labex MER

axis **8**

"Marine social-ecological system management"

SCIENTIFIC CONTEXT

Marine and coastal ecosystems are subjected to a growing social demand for improved knowledge, new uses and more integrated management. This creates new expectations from marine sciences which require interdisciplinary or trans-disciplinary approaches. System thinking, ecosystem services assessment, ecosystem-based management, resilience and adaptation are all examples of emerging concepts which may help to build new epistemological and analytical framings for more integrated marine science. Axis 8 supports interdisciplinary or trans-disciplinary research projects dealing with the management of marine social-ecological systems from both social and natural science perspectives.

Keywords
- Social-ecological systems
- Management
- Resilience
- Adaptation
- Trans-disciplinary research
- Integrated approaches

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ROADMAP

The research program of Axis 8 is based on the following 3 themes:
- Observation, assessment and monitoring of marine ecosystems and delivered services
- Integrated approaches in support of ecosystem-based management
- Change in ecosystems and adaptation

The research will aim to produce new insights for inter- or transdisciplinary work, innovative and integrative models to support analysis and decisions, and strategic approaches for facilitating the use of scientific advice for operational purposes. When possible, the research will incorporate results from public participation research programs and adopt the perspective of post-normal science.

- Theme 1 develops new approaches and frameworks for the integrated assessment of marine ecosystems. Ocean observation can no longer be seen as simply acquiring physical and biological data: it should include the human dimension. Ecological features cannot be separated from the influence of human activities. The large number of parameters requires extending marine ecosystem observation to other people than only scientists. This creates opportunities for developing public participation in scientific research and creating new infrastructures for data collection and management. The ecosystem services approach is one possible interdisciplinary framework for assessing social-ecological systems. This approach, which was proposed by ecologists and economists interested in ecosystem preservation, has to face new challenges such as including insights from a wide range of disciplines, and demonstrating its usefulness for management.

- Theme 2 proposes research oriented toward ecosystem based management (EBM). EBM is an integrated approach of management, whose aim is to maintain an ecosystem in a sustainable, healthy, productive and resilient condition so that it can provide the services humans want and need. EBM requires trans-disciplinary approaches that encompass both the natural aspect of ecosystems and the social aspects of drivers, impacts and regulation. Marine science is expected to provide insights into the integration of the ecosystem perspective within sectorial policies dealing with fisheries, aquaculture or the exploitation of deep-sea resources. The purpose of Axis 8 is to develop and support research approaches which systematically associate well-balanced social and natural sciences for tackling EBM challenges and issues.

- Theme 3 examines the changes occurring in marine and coastal areas, which raise the issues of resilience and adaptive management. These changes were addressed within the frame of Integrated Coastal Zone Management for several decades. More recently the European Union launched the Integrated Maritime Policy (IMP). IMP assumes that it is possible to draw higher returns from the sea with less impact on the environment by coordinating marine policies. New uses, as well as new regulation and governance devices are expected to emerge, which will require scientific innovation for helping society to face the challenges raised by natural hazards or blue economy expectations.

EXPECTED RESULTS

Axe 8 will increase opportunities for collaborative work that cross disciplinary boundaries. The opportunity for researchers and students to work in a trans-disciplinary setting will benefit them directly by improving their understanding of their own disciplinary work. This will result in various outcomes, such as better-focused research questions or more articulate motivations for the disciplinary work. In a medium term perspective, axis 8 is expected to contribute to more rapid, long-lasting and sustainable innovative solutions to pressing marine management issues.
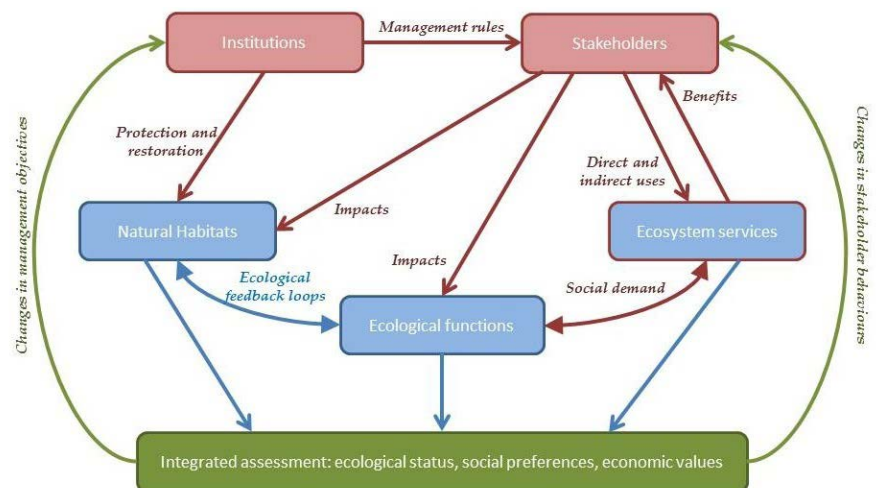
A conceptual view of a social-ecological system subject to adaptive management for the sustainable delivery of services and benefits