MareFrame

Tools and processes to support scenario based planning in Ecosystem Based Fisheries Management: Lessons from seven European case studies

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Overview

- The Decision Support Framework
- Strength, weaknesses, reception, lessons
- Further development and use

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Why decision support for EBFM?

- Present relevant information and avoid overload

- Present and analyze tradeoffs and balance concerns

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Decision Support Framework

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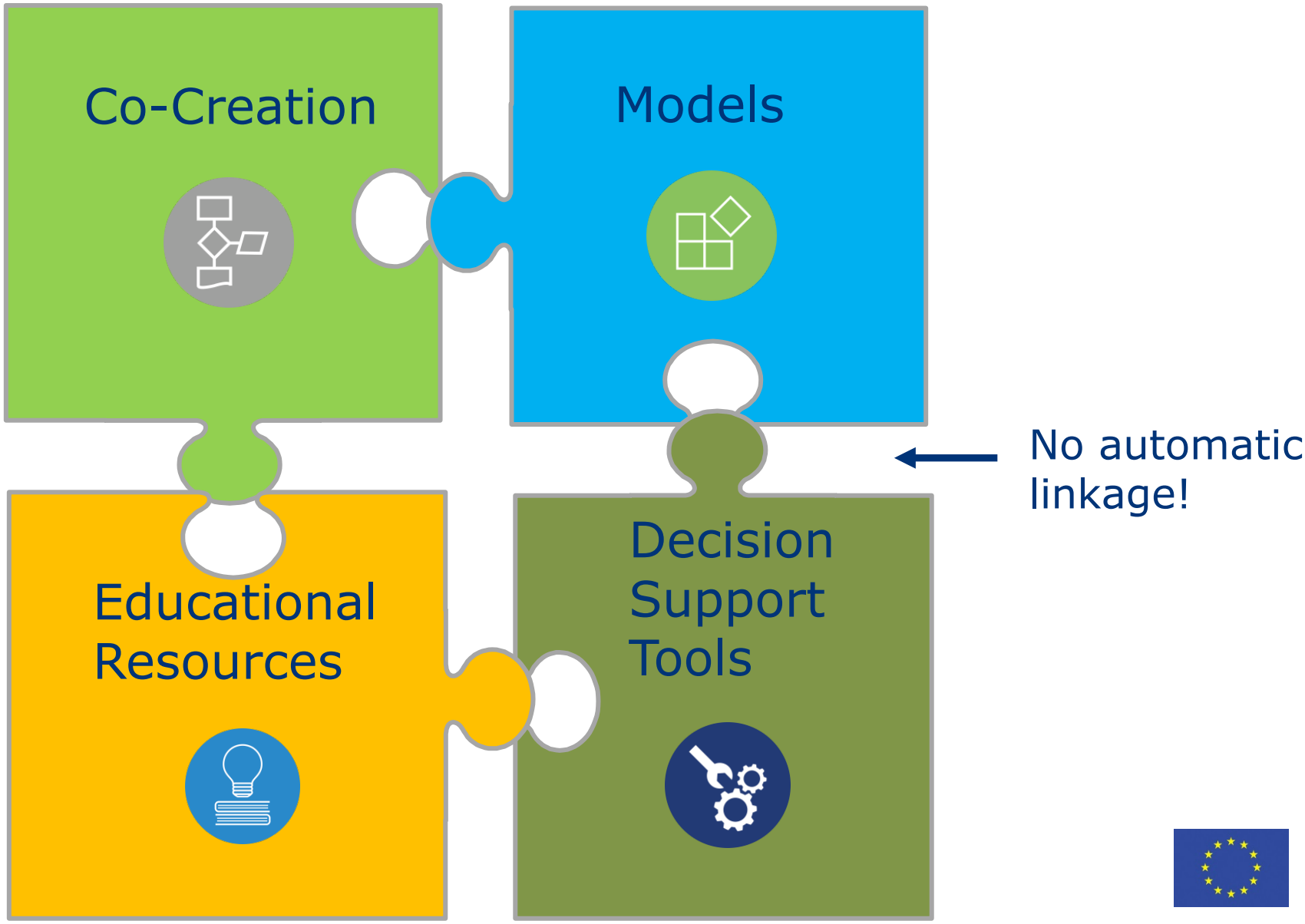
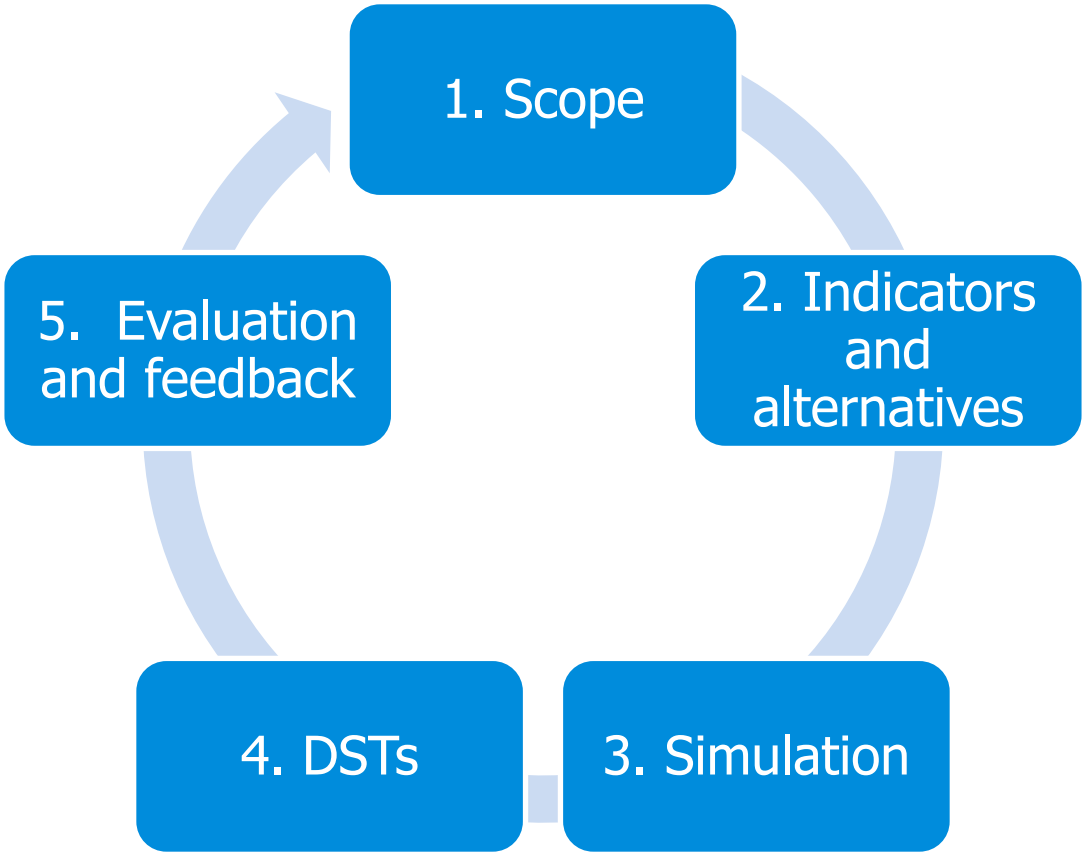


Development and use of the DSF



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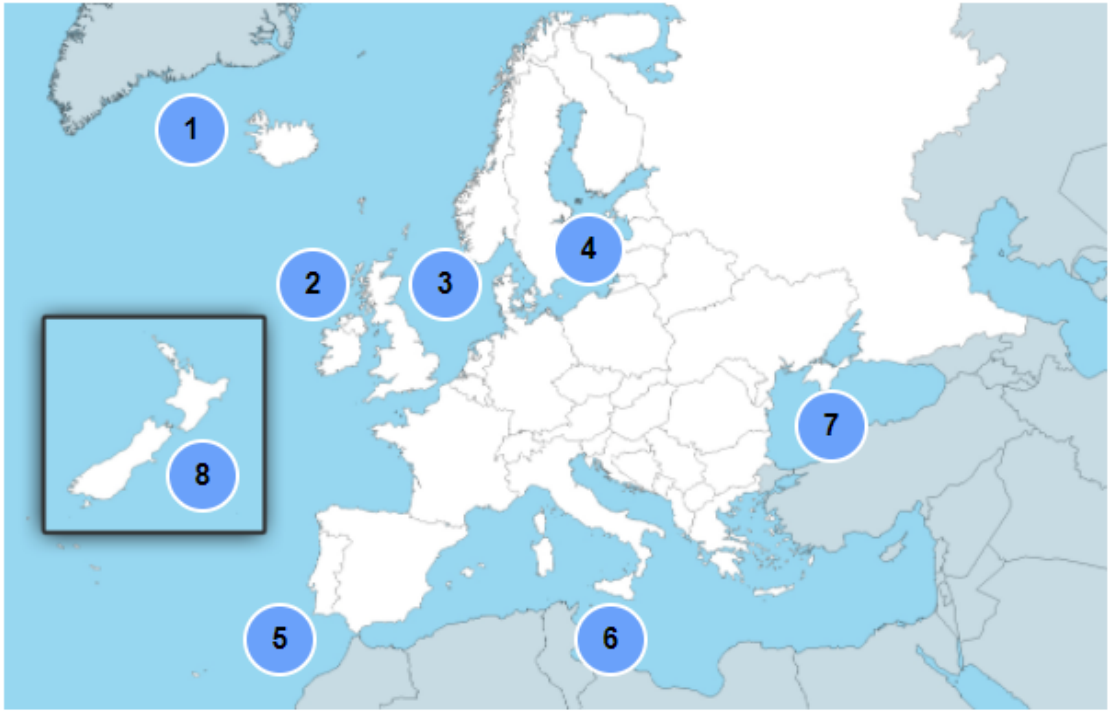
MareFrame Decision Support Framework

The MareFrame Decision Support Framework is a pragmatic planning process for moving towards an Ecosystem Approach to Fisheries Management. Please select from the case studies below to review the available information and decision support tools.



1. Iceland
2. West Coast of Scotland
3. North Sea
4. Baltic Sea
5. Gulf of Cádiz
6. Strait of Sicily
7. Black Sea
8. Chatham Rise (New Zealand)

http://mareframe.mapix.com/

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MareFrame Decision Support Framework

The MareFrame Decision Support Framework is a pragmatic planning process for moving towards an Ecosystem Approach to Fisheries Management. Click on the map of Europe to the left to see all case studies. Please review the case study and select the Multi-Criteria Analysis or Bayesian Belief Network below.

Case Study: West Coast of Scotland

Objective: To achieve an advantageous and economically and sustainable fisheries through a multispecies approach that addresses environmental concerns.

Management Problem

The main problem that has identified by stakeholders and researchers is that the spawning stock biomass of cod and whiting have declined to the lowest levels seen in available data series. This is in spite of fisheries management measures aiming to achieve recovery. Such measures include a cod recovery plan (2009) and a zero TAC for cod (except for a 1.5% bycatch limit) that has been in place since 2012. The bycatch limit applies only to landed fish and does not constrain discards of cod. The discards mainly stem from mixed demersal trawl fisheries and for Norway lobster, respectively. In addition, it has been suggested that seal predation on small cod individuals could impair recovery of the cod stock (Cook et. al., 2015). From 2016, the main commercial species will be subjected to an "obligation to land all catches", which may involve severe negative consequences for the industry (at least in in the short term) due to the so-called "choke species problem".

Management Setting:

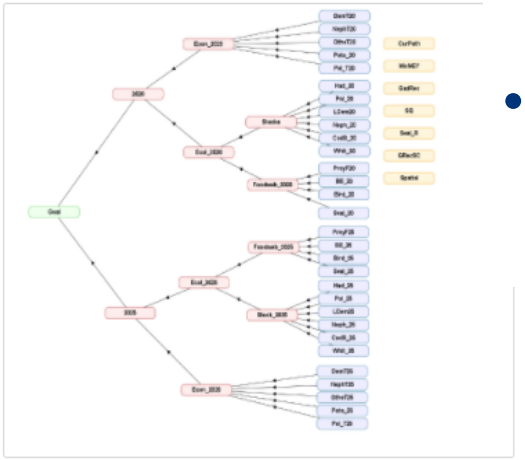
The governance of marine resources and the environment in the VIa area is complex and involves institutional arrangements and agencies at both national (UK and Scotland) and international (EU) levels. The fisheries are managed under the Common Fisheries Policy while environmental aspects are mainly managed under the Marine Strategy Framework Directive. UK and Scotland are responsible for implementing fisheries and environmental management measures in the near shore areas. The fisheries in VIa are dominated by Scotland although other countries such (mainly France and Ireland) also are participating.

Main objectives and criteria:

A management proposal for the case study will be evaluated in relation to a set of objectives and criteria (see the list below). Some criteria are derived from the main polices that apply to the case study (the CFP and the MSFD). For instance, the CFP requires that the spawning stock biomass (SSB) of any commercial fish stock should be at or above the level consistent with a Maximum Sustainable Yield (MSY) no later than the year 2020.

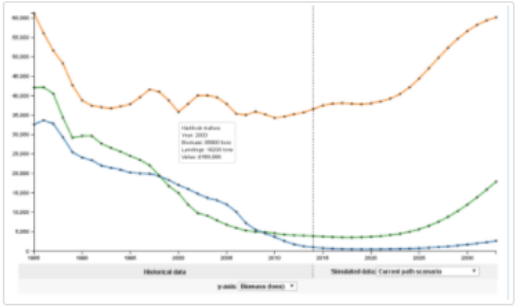
Objectives for the mangement plan proposal	Candidate operational objectives and indicators
Recovery of the cod stock	Cod SSB ≥ 22.000 t (Bpa) by the end of the planning period
Recovery of the whiting stock	Whiting SSB ≥ = 22 000 t (Bpa) by the end of planning period
Ensure strong economic performance of demersal fisheries	An optimum combination of Multispecies Maximum Economic Yields of key demersal species is suggested An optimum balance between shrimp and whitefish is suggested
Healthy commercial fish stocks	All commercial stocks ≥ Blim by end of planning period All commercial stocks ≤ Flim by end of planning period At least 75% commercial stocks ≥ SBB MSY or:

Multi-Criteria Analysis



MCA with set priorities
MCA without set priorities
MCA with previous model outcomes and set priorities

Scenario Model output



Management Scenarios

Generic management alternatives were defined based on meetings with stakeholders. The alternatives (MCA short names in parenthesis), their rationale, model approach and limitations are described. NB! Two scenarios (marked with *) involve seal culling and were only included to assess the effect of seal predation on the recovery of cod and whiting for research purposes, they are not regarded as

- Case study description
- Decision support tools:
- Structured evaluation of alternatives
- Interactive scenario tools

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DST toolbox

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DST	Scen. Vis.	MCA	BBN	Toy M	Green M
Baltic	✓		✓	-	-
North Sea	(Green M)	-	-	-	✓
Iceland	✓	✓	-	-	-
WcoS	✓	✓	-	-	-
SWW	(Toy M)	✓	-	✓	-
Med.	✓	✓	-	-	-
Black S.	✓	-	(✓)	-	-

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Strenghts

- Working concept for scenario planning: co-creation, models & DSTs
- Problem focus
- User access to model outputs
- Structured evaluation
- Generic approaches

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Limitations

- Scoping phase only
- Uncertainty
- Social and economic
- Co-creation: Representational limitations & who are end users?

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- DSTs need to be really user-friendly
- Difficult to assign decision weights

https://www.facebook.com/MareFrame/photos/pcb.1870742996471707/1870741486471858/?type=3&theater

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Lessons

- DSTs: Perceived as revelant but require time, introduction and guidance
- Expectation management
- Learning, networking capacity building

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Explain terminology and abbreviations

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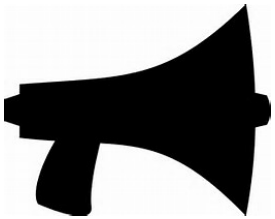

MCA…DSF…MSFD
…DST…GES_D3+
…SSB…MEY…F…
EBFM…EBITDA…
BBN…TLR2…MTRL
…STECF…MSY…

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Further development and use

Case studies:

- Strait of Sicily: ongoing planning
- West Coast of Scotland: ClimeFish
- Chatham Rice: ongoing

DSTs

- H2020 projects: REEEM & FarFish
- The DSF platform continues

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