BONUS
SCIENCE FOR A BETTER FUTURE OF THE BALTIC SEA REGION

BONUS in Brief

NOVEMBER 2018

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BONUS

EDITORIAL

BONUS brings always something new

by **Andris Andrusaitis**, Acting Executive Director, BONUS

Although BONUS has reached a mature age, it is far from growing old. With a slight rewording of an old Latin saying, it's quite the opposite as BONUS "brings always something new". In this issue of our newsletter, we present eight NEW knowledge synthesis projects commencing this autumn, the NEW Baltic and North Sea Coordination and Support Action and four NEW strategic partners.

Knowledge synthesis pulls together the outputs of individual studies addressing a particular question. By default it involves also a comparison and critical assessment of these findings in order to confirm the truly robust evidence and identify those questions where our understanding is still controversial and insufficient. At BONUS, we see the knowledge synthesis as central for knowledge translation from research community to practice and for ensuring evidence-based decision making. In August 2017, we published a call for proposals to synthesise the research outputs in nine important areas related to sustainable use of the Baltic Sea ecosystem services. Now we are proud to present a whole generation of new BONUS projects that will summarise and review our knowledge in such important areas as the Baltic Sea food webs, advancement of the monitoring and assessment systems, creation of policy instruments for nutrient abatement, non-monetary valuation of the ecosystem services and improvement in maritime risk analysis and mitigation. One of the new projects will survey the landscape of various existing decision support tools and develop a guiding map and a unified entrance point for potential users of these tools. Logically, our knowledge synthesis projects will not limit their analysis to the scientific production of BONUS but will delve as deep and broad as possible into the selected topic.

November will become the first implementation month of Baltic and North Sea Coordination and Support Action (BANOS CSA) funded within the EU's Horizon 2020 framework. In the coming 30 months, BONUS together with the major research and innovation funders from Belgium, Denmark, Estonia, France, Germany, Latvia, Lithuania, the Netherlands, Norway, Poland, Sweden and United Kingdom, will lay the foundation for the future joint Baltic Sea and the North Sea research and innovation programme.

It would be impossible to embark on such ambitious task without the guidance and advice by our four new strategic partners: HELCOM, OSPAR, ICES and JPI Oceans. The Baltic Sea Environment Protection Commission, known as HELCOM, is an intergovernmental environmental governing body established by all countries surrounding the Baltic Sea. OSPAR in an analogous mechanism by which 15 national governments cooperate to protect the marine environment of the North-East Atlantic including the North Sea. European Union is a member in both organisations. Collectively known as regional seas' conventions, HELCOM and OSPAR are major actors implementing the EU's Marine Strategy Framework Directive aiming at achieving good environmental status of the seas washing the coasts of Europe – and because of this, they are among the most important potential users of the outputs of the future Baltic and North Sea programme. ICES – The International Council for the Exploration of the Sea is a global organisation that develops science and advice to support the sustainable use of the oceans. The ICES network involves scientists from over 690 marine institutes in 20 member countries. Globally ICES serves as one of the best-established ocean knowledge brokers – a transfer link between science and practice, therefore its partnership is important for the future programme. Finally, the Joint Programming Initiative Healthy and Productive Seas and Oceans (JPI Oceans) covering all European sea basins and providing a long-term integrated approach to marine and maritime research and technology development in Europe is a natural umbrella for the future programme's strategic research and innovation agenda and a networking hub among the regional seas' programmes. ■

BONUS guest column

In this issue we have invited the strategic partners of the Baltic and North Sea Support and Coordination Action (see page 4 for more) to reflect on their recent developments.

The HELCOM assessment of the Baltic Sea is an opportunity to improve our sea and foster new partnerships

HELCOM

by **Monika Stankiewicz**, Executive Secretary, HELCOM

The second holistic assessment of the ecosystem health of the Baltic Sea is the largest assessment project ever carried out by HELCOM. The ambition was to provide a holistic view of the status of the marine environment, identifying and measuring the pressures and impacts from human activities on our sea.

We strived to ensure it is based on the best available scientific knowledge, as well as to enhance the regional assessment system including indicators that measure the ecological state of the Baltic Sea. We also aimed at delivering a product that meets multiple and often specific policy needs.

These ambitions were fulfilled with the unfailing support of the Baltic Sea countries that contributed to the assessment with unprecedented resources, and through frequent science-policy interactions. Additional funding by the EU enabled substantial development of the assessment methods, among others.

Our mission now is to ensure that the assessment is being used.

The assessment reveals a poor status of the Baltic Sea, and the goals and objectives of the Baltic Sea Action Plan (BSAP) are unlikely to be reached by 2021.

Due to the time lag between our actions for a healthy Baltic Sea and the response of the ecosystem, these results don't come as a surprise. Thus, comparing with the previous assessment, our task was also to detect trends and signals of change, and to identify emerging issues such as those related to climate change.

In addition, the report provides an insight into economic and social aspects. No holistic view of the marine ecosystem can be provided unless social and economic aspects are also included.

The assessment already had a significant impact on policy making in HELCOM. Based on its results, the HELCOM Ministers and the EU Commissioner decided earlier in March to strengthen the implementation of the BSAP and to update it by 2021. The water and marine related targets of the UN Sustainable Development Goals will be utilized as a framework for this update.

Furthermore, the EU countries in the Baltic Sea have expressed their intention to use the report for this year's reporting under the EU Marine Strategy Framework Directive (EU MSFD).

Pressingly, we need to know how the Baltic Sea's ecosystem responds to the undertaken measures and within which timeframes, to see when good status can be expected, and what actions work and what don't. HELCOM will draw from the newest scientific results to seek answers on this issue and to meet this clear policy need. Fresh outcomes from BONUS projects have been released just in time for this purpose.

Last but not least, being a strategic partner in the Baltic and North Sea Support and Coordination Action (BANOS CSA) that prepares for the future northern European regional seas research and innovation programme, is a clear opportunity for HELCOM to expand on the currently available results and build new partnerships. This will support the future implementation of the updated Baltic Sea Action Plan even more. ■

Cross-sectoral and inter-regional cooperation is increasingly relevant and necessary

OSPAR

by **Susana Salvador**, Executive Secretary OSPAR Commission

The Convention for the Protection of the Marine Environment of the North-East Atlantic – the OSPAR Convention – guides international cooperation on the protection of the marine environment of the North-East Atlantic. The activities and work under the Convention are managed by the OSPAR Commission.

OSPAR's vision is of a "clean, healthy and biologically diverse North-East Atlantic Ocean, used sustainably" and its guiding principles underpin the sustainable use of the marine environment. The specificities of the North-East Atlantic are addressed by OSPAR through 5 thematic strategies dealing with the main threats identified within OSPAR competence: The Biological Diversity and Ecosystems Strategy, the Hazardous Substances Strategy, the Eutrophication Strategy, the Offshore Oil and Gas Industry Strategy and the Radioactive Substances Strategy.

While requiring a sound coordination amongst Contracting Parties, also cooperation with international organisations, using science-based evidence whenever possible, is of a key importance. Cross-sectoral and inter-regional cooperation is increasingly relevant and necessary also as measures adopted by OSPAR do not address all human activities that may adversely impact the North-East Atlantic marine environment.

OSPAR has signed Memoranda of Understanding (MoU) with IMO and ISA, of utmost relevance, alongside with the Collective Arrangement adopted in 2014 with NEAFC. Furthermore, MoUs are in place with many other international organisations and regional bodies such as NASCO, HELCOM, ICES, EEA, ECE, Abidjan and Cartagena Conventions. These are all suitable platforms for collaboration, exchange of information on lessons learnt and experience from other regions and sectors.

OSPAR assessments of the North-East Atlantic marine environment

An important achievement towards a better understanding of the North-East Atlantic marine environment was reached in 2017 with the launching of the OSPAR Intermediate Assessment.

This was the first OSPAR scientific assessment based on specific and commonly measurable indicators, thus consisting on a significant cornerstone towards the realisation of the OSPAR vision. It was the result of an ambitious data collection exercise in which OSPAR Contracting Parties joined efforts, including on methodologies and indicators that would serve the purpose of sound scientific examination.

The impact of pressures from human activities on the state of the marine environment was assessed through common indicators, all detailed in an online-only publication available at https://oap.ospar.org/en/ospar-assessments/intermediate-assessment-2017.

The Intermediate Assessment 2017 constitutes a valuable contribution to the next OSPAR integrated assessment in 2023 - the Quality Status Report 2023 - which will include recommendations on priority actions.

For OSPAR Contracting Parties that are also EU Member States, OSPAR regional assessments can be used to help providing information on the state of the marine environment in the North-East Atlantic, as the regional context for national marine status reporting under the EU Marine Strategy Framework Directive. It is also available to be used as regional context to supplement national reporting under the UN Sustainable Development Goals, in particular SDG 14.

OSPAR is a strategic partner in the Baltic and North Sea Coordination and Support Action (BANOS CSA) that prepares a framework for launching a joint Baltic and North Sea research and innovation programme in 2021. ■

ISTOCK

Advancing and sharing scientific understanding for the benefit of long-term sustainability


ICES

by **Anne Christine Brusendorff**, General Secretary International Council for the Exploration of the Sea

Seas and oceans are shared between many jurisdictions, with some parts being common to all. With increasing human activities in the ocean, it has become more important than ever to consider the common science needs to address interrelated effects.

BONUS has shown how science priorities can be identified at ecoregion scale, and with the new Baltic and North Sea Coordination and Support Action (BANOS CSA), it will be possible to make use of the experience gained during BONUS, and continue to work together with stakeholders, as well as scientific and funding organizations.

While it is important to identify research priorities, experience has shown that it is also important to ensure the scientific results are used to inform policy and management. Making this link helps demonstrate the significance and impact of science, and thereby the benefits to society.

A joint programme for the Baltic and the North Sea is a first step in ensuring the societal relevance of integrated marine research, and through the participation of consortium members and strategic partners, it will be possible to address how to interact with, peer-review and synthesize the research for best use by decision-makers.

Another important aspect of a future joint Baltic Sea and North Sea research and innovation programme is the transfer and knowledge sharing across countries, providing a platform of excellence for carrying out research.

We are looking forward to participating in BANOS CSA as a strategic partner in the preparation of a future joint Baltic Sea and North Sea research and innovation programme.

ICES will be able to draw on its diverse community of scientists and experts, long-standing cooperation structure, as well as its new Strategic Plan. This plan sets science priorities for marine ecosystem and sustainability science for the 2020s and beyond.

Cooperation within a future joint Baltic Sea and North Sea research and innovation programme will help to advance and share scientific understanding of marine ecosystems and the services they provide. We can use this knowledge to generate state-of-the-art advice for meeting conservation, management, and sustainability goals. ■

A European platform to bridge the regional and global dimension


JPI OCEANS

by **Jacky Wood**, Acting Executive Director, JPI Oceans

JPI Oceans is one of ten Joint Programming Initiatives with the aim to pool national research and tackle societal challenges through better use of research and innovation funding in Europe. As a strategic partner in the Baltic and North Sea Coordination and Support Action (BANOS CSA), JPI Oceans is looking forward to further close collaboration with the Baltic and North Sea research and innovation communities. With member countries from all European sea basins and a widening international collaboration outside Europe, JPI Oceans can offer a platform to bridge the regional and global dimension.

A prime example of this is the first JPI Oceans action on microplastics in the marine environment initiated in 2013. With the growing understanding of the issues generated by the JPI Oceans research projects, the G7 countries acknowledged the lead given by the JPI Oceans action and they and the G20 countries put marine litter as a priority on their agendas. As a follow up, JPI Oceans can announce that 10 member countries have agreed in principle to launch a new, open joint call on the topic of microplastics. The call will be officially announced after the conclusion of the first four projects on microplastics in November 2018 and we hope the Baltic and North Sea communities will participate as partners in proposals.

JPI Oceans is also growing its international dimension outside of Europe, not least in the context of the UN sustainable development goals and the agreement to designate a UN Decade for Oceans Sciences. As a partner in the new action to underpin the Belem statement, the agreement between the EU, South Africa and Brazil, JPI Oceans involvement in the transatlantic collaboration also moves up a gear.

The JPI Oceans table further provides a flexible framework for collaboration. For example, JPI Oceans, together with the former ERA-NETS COFASP and the Marinebiotech ERA-NET and the European Commission Horizon 2020 progamme have developed a new ERA NET Cofund on the blue Bioeconomy. The Cofund will launch a first joint call in December 2018 with a maximum budget of approximately 32 million Euro. The MarTERA ERA-NET Cofund, which was the joint initiative of the former ERA-NET MARTEC consortium, and JPI Oceans members recently announced the 19 research and innovation projects, which were selected for funding. Together representing 23 million euros of new funding, a wide variety of projects has started ranging from marine robotics to shipping, aquaculture, biosensing and more.

JPI Oceans and the BONUS Article 185 Initiative (ending 2020) share some funding partners and have been collaborating for some time. BONUS has created a scientific community around the Baltic Sea basin and has provided a harmonized way to look at the issues surrounding the management of a regional sea basin which reaches across national boundaries. It has helped to bridge the gaps, for example on ensuing harmonized and comparable data and brought together the critical mass of funding for research projects needed to achieve its ambitious research goals.

There is a real opportunity now for the Baltic community to bring the experience forward in a broader context and to exchange best practices where BONUS has succeeded. As a Strategic Partner in the new BANOS CSA, JPI Oceans looks forward to working with the BANOS CSA consortium to help shape the regional research agenda and to provide a pan European dimension and a European bridge to the wider international community. ■

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BONUS is a joint Baltic Sea research and development programme producing knowledge and eco-technological advances to support development and implementation of regulations, policies and management practices specifically tailored for the Baltic Sea region. It issues calls for competitive proposals and funds projects of high excellence and relevance based on its strategic research agenda.

BONUS is funded jointly from the national research funding institutions in the eight EU member states around the Baltic Sea and the European Union by a total of EUR 100 million for the years 2011–2020. Russia participates in BONUS through bilateral agreements.

BONUS in Brief is published by the BONUS Secretariat to keep the BONUS community, including partners and supporters, informed about current views and news about BONUS activities and accomplishments.

BONUS EEIG is the legal management organisation of BONUS.

Engineering a launch pad

By **Andris Andrusaitis**, Coordinator of the Baltic and North Sea Coordination and Support Action, and Acting Executive Director, BONUS

This autumn BONUS together with major research and innovation funders of 12 countries and four transnational organisations starts the Baltic and North Sea Coordination and Support Action (BANOS CSA). The aim is no less than preparing a framework for launching a joint Baltic and North Sea research and innovation programme.

Our promise is to ensure that the future programme will achieve high level of scientific, administrative and financial integration, and generate strong impact as well as EU-level benefit. Already while designing the CSA proposal, we pictured it to be a bit similar to that of a 'launching complex' of a spacecraft - providing the right direction and speed that would bring it to the necessary orbit and send it to the desired destination. While in-flight, adjustments are possible, the success of the whole mission depends on proper function of the launch pad and the booster engines. BONUS – the implementing structure of the future programme will invest its 15-year experience in creating a programme that can fly high and far.

Slowly but steadily

The idea of a future programme in support of achieving sustainability of the ecosystem services of the two sister seas washing the coasts of Northern Europe sparked already in early 2013. In 2015, the participating states expressed their commitment and in the same year a group of research policy experts and scientists draw an outline of what the programme would entail (see BONUS in Brief 2015 issues). Now, with an ongoing debate on the design and priorities of the next EU research and innovation framework Horizon Europe, it is crucial that BANOS CSA provides us with more resources and time to build a firm fundament for an enduring and genuinely consolidated future collaboration.

A joint programme starts with a joint agenda

Developing a joint research and innovation agenda (SRIA) will be the most important task of BANOS CSA. Prior to it, we must first scout the landscape of current priorities by individual nations and transnational organisations and agree on the scope of the future programme. Our experienced German and Swedish partners have assumed these ground-preparing tasks. As soon as this is completed, we will activate the well-tested BONUS production chain: the international drafting team will draw the blueprint. This will be further discussed and adjusted through a series of stakeholder meetings and eventually be delivered to the Strategic Orientation Workshop (SOW) for its scrutiny. The SOW is a cross-national, cross-disciplinary and cross-sectoral consultation platform that will give the SRIA its ultimate shape and direction. We anticipate that the SRIA of the future programme will retain two important qualities of the current Baltic Sea strategic research agenda:

- being a 'living document', a character achieved through systematic updates, and
- amalgamation of a far-reaching strategy with an operational programming (i.e. this provides the research and eco-innovation communities a single entry point to understand both the strategic direction and the timeline of its calls and actions).

Making it tick

In which way the future programme will be governed and managed? How its funds will be administrated? What kind of a joint executive structure would be best suited to run it? And, most importantly, what format will it take? These are big questions, each entwined with another! There are many options and different scenarios have to be carefully analysed to find the most viable one. BONUS will lead the work package tasked to design the mechanism of the future programme. This does not mean that the solutions serving the Baltc Sea programme will be simply replicated. Instead, the priority of BANOS CSA will be to strengthen the North Sea component and find the ways that work flawlessly in the new context. Many lessons learned from BONUS's years of practice will benefit the improvements in the new programme, for instance, the aim to simplify the participation of future beneficiaries.

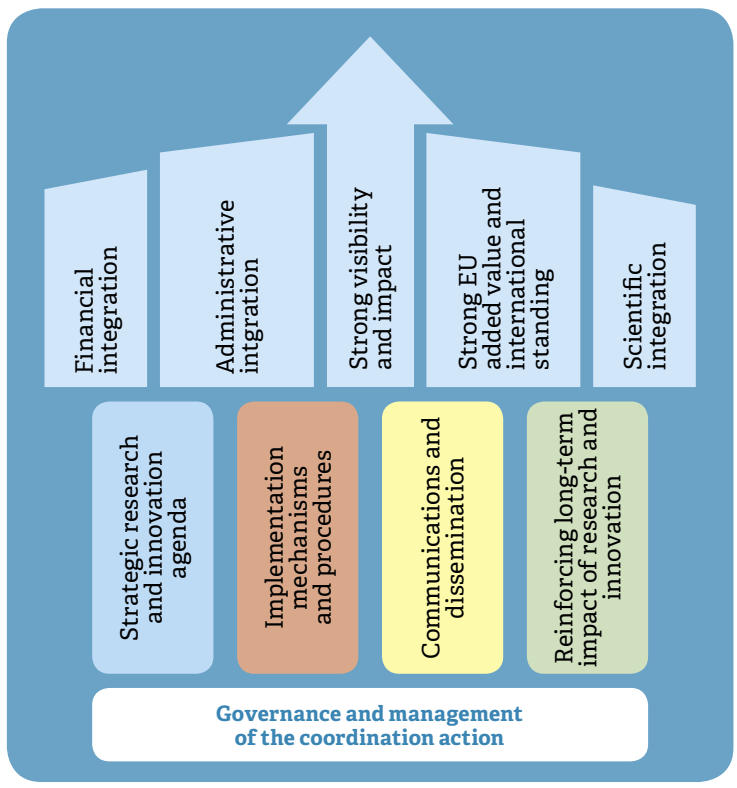
Turning idea into impact

The ongoing Baltic Sea programme has achieved much in strengthening the impact of research. Nevertheless, there is still lot of room for development of genuinely efficient platforms for engaging with the stakeholders and communicating the new scientific knowledge to its potential users, be it policy makers and managers in various economical sectors or innovative entrepreneurs. The BANUS CSA plan includes two dedicated packages to deal with communications and dissemination and strengthening the impact of research and innovation. For instance, our Belgian partners will lead the search for the best ways for implementing full data openness while the future programme's strategies and instruments in support of diffusion of open innovation will be developed under coordination of the Dutch partners.

The reagional seas surrounding the European continent might seem very different but in one aspect they are similar – that is where the interconnection between the sea and human society comes to its closest. The bulk of the marine ecosystem services, be it tangible biological or mineral resources and waterways or recreation and inspiration, all originate in the regional seas. It is there where the strongest pressures are felt and where achieving good environmental status is most urgent.

STEPS TAKEN TOWARDS A JOINT BALTIC AND NORTH SEA RESEARCH AND INNOVATION PROGRAMME:

2012 December	BONUS Steering Committee initiates discussion of the successor to BONUS
2013 March	Possible geographic extension is first considered as part of the succession strategy
2014 February	An ad-hoc committee for developing the successor programme is established
2015 August	Outline of the future Baltic Sea and North Sea programme is adopted (publ. Feb 2016)
2015 October	Proposal of the future programme by 11 Baltic and North Sea member states submitted to the Commission by the Estonian EC presidency
2016 October	Commissioner Moedas responses to Estonian EC presidency suggesting a bridging mechanism i.e. a CSA "in order to facilitate engaging with the North Sea stakeholders and further strengthen the North Sea component of the new proposal"
2017 October	European Commission Horizon 2020 Work Programme 2018 – 2020 includes the topic "Towards a Baltic and North Sea research and innovation programme"
2018 November	The Baltic and North Sea Support and Coordination Action (BANOS CSA) starts



Much has to be done to establish systematic cooperation among the research and innovation programmes created for support of sustainable blue growth in Europe's regional seas and BANOS CSA is committed to contribute to this important task. ■

Synthesising knowledge and setting trends

by **Meelis Sirendi**, Deputy Acting Director, BONUS

Knowledge synthesis is central for knowledge translation from research community to practice and for ensuring evidence-based decision making. 'BONUS call 2017: Synthesis' funds consortia that will synthesise research outputs addressing the challenges faced by both sustainable use of ecosystem services and sustainable blue growth in the Baltic Sea.

As inherent elements of knowledge synthesis, the eight new projects will, during 18 months-long desktop studies, critically review of research outputs as well as identify the knowledge gaps and further research needs. Each project will analyse how successfully the outputs of science have been taken up at different levels of public governance and management, and by industry. Finally, the projects will propose ways to enhance the societal significance and impact of research and innovation relevant to the specific topics they are addressing.

In total, nine topics were opened for the call (see BONUS Briefing 28), and after thorough evaluation by independent experts, six topics opened for the call are now covered by the eight synthesis projects funded.

In the next three pages, the coordinators of BONUS BALTIMARI, DESTONY, FUMARI, MARES, ROSEMARIE, SEAM, TOOLS2SEA and X-WEBS will introduce their projects. ■

www.bonusportal.org/synthesis_projects

BONUS BALTIMARI

Review, evaluation and future of Baltic risk management


BALTIMARI

Coordinator **Pentti Kujala**, Aalto University

The BONUS BALTIMARI sets out to review the current state-of-the-art in risk analysis and decision support, focusing on the Baltic Sea area. We target the areas of Maritime transportation systems (MTS) and offshore energy production systems (OEPS). In collaboration with stakeholders, we aim to identify priorities for future research in risk management.

Review of current state-of-the-art

We review several R&I projects in the Baltic Sea area which have developed analysis methods for decision support in accident prevention, response and risk mitigation. The key factors that will be studied are:

- Utility: cost-effectiveness and technology readiness level
- Quality of the underlying evidence
- Firmness of the method's scientific basis
- Existing knowledge gaps
- Intended end users.

Evaluation of and assessment of uptake of past R&I

The assessment of R&I investigates whether the results of research are being used in practice. We aim to understand factors affecting successful uptake of R&I. We will compile a document of best practices based on interactions with relevant stakeholders. Selected projects with varying uptake and of different budgets in different organizations will be analysed through interviews. Evaluation of uptake will involve understanding the end users' thoughts on R&I. This will help identify pathways for improving the transfer of research to industry and policy environments.

Identification of knowledge gaps

Knowledge gaps related to risks in the MTS and OEPS, e.g. related to human behaviour aspects, autonomous vessels, and environmental pollution will be identified, along with gaps in analysis and decision support tools.

During its 18-month implementation period, BONUS BALTIMARI aims to complete

- State-of-the-art reviews of maritime risk analysis and decision support systems for shipping and offshore energy
- Report on the uptake of R&I actions for relevant end-users and make suggestions for improvements
- Systematic overview of main knowledge gaps and future R&I through identification of risks in the MTS and OEPS
- Policy briefs directed at policy makers and industry stakeholders.

We are now reaching out to industry and public end-users and stakeholders with previously implemented research. If you are interested in identifying gaps and setting priorities for future research or you have an experience to share with us, please email: Ketki.kulkarni@aalto.fi

PROJECT PARTNERS

Finland
Aalto University (coordinating partner)
University of Helsinki

Estonia
University of Tartu

Germany
Hochschule Wismar

Poland
Gdynia Maritime University

Sweden
World Maritime University

The key theme addressed from BONUS SRA*

3.1 Maritime risk analysis and management

www.bonusportal.org/baltimari
https://wiki.aalto.fi/display/BB/

BONUS DESTONY

Decision support tool for management of the Baltic Sea ecosystem


DESTONY

Coordinator **Vivi Fleming-Lehtinen**, Finnish Environment Institute

Successful environmental management relies on an enormous amount of complex information that is processed further to interpret or predict potential changes and responses. A number of decision support tools (DST) have already been developed to support this process. The aim of BONUS DESTONY is to evaluate these tools and propose the direction of further development.

Decision support tools represent various compartments from the pressure-state-impact-response -chain of actions, cover a wide field of disciplines, and vary in the degree of their availability and use – all these properties characterise them as well as enable investigating their successfulness. During the coming 1.5 years, BONUS DESTONY will develop definitions and criteria to help evaluate the performance of DST. Furthermore, the tools will be analysed against the current and anticipated future needs. Finally, an internet-based catalogue will be created as an information base.

A common feature to successful DST is that they are developed in close collaboration with end-users, or even by end-users themselves, and constantly updated along with increasing knowledge or changing requirements. BONUS DESTONY has gathered together a core group of end-users to be interactively involved in the project implementation. ■

PROJECT PARTNERS

Finland
Finnish Environment Institute (coordinating partner)

Denmark
Aarhus University

Germany
Leibniz University for Baltic Sea Research Warnemünde

Sweden
Stockholm University

The key theme addressed from BONUS SRA*

4.1 Governance structures, performance and policy instruments

www.bonusportal.org/destony

BONUS FUMARI

Future marine assessment and monitoring of the Baltic


FUMARI

Coordinator **Kristian Meissner**, Finnish Environment Institute

BONUS FUMARI will explore gaps in current Baltic Sea monitoring and the possibility of using novel monitoring methods to address these shortcomings. The recommendations aim to enhance future coverage, comparability, sensitivity and cost effectiveness of Baltic Sea monitoring. Given the complexity of this task, stakeholder involvement will be critical to project success and will be integrated at all stages of the project.

BONUS FUMARI builds on past evaluations of relevant directives and combines these with the insights and lessons learned from both freshwater EU-projects led by the project partners (such as EU FP7 WISER, MARS and the COST action DNAqua-Net) and marine projects (such as BONUS BLUEWEBS, EU-LIFE MARMONI, EU FP7- ODEMM, and DEVOTES). The combined experience from both marine and closely related freshwater monitoring will be a valuable basis for the evaluation and recommendation for a renewed monitoring system of the Baltic Sea environment. BONUS FUMARI will coordinate actions with the project BONUS SEAM, which also aims to provide recommendations for a renewed monitoring of the Baltic.

Outputs of the project will include review papers and related policy briefs that address current monitoring and its gaps in relation to legislative requirements, shortcomings and improvements of data management, and novel monitoring methods that could be applied in Baltic marine monitoring.

In particular BONUS FUMARI sets out to answer the following questions:

- Does the current monitoring sufficiently address the requirements set by the EU data collection regulation, Baltic Marine Environment Protection Commission's (HELCOM) Baltic Sea Action Plan, EU Water Framework Directive (WFD), and EU Marine Strategy Framework Directive (MSFD)?
- What are the most critical shortcomings of the current marine monitoring programs regarding the requirements set by relevant EU directives?
- Which novel methods could efficiently enhance the Baltic marine monitoring through improving its coverage, cost effectiveness, and reliability?
- What is the state-of-the-art of these methods related to their use in operational monitoring?
- How could the monitoring system be rearranged and complemented to achieve improved coverage, sensitivity, and cost effectiveness? ■

PROJECT PARTNERS

Finland
Finnish Environment Institute

Germany
University Duisburg-Essen

Sweden
Swedish University of Agricultural Sciences
Halmstad University
Swedish Meteorological and Hydrological Institute

The key theme addressed from BONUS SRA*

5.1 Integrated monitoring programmes

www.bonusportal.org/fumari

*BONUS strategic research agenda, update 2014

BONUS MARES

Multi-method assessment for resilient ecosystem services and human-nature system integration

MARES

Coordinator **Maurizio Sajeva**, Pellervo Economic Research PTT

BONUS MARES will set out to identify possible future scenarios of best practices in the knowledge transfer and generate a geospatial tool to represent ecosystem goods and services, as well as their impact on human lifestyles and well-being. This in turn will contribute to efficient and sustainable use of natural resources.

An idea of natural capital has emerged to identify the potential and actual benefits that humans derive from nature. Economic research and various monetary and non-monetary methods have also been developed to reintroduce environmental goods into economic evaluations, generating the concept of ecosystem services. However, the issue is under debate within the scientific community, and a general agreement on the validity of evaluation methods is often missing: not all methods are adequate to evaluate all kinds of environmental goods. Moreover, much about ecological processes and the amount of resources that can be used in a sustainable way is still unknown. Understanding the interactions between biodiversity, humans and geophysical processes are of primary importance in BONUS MARES: Economics is approached as an open system that is intertwined with other environmental and human systems. In this light, the BONUS MARES project will:

- observe and monitor ecosystem goods and services in the Baltic Sea region, and more specifically of its coastal system threatened by multiple pressures and climate change (macroalgae, seagrass beds and mussel reefs)
- analyse the adequacy of existing methods to transfer this scientific knowledge for practitioners (combination of 'ecosystem service-evaluation method')
- provide an interface that brings science closer to society and policy, and thereby supports policy makers with scientific evidence, upon which critical decisions can be made, and the principle of accountability adequately implemented

A highly participatory research process will involve experts, stakeholders and decision-makers from the Baltic countries and possibly from other regions where similar experiences can be found. BONUS MARES' work will be captured in newsletters, policy briefs and a final popular publication that will pull together findings, lessons learned, and gaps identified in current practices. BONUS MARES will inform and interface in this way with the concerned stakeholders and the general public, thereby pursuing the objective of concretely reducing the distance between the scientific community, decision-making and the overall society. ■

PARTNERS

Finland
Pellervo Economic Research PTT (Coordinating partner)
Edistysmielisen tutkimuksen yhdistys ry (e2)

Estonia
University of Tartu

Germany
GEOMAR Helmholtz Centre for Ocean Research Kiel

The key theme addressed from BONUS SRA*

4.2 Linking ecosystem goods and services to human lifestyles and well-being

www.bonusportal.org/mares

BONUS ROSEMARIE

Blue health and wealth from the Baltic Sea – a participatory systematic review for smart decisions

PHOTO: HANNA MÄNTYNEN

Coordinator **Soile Oinonen**, Finnish Environment Institute

When sustainable blue growth is the target, what are the burning questions of the decision makers? How can they balance the current uses of the Baltic Sea ecosystem services with the future uses? BONUS ROSEMARIE aims to act as a 'research broker': By meeting policy advisors and decision makers we set out to identify their knowledge needs, and then search for the answers through the existing scientific works.

The answers will be summarised in three separate evidence syntheses. The first synthesis focuses on the state and future of the Baltic Sea ecosystem services and what is now known about the synergies and trade-offs that link different usages of these services. The second sheds light on the impacts these ecosystem services have on human mental and physical health and well-being. The third synthesis will help decision makers navigate through the different non-monetary and monetary valuations methods used to capture full spectrum of values attached to the marine ecosystem services.

We will also highlight our main findings in policy briefs and an animation. To reach the wider public we will publish the animation in German, Estonian, Finnish, Swedish and English.

To ensure high-quality, the work will follow the guidelines and standards of Collaboration for Environmental Evidence.

This means that we separate the wheat from the chaff: Evidence is searched following predetermined rules, findings are listed transparently and their quality will be checked. This will help us also find the gaps in knowledge. Such a systematic method allows for repeating similar analyses later on when new research is available.

BONUS ROSEMARIE engages with stakeholders throughout the project implementation. Both the systematic reviews and the policy briefs will be produced in dialogue with the end-users. This way, new and even unexpected results are hopefully easier to assimilate and apply in the daily work of decision makers. Moreover, it will add to the researchers' understanding of the ways that practitioners use scientific outputs. This can pave the way for increased societal impact of research. ■

PARTNERS

Finland
Finnish Environment Institute (coordinating partner)

Estonia
Estonian University of Life Sciences

Germany
Gottfried Wilhelm Leibniz Universität Hannover

Sweden
Royal Institute of Technology

The key theme addressed from BONUS SRA*

4.2 Linking ecosystem goods and services to human lifestyles and well-being

www.bonusportal.org/rosemarie
www.syke.fi/projects/bonusrosemarie

BONUS SEAM

Towards streamlined Baltic Sea environmental assessment and monitoring

SEAM

Coordinator **Mats Lindegarth**, University of Gothenburg

A safe, secure and sustainable society needs good information on the state of the sea. Monitoring of the marine environment and its biodiversity generates this valuable information describing how the marine environment and marine ecosystems vary through time. The objective of the BONUS SEAM project is to propose recommendations for a more efficient monitoring system to ensure that the information generated can be used by policymakers, scientists and wider society to inform and guide policies and actions for the sustainable management of the Baltic Sea.

A key challenge for the organisation of monitoring activity at Baltic Sea scale is to ensure that it can serve the required information needs in a streamlined way while delivering comparable and consistent data transnationally. In parallel, innovations for data collection and interpretation may offer possibilities for further refining approaches for marine monitoring and assessment to provide an increased return of information on present investments in monitoring. To achieve this objective BONUS SEAM will follow a threefold approach:

Firstly, BONUS SEAM will critically analyse the adequacy of current Baltic Sea environmental monitoring to support assessment requirements under different environmental policies, e.g. the assessment of status and trends, identify gaps and mismatches in relation to policy and science, and identify potential routes for improvement. A particular focus will be given to the monitoring of hazardous substances and the habitats and communites of the seafloor and water column.

Secondly, BONUS SEAM will review recent innovative approaches for a more cost-effective collection of data and evaluate their potential application in an operational monitoring programme.

Building on these two steps BONUS SEAM will develop a proposal for a revised monitoring system for the Baltic Sea. We will communicate and test with key policy and technical stakeholders, including those authorities in charge of the monitoring nationally, to ensure that there is a close fit with possible implementation routes. The outcome of BONUS SEAM will be a realistically applicable proposal for how the current system of monitoring in the Baltic Sea can be revised. BONUS SEAM will also identify priority research needs to contribute to the further development of Baltic Sea assessments over the longer-term. ■

PARTNERS

Sweden
Swedish Institute for the Marine Environment/University of Gothenburg (coordinating partner)

Denmark
Technical University of Denmark

Estonia
Tallinn University of Technology

Finland
Finnish Environment Institute

Germany
Leibniz-Institut für Ostseeforschung Warnemünde

The key theme addressed from BONUS SRA*

5.1 Integrated monitoring programmes

www.bonusportal.org/seam
www.havsmiljoinstitutet.se/english/themes/research/bonus-seam

BONUS TOOLS2SEA

Policy tools for Baltic Sea nutrient management

TOOLS2SEA

Coordinator **Mikael Skou Andersen**, Aarhus University

From the end of the 20th century and up to 2014 nutrient loads to the Baltic Sea declined by 13% for nitrogen and 19% for phosphorus. Despite this relief, virtually the entire Baltic Sea (97%) remains eutrofied, according to HELCOM's second holistic assessment, and deep emissions reductions are required as agreed under the Baltic Sea Action Plan. In this context, the BONUS TOOLS-2SEA project will provide much needed knowledge about the history and performance of governance approaches and policy instruments for nutrient management.

Aims

BONUS TOOLS2SEA will focus its work on three fronts. Firstly it sets out to assess how national regulatory traditions, individual attitudes and human behaviour shape nutrient management policies, in order to understand countries' policy performance around the Baltic Sea and beyond. Secondly, we will provide a synthesis of the most reliable cost and benefit estimates, identifying socio-economically suitable policy instruments for spatially targeted nutrient management. It will take into account distributional implications, regional disparities and possible win-win approaches. Thirdly, to facilitate accomplishment of Baltic Sea Action Plan targets, we will provide an outlook on possible future directions in emissions abatement. Critical gaps in current knowledge will be identified and translated into practice to provide suggestions for pilot experiments and innovations. The project will thus provide support to deliberations in HELCOM and in individual countries, including with relevance to the planned 2020 revision of the EU Water Framework Directive.

Methods

BONUS TOOLS2SEA will screen and synthesise results from previous BONUS funded projects (MIRACLE; GO4BALTIC; GOHERR; BALTICAPP; COCOA; SOILS2SEA) as well as summarise research results and insights from a broader array of studies, projects and publications available in the international literature and in national languages of the Baltic Sea region. Stakeholders from farming, NGO's and government agencies are invited to provide input early on of the project, as well as at a policy scenario workshop scheduled for Fall 2019, where preliminary findings will be presented and reviewed.

Outputs

Results will be subject to peer review under the high standards of scientific publications. They will be available in a condensed version as policy briefs accompanied by infographics, with summaries in national languages of the Baltic Sea region. Three sets of brochures will target farmers, water planners and investors respectively. Lessons with regard to the coordination of rural development funds with targeted water quality measures will be highlighted. ■

PARTNERS

Denmark
Aarhus University (coordinating partner)

Finland
Finnish Environment Institute

Latvia
Baltic Study Centre

Sweden
Swedish University of Agricultural Sciences

The key theme addressed from BONUS SRA*

4.1 Governance structures, performance and policy instruments

www.bonusportal.org/tools2sea
http://projects.au.dk/BONUS_TOOLS2SEA/

BONUS XWEBS

Taking stock of Baltic Sea food webs: synthesis for sustainable use of ecosystem goods and services

PHOTO: JAN STEFFEN

Coordinator **Jan Dierking**, GEOMAR Helmholtz Centre for Ocean Research Kiel

BONUS XWEBS wants to take stock of the field of food web science in the Baltic Sea region ("what do we know, what do we not know?"), provide a vision for this field for the coming decade ("what do we need to know, and how can we obtain this knowledge?"), and assess barriers standing in the way of the integration of food web knowledge in sustainable management of ecosystems.

Where do we stand regarding Baltic food web knowledge?

Knowledge on Baltic Sea food webs has grown enormously and new methods and approaches have been developed, not least through the targeted efforts of BONUS. Unfortunately, knowledge integration and use in practical management are lagging behind. Moreover, new knowledge gaps have become evident. E.g., our ability to forecast future food web dynamics remains poor, but this information would be essential to allow managers to prepare for and mitigate future changes. Baltic food web science thus stands at a crossroad: a new synthesis, as well as decisions on where to direct future research efforts and on how to best transform and apply food web knowledge in practical management are urgently needed.

Where does BONUS XWEBS come in?

Our aim is to advance the field of Baltic food web science via a systematic review effort including a synthesis of syntheses to reap the harvest of the wealth of new information that has become available from BONUS as well as outside it. This will include topic reviews of particularly dynamic fields, like the food web interactions of non-indigenous species. As second step, we will assess existing knowledge gaps and develop a vision for priority studies in this field. In the more applied management context, we are then interested how complex knowledge can be best funnelled into "simple" decision support with the help of models and indicators. Finally, we will provide a systematic assessment of food web knowledge transfer into management advice and decision making: what is working, where are barriers, what can we improve and how to implement it in practice?

Project approach and call for participation

At the heart of BONUS XWEBS stands a series of scoping and writing workshops, in which we will bring together experts on various aspects of Baltic food webs, including researchers from within and outside BONUS XWEBS and stakeholders (e.g., HELCOM and ICES, but open to others). Watch out for calls for participation in the 2019-2020 XWEBS workshop series – and join us to contribute with your knowledge, views and expertise!

PARTNERS

Germany
GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany (coordinating partner)

Denmark
Technical University of Denmark

Estonia
University of Tartu

Finland
Abo Akademi University

The key theme addressed from BONUS SRA*

1.3 Food web structure and dynamics

www.bonusportal.org/xwebs

Chair of the BONUS Steering Committee, Dr. Joachim Harms

On 1 October 2018, **Dr. Joachim Harms**, from the Jülich Research Centre, Germany was appointed as the Chair of the BONUS Steering Committee. **Dr. Maija Bundule** from the State Education Development Agency of Latvia acts as the current Vice Chair. The BONUS Steering Committee chairmanship rotates annually among the representatives from the national funding institutions that are members of BONUS.

ELKE THEDINGA

Dr Joachim Harms, what is your professional background?

My professional background is marine biology. I worked as scientist for 14 years at the Marine Station Heligoland in the North Sea, with research visits to New Zealand, Japan and Brazil working on cultivation of Crustacea and Fish. Now for close to 25 years, I have been working in science administration co-ordinating research activities in the marine and maritime area and assisting the respective ministries to align national programme activities with international agenda.

Germany joined BONUS in December 2007, what has been the most memorable event since then in BONUS?

BONUS is a wonderful example of a fruitful cooperation between its member states. Over the years, trust and friendship has developed, making this one of the secrets why BONUS has managed all difficulties and burdens and why we have always been able to find good solutions for further intensifying our cooperation.

How do you see the strengths of BONUS evolving in the future?

The cooperation with the new members from around the North Sea will widen our perspectives. New ideas and new targets will evolve. The partnership has to be developed once again and we need a good understanding of the respective national interests to identify the right topics for our joint future. We therefore need a close co-operation with JPI Oceans and interlinkage with the other sea basin approaches. Such an alignment will help us to have a strong voice in the European research landscape. ■

/MS

Improving the gender balance in marine science and technology

by **Hela Mehrtens**, Equal Opportunity Commissioner, GEOMAR Helmholtz-Centre for Ocean Research Kiel

Marine science and technology is traditionally a male-dominated field, with a significant lack of women in leadership positions. Therefore, there is an urgent need for change. 'Baltic Gender' responds to the need of harvesting the whole capacity of men and women alike at all levels of research and in the technology teams to tackle the various challenges lying ahead in the marine environment.

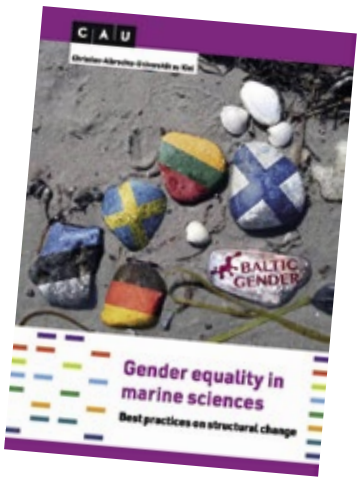
'Baltic Gender' is an EU-funded project that brings together eight scientific institutions in five countries around the Baltic Sea to work on reducing gender inequalities in marine science and technology. The project has been funded for 4 years, starting in September 2016, by the HORIZON 2020 programme under the call "Gender Equality in Research and Innovation" and is coordinated by Prof. Dr. Katja Matthes (GEOMAR Helmholtz-Centre for Ocean Research Kiel).

Acting as a platform for the exchange of institutional practices and the transfer of knowledge between the consortium partners, 'Baltic Gender' will work towards the establishment and implementation of Gender Equality Plans in its partner institutions, which play an important role in committing institutions to long-term approaches, realistic targets and concrete measures. The project will establish practical schemes and innovative strategies including user-friendly output that promote gender equality around the Baltic Sea.

The following publications are already available from the project:

- The brochure "**Best practices on structural change**" provides various best practice measures in the different Baltic Gender institutions
- A leaflet on how to establish strategies for promoting a family-friendly working culture
- A resource pack to build competence and skills in gender sensitive teaching methods
- The practical guide on how to include Gender Equality Plans in research projects

Read more at www.baltic-gender.eu



Past and coming events

Early career researcher discuss knowledge transfer in marine sciences

The keywords 'science communication', 'application of scientific results' and 'proactive behaviour' dominated the discussions of the PtJ-BONUS workshop during the 9th YOUMARES conference on 13 September 2018 in Oldenburg. An intense World Café session highlighted the opportunities and limitations of knowledge transfer. Furthermore, the participants considered the enormous impact that can be achieved by having research results strategically transferred to non-expert communities. Also the support of open access as an important fundament to foster the exchange within the scientific community was widely discussed. Further, the workshop participants were convinced that the transfer of information has to go hand in hand with a certain degree of 'entertainment value', which is crucial to communicate the central message of 'Research is fun'. All personal contacts between scientists and the society were considered of key importance. Hence, in order to directly involve the society at large in marine science, the attendees suggested to design a special public session to be part of the next YOUMARES conference taking place in Bremen, 24-27 September 2019.

Participants of the PtJ-BONUS workshop 'Knowledge Transfer in Marine Science' at the 9th YOUMARES conference in Oldenburg, Germany .

/Dr. Lydia Gustavs, Projektträger Jülich (PtJ)

- **BONUS-HELCOM conference: Research and innovation for sustainability**, ***The 7th BONUS Forum and the 8th HELCOM Baltic Sea Action Plan Stakeholder Conference in association with OSPAR, ICES and JPI Oceans***, 6 November 2018, Copenhagen
- **BALTEX "Multiple drivers for Earth system changes in the Baltic Sea region" workshop in collaboration with BONUS, HELCOM and ICES**, 26-27 November 2018, Tallinn
- **The Baltic Sea Region – The Science Powerhouse**, a joint conference organised by Baltic Science Network and Baltic TRAM in cooperation with Science|Business, 26 November 2018, Brussels
- **European Maritime Day (EMD) 2019 'Blue entrepreneurship, innovation and investment'**, 16-17 May 2019, Lisbon
- **The 10th Annual Forum of EU Strategy for the Baltic Sea Region (EUSBSR)**, 12-13 June 2019, Gdansk
- **The 12th Baltic Sea Science Congress (BSSC) 2019**, 19-23 August 2019, Stockholm
- **SAVE THE DATE – 19 August 2018! The 7th BONUS Young Scientist Club** will convene in Stockholm at the start of the BSSC 2019. The world-renowned science communication trainer Nancy Baron of COMPASS, and the author of 'Escape from the Ivory Tower', will lead the Baltic Sea young scientist through interactive session of 'making your science matter'.

/MS