

MareFrame

4.1 Final publishable summary report

An executive summary (not exceeding 1 page).

The MareFrame project was initiated in order to facilitate increased implementation of Ecosystem-based Approach to Fisheries Management (EAFM) in Europe. The importance of such an approach has been highlighted by many experts in the field of fisheries management, i.e. moving from single-species to multispecies ecosystem approaches when considering management decisions and potential socio-economic impacts. To reach this goal, MareFrame developed a new **Decision Support Framework (DSF)** in collaboration with stakeholders. The DSF consists of:

1. **Co-creation process**
 2. **Ecosystem models**
 3. **Decision Support Tools**
 4. **Educational resources**
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- The diagram shows four numbered items listed on the left. To the right of these items is a large blue bracket that encompasses all four items. To the right of the bracket, the letters 'DSF' are written in a green, sans-serif font.

The processes (1-4) that form the new DSF were designed to assist with the selection of preferred scenarios, understand the underlying preferences and identify trade-offs. The DSF highlights alternative management actions and its consequences. A DSF roadmap, with recommendations on how to implement the EAFM within the framework of the Common Fisheries Policy (CFP), Marine Strategy Framework Directive (MSFD) and Habitat Directive (HD) was constructed. Exploitation of the new DSF is already ongoing and has been summarised in ICES and GFCM roadmaps.

The **co-creation process** was designed and implemented with stakeholders. It helped to address changes, broadened knowledge, supported learning, and improved scientific acceptability (credibility), policy relevance (salience), and social robustness (legitimacy). It is iterative and linked to on-going international programmes as in e.g. ICES, GFCM, STECF and JRC. If successfully implemented, the co-creation process can transform the culture of science.

Ecosystem Models (EMs) were developed and extended. Ten EMs were tested and compared within and across eight ecosystems. The EMs allowed scientists and regional stakeholders to investigate the effects of fishing and climate change scenarios on key ecosystem processes. Outputs include indicators of Good Environmental Status (GES), other relevant indicators and time series data. The project leaves behind fully operational ecosystem models ready to implement an EAFM.

Decision Support Tools (DST) include new tools and technologies that enables comparisons between relevant "what-if?" scenarios and trade-offs, where stakeholders and decision makers can evaluate likely effects of management decisions on biological-, ecological-, social- and economic indicators. DSTs in the DSF include e.g. visualisation tools, dashboards, infographics, the SeafoodSim online training game and the MareFrame DataBase, all generic, open source and available at the project website.

Educational resources include Webinars, advanced training schools, workshops and interactive learning tools for education and training of the users of the DSTs. MareFrame has developed educational materials relevant for EAFM that are available on Tutor-Web. MareFrame has supervised number of PhD and MSc students in relation to the project. A daughter project of MareFrame, MSCA-ETN SAF21, is educating network of PhD students in social sciences and fisheries management. MareFrame has cooperated with other national and international research projects, which has been mutually beneficial regarding scientific and technological development.

MareFrame successfully disseminated the project outputs and the project main dissemination material was assembled in a MareFrame Portfolio that has been published at the project website. A special issue of the Fisheries Research journal will be dedicated to peer-reviewed publications on MareFrame results, titled: "Advancing Ecosystem Based Fisheries Management".

MareFrame knowhow:

- Knowledge on how to implement EAFM in Europe
- Evidence-based policy brief on how to improve EAFM advice within the CFP and MSFD
- How to involve stakeholders in the decision processes through co-creation

The co-creative processes and training actions with stakeholders have been extremely successful in MareFrame and will increase the likelihood of the effective implementation of an EAFM in Europe, especially since stakeholder input and acceptance is a key to changes in the marine sector. Co-creation has led to some of MareFrame's favourite, and hopefully legendary, quotes:

- Co-creation is OK
- Turn Stakeholders into Takeholders

I collaborate with fishermen because it gives me new Knowledge