

Focus areas to support the science basis needed to implement the Marine Strategy Framework Directive

As one of its outcomes, the Council Steering Group on the Marine Strategy Framework Directive (CSGMSFD) suggested relevant ICES outputs and recommendations be tailored to the objectives of the MSFD, with the aim to effectively support member states with implementation. To this end the Secretariat carried out an analysis to identify issues that could be further addressed by the Expert Groups (EG).

This work will also feed into the work carried out by the Regional Seas Commissions, who are working as coordination platforms for the implementation of the MSFD, and will enable cooperation and comparability between ecoregions.

Development of approaches for MSFD implementation

1 Background and Approach

Looking forward to the implementation and further development of the EU MSFD and other environmental assessment and management approaches, it is important to highlight that ICES is the key organisation for the provision of tools, advice and strategy that cross national boundaries and cover eco-regions. As documented in the Council Steering Group on MSFD report in March 2012, the ICES document to marine directors from June 2012 ([ICES scientific and advisory services of relevance to the EU Marine Strategy Framework Directive](#)), and the document on Integration of fisheries surveys and environmental monitoring (CM 2012 Del-04.1); ICES finds itself in a unique position of being able to develop many of the tools, thinking and networks to make the MSFD effective and forward looking.

This document takes the discussion further by assessing the science needs of the ICES community to support effective management of our oceans. It considers what ICES needs to do to facilitate an effective provision of science and advice from and for its members for the effective stewardship of the European seas. It looks forward to the community's needs by 2018, and considers that any future effective European marine policy must further integrate the assessment across descriptors and prioritize measures to address human impacts.

Based on work, e.g. carried out by WGECO considering the utility and application of indicators for management of the marine environment, ICES must facilitate the further development of relevant indicators, their operationalization, setting of limits and target points for management. It must also work with its members and research funders to ensure that supporting science, effective tools and approaches for marine management are made available, such as spatial planning and scenario simulation for trade-offs.

2 Scope for further development

A review of the joint community approach suggests the following potential focus areas:

Management Objectives

The understanding of the importance of scoping for management objectives for marine health should be at the centre. Indicators are at the science/policy interface. Any prioritization of objectives and management measures to address pressures must be carried out following a dialogue. The science to develop indicators must be based on transparent scoping exercises with policy developers and stakeholders. This should be further strengthened in future work.

Indicators

It is necessary to look into and clarify the purpose of indicators and thresholds in management. To move forward past conceptual thinking about indicators, practical methods to operationalize indicators should be emphasized and spread throughout the ICES community. Approaches must be developed that integrate

across descriptors and demonstrate clear links between indicators and management action.

Tool Box

There is a need for a cohesive approach to develop and deliver a tool box for assessing marine health in the ICES community. It is envisaged that tools will have to interface map and process information. Attention should be given to build upon the initial exercises to develop tools to assess cumulative impacts and to make these operational. In this way ICES can contribute process information (the functional elements in time and space) to the development of tools and help to improve existing tools. Cumulative impacts must be considered within and across sectors, e.g. making use of maritime spatial planning tools.

Furthermore ICES should use its skills and expertise in fisheries management strategy evaluations, to develop new tools for risk assessment or integrated management strategy evaluations for marine health.

Components needed to develop tools (models, data, and new observations).

Tools to develop and test indicators need strong modelling and improved data integration. New observations and strategies for marine monitoring are also central to the development of these tools.

A suite of modelling approaches is required. To be able to give answers in a short-term perspective suites of simple, moderate and complex models must be developed to address the various challenges. Importantly, ecosystem models which incorporate human behaviour, human impact, as well as economic and social drivers will be required.

Furthermore, it will be important to bring together the communities considering habitat and spatial issues and those working on ecosystem model development. Integration of spatial planning and an understanding of processes are both key to understanding the operation and effectiveness of indicators, as well as to the functionality of any tool. The two communities must be encouraged to interact and develop concepts together. Cooperation in this field should *inter alia* lead to consideration of space, resolution, connectivity, and habitat.

Collection and storing of data is important to inform analysis and thinking. Additionally, the provision of data to researchers must be simple, integrated and timely. Data from different sources and across sectors must be interoperable. Despite great strides forward, much of the data held by our community is still sectorial with varying degrees of accessibility and issues of data ownership and data access rights. This is despite much of the data collection being funded by the European public purse.

Likewise much of our ocean observing and monitoring appears to be focused on very specific research targets with little consideration of the other needs of society. ICES needs to consider the current strategy for ocean observing and integration across surveys and platforms ([See CM Del-04.1](#)).

3 A way forward

To deliver an effective approach for future considerations about marine health e.g. Good Environmental Status (GES), ICES through the leadership of the Council steering group should deal with the following areas:

1. For ecosystem assessments:
 - i. Focus on the role and operation of indicators
 - ii. Focus on the roles of habitats in ecosystem functions
 - iii. Develop methods for assessing cumulative impacts
 - iv. Operationalize methods for ecosystem assessments using indicators and habitats
2. For integrated monitoring:
 - v. Adapt current monitoring methods towards integrated monitoring of ecosystems
 - vi. Ensure that data collection and processing be coordinated, accessible and interoperable
 - vii. Facilitate the provision of harmonized data, suite of models and mapping tools as inputs to ecosystem assessments
3. For ecosystem management:
 - viii. Develop end-to-end modelling platforms to evaluate management scenarios of regional seas including trade-offs
 - ix. Develop tools for spatial designs of human activities and conservation needs
 - x. Facilitate adaptive and participatory approaches