



briefing
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Outcomes of BONUS Sustainable ecosystem services call: Widespread impact on Baltic Sea management action

The BONUS call 2014: Sustainable ecosystem services (SES) of over EUR 17 million in volume, engaged 500 research staff across implementation of eight projects funded in years 2015–2018. The projects generated substantial impact on science, society, policy and management of the Baltic Sea region. The research partners from 47 institutes of all nine countries in the Baltic Sea region (Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland and Sweden as BONUS member countries, and Russia through bilateral agreements), facilitated Baltic-wide research integration both within and beyond the SES call.

■ To date, the SES projects have published 106 scientific papers, out of which 60 % as open access and nearly all of them featuring authors from at least 2 different BONUS participating states. Furthermore, over 80 suggestions have been made to shape Baltic policy and management measures. These projects have reported on nearly 300 events of stakeholder engagement on nearly 700 events where project results have been widely disseminated, including 60 popular science contributions. The projects have supported 63 doctoral studies and close to 50 PostDoc positions over the course of their implementation. The gender balance has been well aligned with the overall BONUS approach as half of all scientific staff have been women.

Broad array of performance statistics data collected from BONUS projects

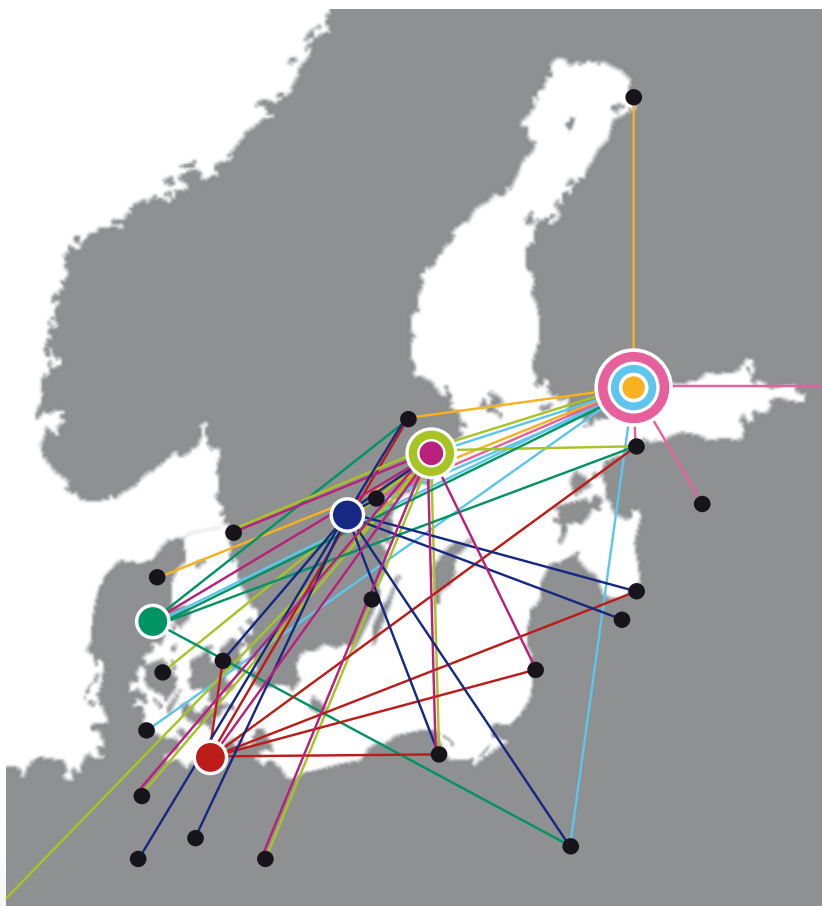
Since opening the first project call in 2012, the BONUS Secretariat has continuously collected performance statistics data as part of the projects' periodic reporting. These statistics comprise 19 categories on the projects' contributions to regulatory management, development and implementation of policy, stakeholder engagement, cross-border research integration, links to academia, and public dissemination, resulting in an extensive database: a unique information source for evaluating the impact of research carried out by the BONUS projects.

■ **Collaboration within, across and beyond project calls and EU states:** The SES projects jointly organised four workshops and symposia. In three of these also projects funded from other BONUS calls were involved. Ten SES publications and a special issue in the journal *Ambio* form further examples of joint efforts involving BONUS Viable Ecosystem, Blue Baltic and Innovation projects. At least 60 links to non-Baltic research actors from within and outside the EU were established, including researchers from Australia, Canada, China, New Zealand and the USA.

■ **Tight links to academia:** The SES projects supported 63 doctoral and nearly 50 PostDoc positions and organised

18 post graduate courses. So far, 130 peer-reviewed scientific publications have been released, of which 60 % were published as open access and more than half had authors from at least two different BONUS participating states; more than 70 publications are still to come.

■ **Broad dissemination of project results:** The SES projects engaged in nearly 700 events of dissemination of the research results to broad public, including ca. 60 interviews to media, and more than 60 popular science papers, such as three special issues in the magazine “Coastal & Marine” prepared by BONUS BALTCOAST.



The Baltic-wide network of the eight SES projects, including 47 different project partner institutes in all nine countries of the Baltic Sea region, as well as in France.

- BONUS BALTCOAST - A systems approach framework for coastal research and management in the Baltic**
Gerald Schernewski, Institute for Baltic Sea Research Warnemuende, Germany
- BONUS BALTCAPP - Wellbeing from the Baltic Sea – applications combining natural science and economics**
Kari Hyytiäinen, University of Helsinki, Finland
- BONUS BALTSPEACE - Towards sustainable governance of Baltic marine space**
Michael Gilek, Södertörn University, Sweden
- BONUS GO4BAL TIC - Coherent policies and governance of the Baltic Sea ecosystems**
Berit Hasler, Aarhus University, Denmark
- BONUS GOHERR - Integrated governance of Baltic herring and salmon stocks involving stakeholders**
Sakari Kuikka, University of Helsinki, Finland
- BONUS MIRACLE - Mediating integrated actions for sustainable ecosystem services in a changing climate**
Karin Tonderski, Linköping University, Sweden
- BONUS SHEBA - Sustainable shipping and environment of the Baltic Sea**
Jana Moldanova, IVL Swedish Environmental Research Institute, Sweden
- BONUS STORMWINDS - Strategic and operational risk management for wintertime maritime transportation system**
Pentti Kujala, Aalto University, Finland



IMPACT OF THE BONUS SES PROJECTS ON MANAGEMENT, POLICY AND SOCIETY

■ The eight BONUS SES projects contributed more than 80 times to the development and implementation of 'fit-to-purpose' regulations, policies and management practices aimed at safeguarding the sustainable use of Baltic Sea ecosystem's goods and services (Table 1) and engaged nearly 300 times with stakeholders of the region.

Table 1. Contribution of the BONUS SES projects to policy and management regulation in the Baltic Sea region and the total percental share on the more than 80 events reported by the projects (completeness of numbers relies on reporting). Detailed information obtainable from the BONUS Secretariat upon request. BS= Baltic Sea

	%	BALTICAPP	BALTCOAST	BALTSPACE	GOHERR	GO4BALTIC	MIRACLE	SHEBA	STORMWINDS
A. Contributing to EU strategies and directives for the BS	7	✓		✓		✓	✓	✓	✓
B. Providing management and policy recommendations	54	✓	✓	✓	✓	✓	✓	✓	✓
C. Updating / developing indicators and descriptors for Baltic Sea Good Environmental Status	4		✓					✓	
D. Closing the gap between science and management, and enhancing Baltic Sea ecosystem approach to management	35	✓	✓	✓	✓	✓	✓	✓	✓

For instance....

- BONUS SHEBA and STORMWINDS were chosen as flagship projects of the EU Strategy for the Baltic Sea Region (EUSBSR) Policy Areas Ship and Safe, respectively, representing a significant support to the macro-regional policy as well as progress towards the EU SBSR goals.
- Recommendations for improvement of policy and management action included e.g. "Exploring plausible Baltic Sea futures-'food for thought' for the design of marine policies" (BONUS BALTICAPP), "Challenges and possibilities for Marine Spatial Planning integration in the Baltic Sea" and "The role of tools in promoting integration" (BONUS BALTSPACE), "Policy brief on factors of success for the implementation of selected innovative governance approaches and instruments", "Actions for more effective water resource management and policies delivering multiple ecosystem service benefits -Lessons learnt for the Baltic Sea Region" and "Roadmap for improving water resource management in the Baltic Sea Region" (BONUS MIRACLE).
- One highlight of developing indicators and descriptors for the Baltic Sea Good Environmental Status was provided by the BONUS SHEBA project, which contributed, among other, to the development of a new HELCOM indicator for *Underwater noise*.
- BONUS BALTSPACE contributed to the HELCOM-VASAB Guidelines for "Implementation of ecosystem-based approach in Marine Spatial Planning in the Baltic Sea area", BONUS MIRACLE contributed to updating flood hazard and flood risk maps for the polish Reda river, and BONUS SHEBA contributed to establishing Nitrous Oxide Emission Control Area in the Baltic and North Sea and restrictions for Sulphur emissions by the International Maritime Organization. BONUS STORMWINDS gave scientific input to the HELCOM OpenRisk guidelines on response to oil spills.

KEY RESULTS OF 'BONUS CALL 2014: SUSTAINABLE ECOSYSTEM SERVICES' PROJECTS

BONUS BALTICAPP: A healthy Baltic ecosystem is not only a public priority but also an achievable goal

■ Model projections revealed that proper nutrient management via implementation of the Baltic Sea Action Plan (BSAP) can significantly improve the environmental status of the Baltic Sea. However, achieving the BSAP nutrient load targets will likely depend on speed and regional impact of climate change and societal developments.

BONUS BALTCOAST: Improving Baltic coastal management via a revised Systems Approach Framework

■ The framework represents a practice-oriented, user-friendly approach to Integrated Coastal Management that accelerates coastal problem solving and directly supports the practical implementation of EU coastal and marine policies.

BONUS BALTSPEACE: Improving integration and sustainability in Baltic Maritime Spatial Planning via an interdisciplinary analytical framework

■ The framework addresses the challenge of integrating various factors (administrative and geographic boundaries, policies, stakeholders, knowledge), while also considering sustainability in Baltic Maritime Spatial Planning, and thus is attuned to the specificities of the Baltic Sea macro-region.

BONUS GOHERR: Dioxin input to the environment, rather than fisheries management measures, must change to reduce dioxin concentrations in Baltic herring and salmon

■ Reducing the dioxin transfer through the food-chain will reduce its accumulation in herring and salmon more effectively than by size-selective fisheries measures. When fishing focusses on small herring with low concentrations of accumulated dioxin, the large dioxin-rich herring will stay in the system and are preyed upon by salmon, ingesting their dioxin.

BONUS GO4BALTIC: Cost-efficient solutions for agricultural nutrient management exist but might be challenging to implement in practice

■ There exists no one-fit-it-all-solution that would unite the demands of agriculture, society, economy and environment. For instance, increasing nutrient loads from ongoing intensification of livestock farms could be reduced if production would shift to crop, which however would also reduce social well-fare. Stakeholders directly affected by environmental pressure are, however, more inclined to adopt local policies.

BONUS MIRACLE: Stakeholder integration as key to successful regional water resource management

■ As priority areas of environmental concern and management measures differ across local areas within the Baltic Sea region, bottom-up approaches of stakeholder integration are essential for the development, acceptance and successful implementation of regional water resource management plans.

BONUS SHEBA: Impact of shipping-related emission and noise pollution of the Baltic Sea assessable via a Driver-Pressure-State-Impact-Response framework

■ Shipping-related emissions of air pollutants, water contaminants and underwater noise can now be assessed, which is important knowledge to assess the environmental impact onto the entire Baltic Sea and identify improvements and policy options.

BONUS STORMWINDS: A toolbox to increase the safety of winter-time passage in the northern Baltic Sea

■ The framework of analysing tools can improve navigation through sea ice, advance accident and subsequent oil spill prevention, as well as accident or oil spill response, in sum increasing shipping safety and thereby reducing environmental pollution.

More information: www.bonusportal.org/ses

BONUS BALTCOAST:	www.bonusportal.org/baltcoast
BONUS BALTICAPP:	www.bonusportal.org/balticapp
BONUS BALTSPEACE:	www.bonusportal.org/baltspace
BONUS GO4BALTIC:	www.bonusportal.org/go4baltic
BONUS GOHERR:	www.bonusportal.org/goherr
BONUS MIRACLE:	www.bonusportal.org/miracle
BONUS SHEBA:	www.bonusportal.org/sheba
BONUS STORMWINDS:	www.bonusportal.org/stormwinds

Publicly accessible management and information tools created or extended with SES project funding

- "Systems Approach Framework handbook for sustainable integrated coastal management" (BONUS BALTCOAST) www.safhandbook.net
- "Nutrient Loading Visualization Tool" (BONUS MIRACLE) www.bonus-miracle.eu/wp-content/uploads/2018/03/mt.html
- "Sustainable Shipping and Environment of the Baltic Sea region (BONUS SHEBA) www.sheba-project.eu/infoportal/index.php.en

This briefing is based on the BONUS EEIG compiled performance statistics summarised by Dana Hellemann.

BONUS, THE JOINT BALTIC SEA RESEARCH AND DEVELOPMENT PROGRAMME (2011–2020),

produces 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 the BONUS strategic research agenda www.bonusportal.org/sra.

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