

Knowledge-based Sustainable Management for Europe's Seas

Reporting

Project Information

KNOWSEAS

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Periodic Report Summary - KNOWSEAS (Knowledge-based Sustainable Management for Europe's Seas)

Multiple human uses of Europe's four regional seas (Baltic, Black, Mediterranean and North Sea/North East Atlantic) have caused severe environmental degradation of these resources. Changing global patterns in human activities and resource use are resulting in increasing levels of environmental pressures on these seas. Measures to manage the marine environment within the European context have traditionally taken a sectoral approach, which has not provided adequate protection. The Marine Strategy Framework Directive (MSFD), the environmental pillar of the European Integrated Maritime Policy, mandates the implementation of an Ecosystem Approach (EA), which may be defined as a resource planning and management approach that integrates the connections between land, air and water and all living things, including people, their activities and institutions.

The definition of the ecosystem approach (EA) adopted by the KNOWSEAS project is: "A resource planning and management approach that recognizes the connections between land, air and water and all living things, including people, their activities and institutions." Input and feedback on the definition was

solicited from the Project Advisory Board and other stakeholders throughout the course of the project, which ensured the relevance of the definition to the broader audience. The validity and utility of the definition was proven through application, and a policy brief on the ecosystem approach has been released ahead of schedule to meet the demand of practical implementation of the MSFD.

Implementation of an ecosystem approach requires an understanding of people's perceptions of the marine environment, and examining human values toward the environment is key to integrating social and ecological aspects of the oceans. In the absence of quantitative information on these values, a survey of public attitudes towards Europe's seas was undertaken as an additional deliverable of the KNOWSEAS project. The main findings have been published as a policy brief.

Having established in the first year of the project the analytical tools to be applied, implementation of the modelling framework within the case study WPs was a major focus of the following two years. Ecopath with Ecosim is being applied in each of Europe's regional seas in order to examine the effects of extreme events on the resilience of Europe's seas. Bayesian Belief Network (BBN) modelling is another

cornerstone of the KNOWSEAS analysis. BBNs have been used for a cost benefit analysis of eutrophication reduction strategies in the Baltic. The BBN model integrates ecological and economic models using conditional probabilities. Integrated Ecosystem Assessment (IEA) has been used for regional seas comparison. A harmonised approach to IEA and detection of regime shifts has been used in the North, Baltic and the Adriatic Seas; the research indicates that the forcing of regime shifts differs between systems. The study has revealed that in some cases the major drivers of regime shift are climate oscillations or water temperature, factors beyond the control of targeted marine management actions. Many of the results from modelling activities are in the final stages of preparation for publication.

Economic analysis is key to the success of the EA since it allows quantification of the benefits provided by the ecosystem and the costs of environmental degradation. An aggregate assessment of the costs and benefits in Europe's regional seas has been completed focusing on fishing transport, energy aquaculture, water quality and recreation. A series of guidance notes has also been produced on the theory and application of values to case studies. An updated version of the DPSIR, renamed the DPSWR, that elucidates the cost benefit trade-offs of environmental decision making has been published.

Effective implementation of an ecosystem approach is dependent on the governance structures in place, and in European governance these structures differ from location to location. Understanding the structures of institutional bodies, regimes and organisations can facilitate the effective implementation of policy. KNOWSEAS social scientists have drafted governance profiles of major regional ocean governance organisations, examining their institutional context, structure, goals, origin and understanding of the EA. Sub-regional case studies have also been selected. These case studies help to identify conflicts and potential alliances between stakeholders. A new method for mapping of governance called "Rapid Policy Network Mapping" has been developed and is being applied. The governance group has also been instrumental in assessing and establishing international best practices in Marine Spatial Planning.

Practical tools for implementation of the MSFD and the EA have been developed including GISeas, a distributed Spatial Data Infrastructure. Spatial multi-criteria analysis has been developed as a tool to support conflict resolution and Marine Spatial Planning. A tool to enhance stakeholder capacity is being

support conflict resolution and marine Spatial Planning. A tool to enhance stakeholder capacity is being developed that integrates many of the findings of the project for rapid communication with policy makers.

The success of the KNOWSEAS project depends on the implementation and utility of the information it provides, and the tools, models and templates developed by the scientists require testing at the regional level. KNOWSEAS has tested and applied its products using different combinations of tools for case studies in each regional sea, and is about to enter its final dissemination phase.

Related documents

 [134654941-8_en.zip](#)

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