

FishMIP FAO Policy Report: key highlights and next steps

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Summary notes:

In view of the Fish-MIP's 10-years anniversary in 2023, the Fish-MIP team is working towards a FAO Technical Report linked to the "Past and Future of Marine Ecosystems" Special Issue in the journal [Earth's Future](#) and that highlights Fish-MIP achievements, with the cross-cutting theme of bridging the science-policy divide to make Fish-MIP outputs more relevant for decision-making.

The report includes six chapters describing key achievements, gaps, and ways forward of this international and ever-growing project. Chapter one is on the latest future projections of ocean biomass at global and regional scales and shows greater declines and regional variation in biomass change compared to previous results and that strong climate mitigation reduces losses for major fishing nations. These outputs are being used to help inform policy and the management of vulnerabilities and risks, but there still are large uncertainties across models.

Chapter two is on regional models and outputs. Among the highlights are that latest future projections show improved agreement between global and regional models from some regions compared to previous results, and that the FishMIP team is using regional models to examine uncertainties related to warming responses. This chapter also highlights clear needs in terms of regional modelling, including the development of regional marine ecosystem model ensembles and of a common downscaling and bias correction approach to support assessments at this scale.

Chapter three is on the reliability of FishMIP projections. It discusses the current development of model evaluation frameworks to validate FishMIP global models and the preliminary application of such frameworks which indicate some improvement in global model skill through time (i.e., from previous results). This chapter also touches on the limitations that have thus far hampered the standardised evaluation of the FishMIP global models, such as the lack of a consistent representation of fishing across models.

Chapter four is on model improvement. Here, the FishMIP team talks about the use of a standardised fishing effort forcing as well as of higher resolution climate inputs that can also better capture coastal dynamics in current simulations (ISIMIP3a). This is to improve the representation of past ecosystem changes and to test how well models can predict these changes when compared to data. The chapter ends with a recommendation: improvements in climate inputs are needed to reduce uncertainty in marine ecosystem model projections.

Chapter five is on the future of fisheries and announces the development of the next FishMIP protocol that implements future socio-economic scenarios and is the focus of FishMIP work in 2024 and 2025. Such leap forward will allow FishMIP to better

disentangle climate from fishing impacts and to answer policy questions surrounding key risks (IPCC), adaptation needed to conserve biodiversity and ecosystems (IPBES) and food security (FAO).

The report ends with chapter six, envisioning the way forward. Future areas of work are the development of more robust regional projections to support climate adaptation, of more accessible data tools and products for policy, and of new climate mitigation scenarios and approaches to test proposed solutions to climate change (geoengineering), as well as the integration of FishMIP results with other sectors to better explore the nexus of biodiversity, water, food and health to support the blue transformation.

The discussion following the presentation of the draft FAO Technical Report evolved around:

- The focus on countries rather than global patterns and the need to avoid overinterpretation of results, including the recommendations of policy directions that compete to national governments.
- The need to use clear, objective language that is fair and accurate and that shows respect for the views of different countries, and to avoid any statement that uses concepts that can have a different interpretation for different countries (e.g., MPAs).
- The role of the report as ground for conversation on the urge to mitigate climate change impacts and as a tool to leverage climate adaptation measurements if trends clearly indicate such need.
- The importance of a summary for policymakers, which will likely be the most widely used output, of an infographic summarising key findings, and of building exposure through social media.
- Future directions of modelling work, such as the need to progress regional models given the focus on countries, and to test adaptation strategies given the focus on climate adaptation in the next decade.