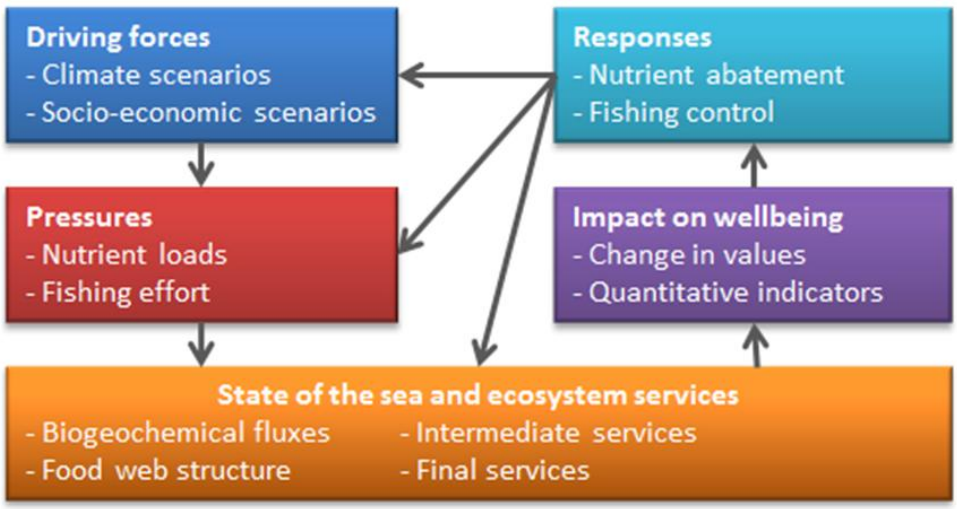
BONUS BALTICAPP: Publishable summary of the 2nd periodic report

The Baltic Sea serves as a precious source of welfare. On the other hand, the sea is also vulnerable to polluting and extractive use of the marine environment. Looking backwards some decades, the provision of many important ecosystem services (such as opportunities for recreation and food fit for consumption) have reduced due to human induced pressures, such as nutrient loads. In future, it may become even more difficult to control such pressures due to global socioeconomic developments and changing climate.

Overall goals and expected final results of BONUS BALTICAPP

The first key task of the project is to study and identify strategies for safeguarding a sustained supply of core ecosystem services that support the sea-dependent lifestyles and wellbeing in the Baltic Sea region under alternative global climate and socio-economic developments. For this end, the project studies, as described in the picture below, the causal chain of interactions between (a) the impacts of changing climate and socio-economic trends on selected anthropogenic pressures (nutrient loading and fishing effort), (b) the impacts of these pressures on biogeochemical processes and the food web structure of the sea, (c) the impacts of these natural processes on the provision of marine ecosystem services, and eventually (d) the contribution of final ecosystem services to our wellbeing.



As the second key task, the project will pilot a mobile application that enables the end-users of the Baltic Sea ecosystem services (i.e. all us) to share spatially and temporally explicit information on the state of the Baltic Sea, and simultaneously, provides policy makers, researchers and any other interested parties valuable information about the demand and hotspot areas of cultural ecosystems services.

BONUS BALTICAPP project has received funding from BONUS (Art 185), funded jointly by the EU, Innovation Fund Denmark, Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning, Academy of Finland, Projektträger Jülich, and National Centre for Research and Development, Poland

Work performed and the main results achieved during the second project year

- The second project year started with the successful arrangement of a workshop on scenarios in Helsinki on April 6-7, 2016: the BONUS Pilot Scenario Workshop. The aim of the workshop was to support the development of harmonized regional storylines of socio-ecological futures in the Baltic Sea region. The scenarios should present plausible future developments of regional pressures and drivers that affect the Baltic Sea in the context of different global climate pathways (RCPs) and socioeconomic pathways (SSPs).
- Another successful arrangement was a joint workshop organized together with HELCOM in Stockholm on 29-30 March 2017. The two-day workshop aimed at building understanding about how the ongoing ecological-economic research can support marine policy implementation and integrated management, and identify existing gaps and priorities for future social and economic research.
- As a follow-up of the BONUS Pilot Scenario Workshop, a group of volunteering participants prepared a manuscript about the extension of the global SSP narratives to the sectors that drive nutrient loading, fisheries and marine traffic in the Baltic Sea area. The manuscript is a collaborative effort between three BONUS projects and volunteering participants. This work has created the basis for further collaboration to develop quantitative projections of point source nutrient loading, diffuse nutrient pollution and atmospheric deposition of nitrogen.
- The coupled physical-biogeochemical model RCO-SCOBI have been extensively applied during the second project year to produce simulations for combinations of alternative nutrient load projections, global climate models, and the global climate scenarios (RCPs). The first results are available for analysis and use as inputs to socio-economic analysis.
- Spatio-temporal variant of the food-web model was developed during the second year and it has been applied to produce preliminary scenario simulations.
- A manuscript about the joint impacts of inorganic N and P fertilizers and Soil Test Phosphorus (STP) on crop growth was completed and submitted. This paper presents a novel model intended for use in economic analysis of crop production and externalities such as N and P leaching.
- The new survey to investigate the societal benefits of water protection under shifting baselines was successfully implemented. The final survey data include altogether 4800 respondents, with around 2000 respondents in Finland and Germany and 800 in Latvia. The response rate ranged from 15 % to 34%, depending on the country. The survey data include spatially and temporally detailed information about the recreational use of the Baltic Sea. The survey made use of the contingent behavior and choice experiment methods to estimate people's future use of the Baltic Sea and wellbeing under changing marine ecosystems.
- A spatial analysis of recreation values in 8 of the 9 riparian countries, estimating visit values per site, shows a first heat map of recreation hot spots along the Baltic Sea shoreline.
- The first test version of a mobile application was prepared during the second project year. After the completion of the coding in December 2016, the app has been under testing with volunteers from Natural Resources Institute Finland and the project participants.

For up-to-date information on BONUS BALTICAPP activities and initiatives, visit us at http://blogs.helsinki.fi/balticapp/

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