13 March 2022

United Nations Division for Ocean Affairs and the Law of the Sea

IMBeR's Contribution to the 15th Round of Informal Consultations to the United Nations Fish Stocks Agreement (ICSP-15): 'Implementation of an Ecosystem Approach to Fisheries Management'

Background

The Integrated Marine Biosphere Research Project (IMBeR) is a Large-scale Ocean Research Project under the Scientific Committee on Oceanic Research, an affiliated body of the International Science Council, and a Global Research Program under Future Earth. IMBeR's vision of "Ocean sustainability under global change for the benefit of society" and its goal to "Understand, quantify and compare historic and present structure and functioning of linked ocean and human systems to predict options for securing or transitioning towards ocean sustainability". Fisheries and fisheries management are central to IMBeR's work and IMBeR is grateful for the opportunity to submit the following contribution.

Fisheries and Ecosystem Approach to Management

Fisheries and aquaculture provide employment to almost 60 million people across the globe and produce around 179 million tons of fish for the world (FAO, 2020). The levels of biological sustainability of fish stocks in the ocean have decreased from 90% in 1974 to 65.8% in 2017 (FAO, 2020). This decline in fish stocks has been compensated to some extent by the exponential growth of aquaculture, which has increased by 527% from 1990 to 2018 (FAO, 2020), accompanied by its own set of social and ecological challenges. Given the importance of the fisheries sector economically and socially, considerable research has been conducted on fisheries governance at multiple levels, including the differences and contradictions across levels. Less work is available on governance of the growing aquaculture sector. Aquaculture has often been included in fisheries policies and regulations nationally and globally, although its activities, which include access to resources (land, water, brood stock, inputs) and control of disease, are more closely related to sustainability issues in agriculture. In relation to the economic and ecological dimensions of fisheries and aquaculture, there remain knowledge gaps in social issues around governing both of these sectors sustainably, equitably and inclusively.

Both the FAO Code of Conduct for Responsible Fisheries (1995) and the FAO Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries (2015) emphasise the importance of ecosystem approaches to fisheries management. However, moving principled governance in fisheries and aquaculture from paper into effective

IMBeR International Project Office - Canada
Steele Ocean Sciences Building
Dalhousie University
1355 Oxford St, Halifax B3H 4R2
Canada
Tel: +1 902-943-4317
E-mail: imber@dal.ca

IMBeR International Project Office – China
State Key Laboratory of Estuarine and Coastal Research (SKLEC)
East China Normal University (ECNU)
3663 North Zhongshan Road, Shanghai
China 200062
Tel: +86 21 52135432
Email: imber@ecnu.edu.cn

Chair: Prof. Carol Robinson
School of Environmental Sciences
University of East Anglia
Norwich NR4 7TJ
United Kingdom
Tel: +44 1603 593174
E-mail: carol.robinson@uea.ac.uk

practice continues to be a challenge. In response to this challenge, IMBeR identified the following priority research area (2022-2025):

To develop understanding on key ingredients for transformation towards more sustainable, equitable and inclusive governance approaches to fisheries and aquaculture.

Under this priority research area, three implementation questions have also been defined:

- How are key sustainability principles, such as precautionary and ecosystem approaches and social equity, being applied (or not) at regional, national and local levels?
- What are the major governance constraints?
- How might law and policy frameworks be improved?

Further Considerations of Ecosystem Approaches to Fisheries Management

- Although underlying models can vary in their level of sophistication, ecosystem approaches to fisheries management typically impose a larger administrative burden than less holistic approaches. In situations where financial and technological resources are lacking, it may be more suitable to use less onerous approaches.
- Ecosystem approaches to natural resource management tend to favour ecological objectives over other aspects of full spectrum sustainability[1] (Stephenson et al., 2021). Marine spatial planning (the spatial component of ecosystem-based management; Ehler and Douvere, 2009) tends to favour economic goals (Pennino et al., 2021). Therefore, the 'ecosystem' in an ecosystem(-based) approach needs to explicitly include social and cultural factors as well as ecological, economic, and institutional ones.
- As the science of fisheries management continues to develop, policy frameworks need to be able to incorporate new approaches that lead to better outcomes for sustainability. While such developments are likely to build on the ecosystem approach rather than replace it, policy frameworks need to be flexible enough to evlove along with the science.
- To be most effective, an ecosystem approach to fisheries management should fall within an overall ecosystem approach to *ocean* management (or the subset of the ocean in question). Whether ecosystem-based or not, management regimes for separate ocean industries (e.g., fisheries, aquaculture, transport, renewable energy, and oil and gas) are unlikely to be successful unless they are linked under an overarching ecosystem approach.
- Key factors have been identified as critical for effective implementation of an ecosystem approach in regional fisheries management organizations. Those factors include: support for climate change and ecosystem science; development of a regional strategy or program for climate adaptation; formal adoption of precautionary and ecosystem approaches; agreement on principles for resource access and allocation and weighing of distributional shifts (Gullestad et al., 2020); consideration of climate change in decision making; and adoption of marine protected areas and other area-based conservation measures (Koubrak and VanderZwaag, 2020).

[1] 'Full spectrum sustainablility' *in sensu* Foley et al. (2020) includes ecological, social and cultural, economic, and institutional and governance considerations.

Literature referenced

Ehler C and Douvere F (2009) Marine spatial planning: a step-by-step approach toward ecosystem-based management. In *Intergovernmental Oceanographic Commission and Man and the Biosphere Programme*, (Paris: UNESCO). IOC Manual and Guides No. 53, ICAM Dossier No. 6. https://unesdoc.unesco.org/ark:/48223/pf0000186559

FAO (1995) Code of Conduct for Responsible Fisheries https://www.fao.org/3/v9878e/v9878e00.htm

FAO (2015) Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries https://www.fao.org/documents/card/en/c/I4356EN

FAO (2020) State of the World Fisheries and Aquaculture https://www.fao.org/3/ca9231en/CA9231EN.pdf

Foley P, Pinkerton E, Wiber MG, Stephenson RL (2020) Full-spectrum sustainability: an alternative to fisheries management panaceas. Ecol. Soc. 25:1. https://www.ecologyandsociety.org/vol25/iss2/art1/

Gullestad P, Sundby S, Kjesbu OS (2020) Management of transboundary and straddling fish stocks in the Northeast Atlantic in view of climate-induced shifts in spatial distribution. Fish and Fisheries 21(5):1008-1026. https://doi.org/10.1111/faf.12485

Koubrak O and VanderZwaag DL (2020) Are transboundary fisheries management arrangements in the Northwest Atlantic and North Pacific seaworthy in a changing ocean? Ecology and Society 25(4):42. https://doi.org/10.5751/ES-11835-250442

Pennino MG, Brodie S, Frainer A, Lopes PF, Lopez J, Ortega-Cisneros K, Selim S, Vaidianu N (2021) The missing layers: Integrating sociocultural values into marine spatial planning. Frontiers in Marine Science. 2021 Jul 1;8:848. https://www.frontiersin.org/articles/10.3389/fmars.2021.633198/full

Stephenson RL, Hobday AJ, Allison EH, Armitage D, Brooks K, Bundy A, Cvitanovic C, Dickey-Collas M, de Miranda Grilli N, Jarre A, Kaikkonen L (2021) The quilt of sustainable ocean governance: patterns for practitioners. Frontiers in Marine Science. 2021;8:120. https://www.frontiersin.org/articles/10.3389/fmars.2021.630547/full

IMBeR International Project Office - Canada
Steele Ocean Sciences Building
Dalhousie University
1355 Oxford St, Halifax B3H 4R2
Canada
Tel: +1 902-943-4317
E-mail: imber@dal.ca

IMBeR International Project Office – China
State Key Laboratory of Estuarine and Coastal Research (SKLEC)
East China Normal University (ECNU)
3663 North Zhongshan Road, Shanghai
China 200062
Tel: +86 21 52135432
Email: imber@ecnu.edu.cn

Chair: Prof. Carol Robinson
School of Environmental Sciences
University of East Anglia
Norwich NR4 7TJ
United Kingdom
Tel: +44 1603 593174
E-mail: carol.robinson@uea.ac.uk