the ongoing/finalized projects of relevance to the BSAP update;
- In general discuss the importance of fit-for-purpose scientific results to support the BSAP update;
- Consider an idea to map the needs for new scientific knowledge and research in support of future implementation of the updated BSAP. Such “mapping” could be done as part of the process to update the BSAP and in addition to serving HELCOM purposes, could be used for a HELCOM contribution to the BANOS CSA as well as UN Decade of Ocean Science.

Tentative programme (1,5 ha – 2 ha)

of the thematic session regarding the latest scientific knowledge of relevance for the update of the BSAP at HELCOM 40-2019, 6 March 2019, Helsinki

3 min'	A brief information on the BONUS research projects funded under the BONUS call 2017: Synthesis, by <i>Andris Andrusaitis, Acting Executive Director of BONUS</i> (document x)
3 min'	Introduction to the presentations of the BONUS projects, by <i>Andris Andrusaitis, Acting Executive Director of BONUS and Monika Stankiewicz, HELCOM Executive Secretary</i>
10 min' (presentation) +2 min' (possible comments)	Baltic Sea marine biodiversity – addressing the potential of adaptation to climate change (BONUS BAMBI) , presented by <i>Professor Linda Laikre (Stockholm University)</i>
14+2 min'	Wellbeing from the Baltic Sea – applications combining natural science and economics (BONUS BALTICAPP) , presented by <i>Coordinator Kari Petri Hyttiainen (Helsinki University) and Professor Markus Meier (Leibniz-Institute for Baltic Sea Research (IOW))</i>
10+2 min'	Coherent policies and governance of the Baltic Sea ecosystems (BONUS GO4BALTIC) , presented by <i>Coordinator Berit Hasler (Aarhus University)</i>
XX min'	<u>Discussion</u> on the use of results of scientific projects in the BSAP update
3 min'	Presentation of the BALTic and NOrth Sea Coordination and Support Action (BANOS CSA) 'Towards a Baltic and North Sea research and innovation programme' (document 2-1), by <i>Andris Andrusaitis</i>
XX min'	<u>Discussion</u> on HELCOM's possibilities to identify and communicate the needs for new scientific knowledge and research in support of implementation of marine policies, in particular of the updated BSAP
10 min'+ 2 min'	ResponSEAbLe – protecting the ocean, our collective responsibility, our common interest , presented by [<i>Heidrun Fammler</i>] (<i>Baltic Environmental Forum, BEF</i>)
XX min'	<u>Discussion</u> on knowledge building and ocean literacy in the Baltic Sea, including environmental awareness and capacity building

[Annex. Background information on the projects to be presented at HELCOM 40-2019](#)

Baltic Sea marine biodiversity – addressing the potential of adaptation to climate change (BONUS BAMBI)

Coordinator: Kerstin Johannesson, University of Gothenburg, Sweden

Total budget: EUR 3.9 million

Duration: 4 years, 1.1.2014-31.12.2017

General:

BONUS BAMBI investigates the genetic biodiversity of the Baltic Sea and how it is managed. Genetic biodiversity increases resilience and resistance to extreme events of population, enhances local adaptation, and is linked to increases in ecosystem function (e.g. eelgrass and *Fucus*). The overarching goal is to describe the genetic structure of key-ecosystem species, and investigate whether or not these Baltic populations will be able to survive and adapt to changes in temperature and salinity predicted by climate models.

The project also works on dispersal potential and how this links to ecological coherence of the Baltic Sea MPA networks. It demonstrates how a new theoretical framework can be used to explicitly include connectivity in the design and assessment of MPA networks.

Further, the project investigates how genetic diversity is regarded in international, national, and regional policy governing Baltic Sea biodiversity. It explores why genetic diversity is poorly considered and how knowledge communication and research-management interactions can help increasing understanding and consideration of genetic biodiversity among public managers of Baltic Sea biodiversity.

Use for HELCOM:

- the results show that genetic diversity is currently not considered in management of Baltic ecosystems or species. In the policy context this topic is not defined enough and/or does not have clear goals or strategies available for management purposes, resulting in local managers lacking knowledge, time and resources to take genetic diversity into account in their work.
- Specific genes linked to abiotic aspects (temperature, salinity etc) which have a high likelihood of being affected by climate change have been identified.
- Genetically Baltic Sea species tend exhibit a high degree of local adaptation. Active management measures may be necessary to mitigate large losses of species under climate change.
- A new theoretical framework has been developed which can be used to explicitly include connectivity in the design and assessment of MPA networks.
- A new theoretical framework for modelling rates of inbreeding and loss of genetic diversity in metapopulations have been developed.
- It has proven difficult to identify hotspot areas of general genetic diversity, and as a result focus of conservation efforts should be on habitat forming and/or keystone species
- The work of the BONUS BAMBI project can be made use of in HELCOM work related to the designation and management of marine protected areas and climate change.
- Currently, the knowledge generated in BONUS BAMBI is used to develop means for including genetic biodiversity in Swedish environmental monitoring lead by the Swedish Agency for Marine and Water Management. These efforts would be possible to extend to other Baltic Sea countries.

Wellbeing from the Baltic Sea – applications combining natural science and economics (BONUS BALTICAPP)

Coordinator: Kari Hyytiäinen, University of Helsinki

Total budget: EUR 2.0 million

Duration: 3 years, 1.4.2015-31.3.2018

General

The BONUS BALTICAPP project uses a new combination of existing state-of-the-art modelling tools and recently collected data. The models create a link between nutrient loading, fishing, human wellbeing and the sea ecosystem and help to evaluate the effects of agriculture and fisheries policies on human welfare. The project identifies long-term strategies to safeguard the many ecosystem services the Baltic Sea provides us. The strategies take into account the plausible climate and socio-economic developments.

Use for HELCOM:

The policy relevant outcomes of the BONUS BALTICAPP will include:

- Global socioeconomic scenarios (Shared socioeconomic pathways, SSPs) [extended](#) and the global climate scenarios (Representative Concentration Pathways, RCP4.5 and RCP8.5) downscaled for the Baltic Sea region
- Baseline projections of nutrient emissions to the Baltic Sea for the period of 2010-2100 and for combinations of SSPs and RCPs
- A novel model describing the joint impacts of N and P fertilization on crop growth and nutrient leaching from agricultural land
- Spatially and temporally detailed long-term projections of water quality, marine flora and fauna and core ecosystem services for selected combinations of regionally downscaled SSPs and RCPs.
- Translation of outputs from coupled climate-environmental modelling to a suite of quantitative indicators for selected core ecosystem services;
- Information about the relationship between recreation choices and site characteristics
- Knowledge of how Baltic Sea ecosystems contribute to lifestyles and provide wellbeing to citizens
- Projections of the value of cultural ecosystem services, particularly recreation, and their change in the Baltic for changing levels of eutrophication and climate change
- Cost-benefit analysis summarizing the long-term economic and ecological consequences of alternative nutrient abatement and fisheries control policies under climate change and anticipated socio-economic developments
- Set of maps describing the future provision of selected provisioning and cultural ecosystem services,
- Recommendations for attainable and cost-effective policies to reach and maintain the good environmental status of the Baltic Sea

Coherent policies and governance of the Baltic Sea ecosystems (BONUS GO4BALTIC)

Coordinator: Berit Hasler, Aarhus University

Total budget: EUR 2.0 million

Duration: 3,75 years, 1.4.2015-31.12.2018

General

BONUS GO4BALTIC has examined national and international environmental and agricultural policies across the Baltic Sea countries, with the aim to analyze and propose cost-effective solutions as well as pointing at

coherence and conflicts between the policies. The results of the project provide policy relevant advice and recommendations for reductions of the eutrophication in the Baltic Sea in coherence with climate and agricultural policies. Modelling at international, national and farm level of cost-effectiveness and implementation related to policies and measures to mitigate eutrophication and climate change are central in the project. Furthermore, the project has a focus on technological development, including incentives, technological change and changes in management. The work is synthesized in a Socioeconomic Baltic Sea Action Plan.

Use for HELCOM:

- Modelling of the effects and costs of policy instruments to regulate greenhouse gas (GHG) emissions and nutrient runoff from agriculture around the Baltic concludes that climate and water policies supports each other and provide co-benefits.
- The scope for a cost-effective strategy to simultaneously achieve nutrient abatement and climate change mitigation by implementing selected agricultural and wastewater treatment measures indicate that up to a certain level it is economically efficient to integrate climate change mitigation target and water regulation. As there is asymmetry in biophysical and economic effects between countries of the realization of such a joint strategy for climate mitigation and nutrient abatement also supports regional cooperation.
- GO4BALTIC concludes that policy efforts to improve Baltic Sea water quality will be expensive if the ambitious targets agreed are to be achieved. Cost-minimisation modelling results indicate that net nitrogen reductions achieved could have been obtained at 12% of the realized costs, had there been a reallocation of abatement between countries. The total abatement budget could, if had been used cost-effectively, have doubled the net nitrogen load reduction.
- Structural development trends in agriculture around the Baltic indicate that drastic reductions in the number of farms and intensification of farms, including dairy farming. This development creates new challenges for environmental sustainability, and more specific increasing pressure on the allocation of manure. One solution could be to shift from dairy production to crop production.
- Another solution is introduction of nutrient trading, including manure trading, as a measure to allocate nutrients better among farms. GO4BALTIC compares nutrient trading market designs and analyse the effects of nutrient trading on costs and effects, and finds that total abatement costs of achieving reduction targets of nitrogen and phosphorus are lowest if a market design with credit stacking is established, for the Baltic Sea. The total abatement cost can be 20% higher when credit stacking is not allowed than when it is allowed. An analysis among Danish farmers concludes that farmers might be reluctant to trade, but also that there are large differences between farm types, and a Swedish study on water and marine stakeholders also showed barriers towards trading mechanisms among citizens and experts. More knowledge on how to combat these barriers could lead to more cost-effective allocation of efforts.
- Farmers' propensity to adopt manure handling technologies is analysed using the BONUS GO4BALTIC Farm Survey, and the drivers for investing in and using manure spreading equipment, slurry tanks, and precision technology for fertiliser application have been investigated. The scale of farm operation, i.e. the size of the farm, is important for the uptake of all three technologies.
- Agri-environmental contracts as part of EU's Common agricultural policy (CAP) are widely used in all of the Baltic countries, and improvements in cost-effective use of these contracts can be achieved by differentiation of the AES both in terms of contract requirements and payments.
- Results from a Finnish study on buffer strips also concludes that differentiation of the subsidies will be beneficial according to large variations in lost profits from implementing buffer strips in different crops and rotations.
- The impact of water quality policies on innovation in nitrogen and phosphorus technology in Sweden has shown that increased environmental regulation stringency has induced innovation in

the wastewater treatment sector, both in the long run and in the short run. A corresponding effect could not be identified in the agricultural sector.

- In summary these, and lots of other results from the project, points at that regulation of the non-point pollution from agriculture is complex, and even if we can conclude that economic incentives are cost-efficient at conceptual and theoretical levels, the empirical analyses points at a number of barriers. Some of these can be explained by risk considerations by farmers. The suggestions from improvements are summarized in the Socioeconomic Action Plan for the Baltic Sea.

ResponSEable – protecting the ocean, our collective responsibility, our common interest

Coordinator: ACTeon Ltd. (France)

Total budget: EUR 3.8 million (co-financed by Horizon 2020)

Duration: 4 years, 4/2015 – 3/2019

As central principle, ResponSEable focused on a better understanding about the relationship between a wide range of human activities and their effect on the marine environment. This included the understanding of the current knowledge system to select target groups and to design new ocean literacy tools for closing existing knowledge gaps.

HELCOM has identified agriculture as the main source of nutrient inputs to the Baltic Sea, and measures and regulations for their reduction are implemented since many years. ResponSEable took up this issue and created a key story of “eutrophication and agriculture” in the Baltic Sea Region. To reduce eutrophication in the Baltic Sea, ResponSEable seeks to answer: How literate are we on well-known issues such as eutrophication of the Baltic Sea? Did we target the right stakeholders? Did we communicate the right messages? Who are the actors in the value chain? How can the actors of the value chain be influenced in the way they operate?

In this story of eutrophication and agriculture of the Baltic Sea, instead of following a cause-effect line of activity, pressure and impact, we analysed the diffuse nature of pressures related to agriculture by analysing all the activities and actors across the value chain to understand, how economic activities directly or indirectly connect to it, which drivers occur within the value chain and which opportunities exist for initiating a change.

The aim of the story was to develop and add a **new perspective on the classical eutrophication-related communication by widening the scope of possible actors responsible for initiating the change**. In addition, ResponSEable assessed the existing knowledge system of these actors and gaps in current communication.

We, the Baltic Environmental Forum team, in charge of connecting the Baltic Sea Region to the ResponSEable project and having worked on the Eutrophication & agriculture key story for three years now, found it very interesting to reflect such well-known Baltic Sea issue with the ResponSEable approach to value-chain and communication. And we are convinced that this it is a good idea for the upcoming Baltic Sea Action Plan revision to add a stronger strategy/new pillar on raising awareness beyond the traditional angle of *pressure-state-response*.