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Systematic Map
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Baltic Sea ecosystem services are not well understood and require further research

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Photo: Edith Chenault

The Baltic Sea Action Plan is currently under review and policymakers need evidence of the health and well-being benefits or costs to people using Baltic Sea ecosystem services. This systematic map highlights a lack of evidence on this subject. The map shows more work is needed to identify the relationships between these aspects to ensure plans to protect the Baltic Sea ecosystem adequately consider the health and well-being of those connected to it.

Why is this Evidence Synthesis Needed?

The unique Baltic Sea marine and coastal environment is under pressure from intensification and diversification of anthropogenic uses. Policymakers need robust scientific evidence to make good decisions when managing the Baltic Sea. Information demonstrating the effects that Baltic Sea ecosystem services have on human health and well-being is scarce and, where it exists, can be difficult to find because it is dispersed across disciplines.

Ecosystem services are the benefits that nature provides to human beings. The concept aids understanding of the relationship between the environment and human health and well-being. Baltic Sea ecosystems, such as the sea-meadows, clean the water and absorb CO₂, as well as providing food, medicinal products and a nursery for fish. However, the ecosystems can also harbour toxins and harmful bacteria. Many benefits and costs (and their impacts on human health and well-being) have been examined and this present work constitutes a systematic map of the evidence.

This systematic map examined these positive and negative impacts of ecosystem services on human health and well-being outcomes (e.g., livelihood, health, education). The aims were to create a better understanding of the potential threats and benefits of Baltic Sea management actions, on the health and well-being of human populations and present these findings to policy advisors.

This Collaboration for Environmental Evidence systematic map collated existing evidence on how ecosystem services and impact costs on human health and well-being to understand the threats and benefits from Baltic Sea management and inform decision-making.

Main Findings

What studies are included?

This map includes 67 studies explicitly mentioning ecosystem services and covering multiple aspects of human health and/or well-being related to the Baltic Sea environment. However, the studies included often lacked depth. The number of studies linking these topics has grown, but a lack of interdisciplinary research means no articles were recovered from medical or public health journals. Areas covered by individual studies range from local to national coastlines and sea regions, to the whole of the Baltic Sea. The highest number of studies took place in Sweden.

What evidence exists on the impacts of ecosystem services on human health and well-being?

Cultural ecosystem services are covered slightly more often than provisioning and regulating services. Studies covering provisioning services mostly mention food, while other provisioning services (for example biofuels) are not widely studied. Regulating ecosystem services research focuses mainly on biological regulation, like eutrophication and wetland reed systems. Cultural ecosystem services studies tend to focus on recreation and tourism. Some ecosystem services have positive health and well-being effects, but the perceived benefits are low. For example, reeds stabilise shorelines and filter pollutants, however, many tourists dislike them

Economic benefits (particularly from tourism and fishing), health, and subjective well-being were the most commonly studied health and well-being topics. The need for education of the public and policymakers was often highlighted due to a lack of knowledge of marine ecosystems and mitigation measures. This hampers conservation of and planning for the Baltic Sea environment. There was a research gap in relation to freedom and choice in decision-making, which includes the choices needed to address beach erosion. An important aspect due to the impact of climate change on coastal communities. Despite the identification of zoonoses (infectious diseases transmitted between species from animals to humans) in the Baltic Sea in health literature, only one study linked them explicitly to ecosystem services.

What are the Implications of the Review Findings?

The main policies governing the Baltic Sea environment, the Marine Strategy Framework Directive (MSFD) and the Baltic Sea Action Plan (BSAP) that aimed to achieve Good Environmental Status (GES) by 2020 are currently under review. The ecosystem services concept was incorporated into the MSFD. However, a lack of scientific evidence of linkages between health/well-being and marine ecosystem services hampers the incorporation of these factors into marine management. For example, the presence of persistent organic pollutants in food is not linked to how the compounds that originate from natural and anthropogenic sources are circulated and distributed throughout the ecosystem.

Human populations need to be considered, as they influence ecosystem service supply and play a role in the feedback loops impacting the ecosystems. Humans are often mentioned as a source of harm in the literature, but they are also part of the system impacted. Policy advisors need relevant information and a better understanding of the connections between the Baltic Sea ecosystem services and health/well-being for the development of action plans. Linking these concepts provides an impetus to solve these complex issues. Enhancing the science-policy-society interaction is crucial to advance the knowledge base of the stakeholders to integrate ecosystem services and their connection to human health and well-being into marine management.

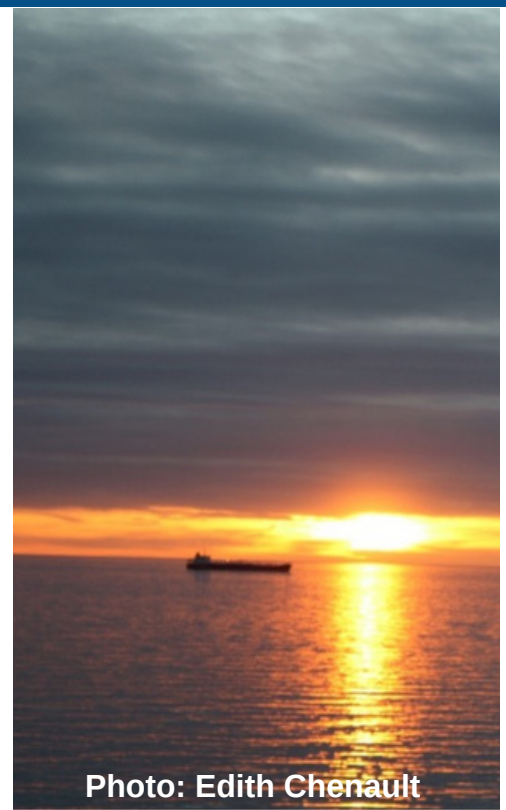


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Synthesis Time Frame

The review authors searched for studies published up to April 2020. This CEE Systematic Map was published in November 2021.

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