

# Development of ecosystem-based maritime spatial planning decision support system for the marine protected areas designation process

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The Baltic Sea is one of the most human-influenced sea areas in the world and is in need for ecosystem-based maritime spatial planning (MSP). There are some separate examples in the Baltic Sea, but common platform for maritime spatial planning would facilitate the work with local stakeholders and cross boarder collaboration. In the sea everything is connected, it is a scene of a wide range of activities from natural processes to human activities such as wind farms, shipping, fishery, aquaculture and recreation. BONUS BASMATI project will develop the platform for an innovative decision support system that can facilitate between different actors and stakeholders in MSP and different stages of the planning process. The goal for this project is to ensure broad and easy access to data and information through an innovative web-based multi-channel decision support system and advanced tools for impact assessment and stakeholder involvement in the decision making process. This decision support system will be developed trough several case studies. The case studies were selected to represent marine spatial planning issues and will identify, collect, produce and supply data and maps concerning marine ecosystem services and human maritime activities.



Figure 1: Elements of BONUS BASMATI decision support system for ecosystem-based maritime spatial planning.

This research focuses on the case study for creation of tools facilitating the identification of new marine protected areas (MPAs) as well as the justification of the allocation of existing ones. MPAs will be based on most valuable benthic habitats. During the identification process of most valuable habitats are defined quality criteria for sea-bottom habitats which determine the territory with greatest ecological

and socioeconomic value. Research area covers the south-eastern Baltic Sea area - Latvian territorial and exclusive economic zone waters.

MPAs are an important management instrument to achieve marine biodiversity conservation targets however establishment of these areas can be controversial as they can impose limitations to human activities in the sea and can have associated negative impacts on economic sectors. MPAs planning process should ensure the balance between the ecological conservation and socioeconomic requirements. Biological principles can be used as primary design criteria, but there should be included relevant socioeconomic aspects to ensure community support and meeting socioeconomic needs.

Decision support system will be linked with existing data systems of ICES, HELCOM data systems and EMODnet. Through the development of this system will be created or acquired data on ecosystem services and human uses to find the most suitable use for marine space. The goal of current study is to support the MPAs designation process considering not only conservation goals, but also including social and economic issues. This tool will evaluate suitable and efficient locations for MPAs using spatial multi-criteria analysis of alternative sea use options and utilizing the Analytical Hierarchy Process. Developed platform will present information as interactive maps, graphics and tables that will help involve interaction with stakeholders.

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