Publishable summary, BONUS BASMATI, the 2\textsuperscript{nd} periodic report

The BONUS BASMATI project has received funding from BONUS, funded jointly by the European Union and national funding institutions for the five countries involved: Innovation Fund Denmark, FORMAS Sweden, Academy of Finland, Latvian Ministry of Education and Science, and Forschungszentrum Jülich GmbH, Germany.

The overall goals of the project and expected results

The overall objective of BONUS BASMATI is to develop integrated and innovative solutions for maritime spatial planning (MSP) from the local scale to the Baltic Sea region scale. This will be realised through multi-level governance structures and interactive information technology aiming at developing an ecologically and socio-economically sound network of protected marine areas covering the Baltic Sea. Based on the results of former MSP projects, the BONUS BASMATI project sets out to analyse governance systems and their information needs regarding MSP in the Baltic Sea region in order to develop an operational, transnational model for MSP, while maintaining compliance with existing governance structures.

Work carried out during the second reporting period

BONUS BASMATI started officially 1st July 2017, and during the second year all five scientific work packages continued their work from year one. Six PhD students and three postdocs are employed by the BONUS BASMATI project thus contributing to the education of young researchers.

The work during the second project year has focused on the following topics:

- Conceptualisations and analytical perspectives on conflicts and synergies in MSP
- An analytical framework for spatial decision support tools (DSTs) to assess use-use interactions
- Implementation of the Baltic Sea Atlas database and to create, gather and share data and datasets from the BONUS BASMATI project
- Analyse how impact assessments can address sustainability in the context of MSP
- A first version of Baltic Explorer has been developed and tested at several stakeholder events
- A GIS analysis and an ecological model are used to find the best locations for mussel farming in relation to nutrient mitigation potential
- Modelling the spatial allocation of activities in the marine context and delicately balancing the need to protect biodiversity and encourage blue growth
- Two 3-days PhD courses have been arranged by Aalborg University CPH and Turku University respectively
- A short four-page Policy Brief was published in June 2019

Main results achieved since the beginning of the project

A workshop among BONUS BASMATI case study partners and invited guests was organised under the theme ‘Conflict and Synergies in MSP – Activity and Impacts’ at NordRegio in Stockholm. At the workshop experiences from the case study identification of stakeholders and their interests were discussed and external guests covering a wide range of stakeholders from the Baltic region as well as from the Mediterranean. They gave examples on how conflicts and synergies were handled in different projects in the Baltic Sea and the Mediterranean.

From a more technical side, the concept of co-location has been explored. It is a concept becoming increasingly important to include in MSP due to increasing pressures on marine space from expanding traditional and new human-based uses of the sea. Co-location involves assessing and predicting use-environment interactions as well as interactions between marine uses in close spatial proximity to avoid or minimise conflicts and increase synergies. Use-environment interactions are the foci of cumulative environmental impact assessment tools, but no clear terminology for use-use interactions exists. Thus, the research has deduced from literature an analytical framework for spatial decision support tools (DSTs) to assess use-use interactions.

MSP is a complex, data intensive process and its success depends to a large extend on the abundance and the quality of its data and the capacity for its analysis. Good data management is the fundamental pillar for MSP, and data collection, production and documentation need to be handled with great care. Thus, the consent on uniform minimum standards and requirements is the first step towards solid data management and a wide applicability of data. In a European perspective,
a major development is related to the implementation of the Directive on Establishing an Infrastructure for Spatial Information in the European Community (INSPIRE). A central part of the second-year work was the technical implementation of the Baltic Sea Atlas database and to create, gather and share data and datasets from the BONUS BASMATI project. In order to accomplish a harmonised and solid data collection, templates on how to create data and metadata were developed and sent out to all project partners. Aspects on data quality were thoughtfully conferred and complemented in the data management process throughout the time.

An analysis of impact assessments taking place in the MSP processes in involved countries, has been carried out. This has involved document analysis and interviews with key planners in Denmark, Germany, and Latvia. Probably, Sweden will be added as a complementary. Focus is on the Strategic Environmental Assessment of plans, which issues they cover, and if they include non-mandatory issues related to sustainability assessment – e.g. by complementing with socio-economic or social aspects. We have further expanded our investigation to cover frameworks for sustainability assessments, and have arrived at a framework that combines DPSIR with ecosystem services, which can accommodate all three dimensions of a sustainability assessment: the strategicness (using alternatives or forward-looking studies, such as scenarios for developing the MSP), the comprehensiveness (for integrating sustainability dimensions) and the integratedness (for using methods to integrate assessments).

One important aim of BONUS BASMATI is to develop the Baltic Explorer, which will be a spatial decision support system (SDSS) for MSP in the Baltic Sea region in order to facilitate access to information. In addition to data access, the system is designed to facilitate collaborative planning by providing high level of interactivity and support for use of large touch screen devices in addition to normal desktop user interface within a web browser. To guarantee the potential future use of the system, the Baltic Explorer will be published as open source before the end of the BONUS BASMATI project. A decision was made, that a new concept for collaborative functionalities was needed, and these were added to the Baltic Explorer toolset. The collaborative application contains basic collaborative functionalities that would allow users to show data and draw and edit new features on maps. The application is aimed at planners, who can use it in various ways when collaborating with stakeholders, including for gathering knowledge from stakeholders, discussing about data and plans, and informing about decisions that are being made. Baltic Explorer has been tested in cooperation with stakeholders at workshops and the results and feedback are used for improvement of the solutions in order to enhance its practical use.

The ecosystem services (ES) approach can be used in MSP as part of the ecosystem-based management to help fulfil the objectives of MSP set out in the MSP Directive, and the Habitats Directive and the Water Framework Directive upon which MSP is built. Integrating the knowledge gained from ES assessments in planning results in well-informed spatial allocation of activities in the marine context – and delicately balances blue growth and the need for protecting biodiversity.

The mapping of ES often means estimating the potential of a given ecosystem to perform the given service. In the meanwhile, as we are developing the concepts and approaches to help us understand and protect ecosystems, they are constantly changing. During the second year of the project in the Latvian case study we worked on how to consider actual levels of ecosystem services provided by coastal habitats and estimate implications caused by environmental changes. The results clearly demonstrate a discrepancy between the ES levels provided by coastal habitats based on purely conceptual estimates - and localised, data driven assessments. Data analysed for the Latvian coastal waters suggests that the level of ES provision is far below its potential, largely due to the degraded state of habitats.

In the Danish-German aquaculture case study, a GIS suitability analysis was applied to identify potentially suitable areas for mussel farming in the south-western Baltic Sea. Three potential sites were selected for further investigation. For this purpose, a local 3D mussel farm scale model was developed with a high horizontal resolution of 10-50m, 1 metre vertical intervals and covering an area of 1.5 km x 1.5 km. A GIS analysis and the ecological model are used to find the best locations for mussel farming in relation to nutrient mitigation potential and will be included in the MSP mapping of the case study area. The model results show the potential harvest from each site, the amount of nitrogen and phosphorus that could be removed, and the potential impacts on water transparency.

A Pan-Baltic case study has studied stakeholder involvement practises by focusing on two transnational sea-use sectors: maritime transport and marine tourism. Planners and other MSP experts around the Baltic Sea has been interviewed to investigate how stakeholder participation has been conducted in practical terms. While all interested stakeholders are offered a possibility to participate, the level of interest towards the planning process varies among the stakeholder groups. For example, groups with strong local interest might lack motivation in participating in national planning processes. Cross-border aspects have a limited role in stakeholder integration in national planning processes.

During the second project year, the partners have continued its active role in networking and disseminating results within the field of maritime spatial planning as well as related fields like public governance, ecosystem services, data and decision support systems. Four scientific publications have been published and several are currently under reviewing. In addition a first policy brief has been published:
