Mapping and Assessment of Ecosystems and their Services in transitional and marine environments

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Introduction: The headline target overarching the "*EU Biodiversity Strategy to 2020*", adopted in 2010 is: "*Halting the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, and restoring them in so far as feasible, while stepping up the EU contribution to averting global biodiversity loss*".
The EU 2020 Biodiversity Strategy includes 6 targets and 20 associated actions, setting the EU on the right track to meet its own biodiversity objectives and its global commitments under the Convention on Biological Diversity (CBD). Action 5 of the Biodiversity Strategy states that: "*Member States, with the assistance of the Commission, to map and assess the state of ecosystems and their services in their national territory by 2014, assess the economic value of such services, and promote the integration of these values into accounting and reporting systems at EU and national level by 2020*"

Methods: The Working Group on Mapping and Assessment on Ecosystems and their Services (MAES) was set up under the Common Implementation Framework (CIF) and supports the implementation of Action 5. It consists of Member State representatives, scientific experts, EEA and EU staff members.
The first output of the MAES working group is the MAES analytical framework [1]. The document sets a conceptual framework for mapping and assessment linking human well-being to biodiversity while making proposals for a typology of ecosystems and ecosystem services.

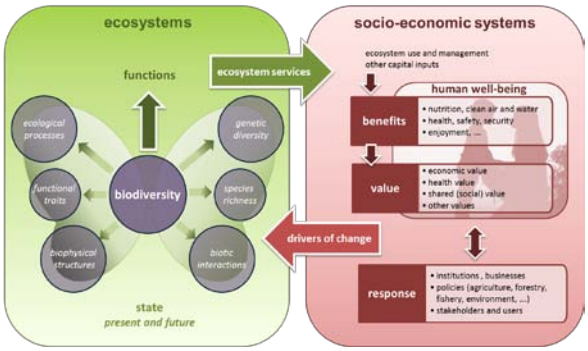

Fig. 1: Conceptual framework for EU wide ecosystem assessments.

The WG-MAES is testing the analytical framework using 6 pilots: 1) The use of nature reporting data for ecosystem assessment, 2) Agro-ecosystems, 3) Forest ecosystems, 4) Freshwater ecosystems, **5) Marine ecosystems**, 6) Natural capital accounting. The reference timeframe for MAES pilots is the year 2010.
Within marine ecosystems, 4 sub-ecosystems have been identified in the MAES analytical framework: 1) inlets and transitional waters; 2) coastal waters; 3) shelf waters; 4) open ocean.

The common framework suggests a 4 step approach, in parallel with the milestones Member States have to achieve in their assessment:
1. Map the concerned ecosystem;
2. Assess the condition of this ecosystem;
3. Quantify the ecosystem services provided by this ecosystem;
4. Integrated ecosystem assessment

A reporting structure had been proposed for steps 1 to 3, in the form of a table (the MAES Matrix) to collect knowledge available for the mapping and assessment of ecosystem and the services they provide. Filling out of the MAES matrix translates into a data availability survey exercise for the subsequent actual mapping and assessment foreseen in Action 5.

Results: JRC has completed the survey on available EU-wide datasets and indicators for all marine sub-ecosystems. Contribution came to the "Marine inlets and transitional waters" sub-ecosystem via the Lagoon and Arch FP7 projects. Additionally for a few ecosystem services mapping has been (or is in the course of being) carried out.

Discussion: Pilot results highlight a number of outstanding issues on the mapping and assessment of marine ecosystems and the services they provide: from data to data and knowledge gaps, to the need for wider harmonization in the body of existing environmental directives.

References: [1] J Maes et al., (2013) Mapping and Assessment of Ecosystems and their Services. An analytical framework for ecosystem assessments under action 5 of the EU biodiversity strategy to

2020. Publications office of the European Union, Luxembourg.