REPORTING FORM 2025

Marine Ecosystem-based Management Progress Evaluation Group: tracking the global progress of EBM (MEBM-PEG)

Operating Period as an IMBeR Member:

- *Start Year: 2022*
- *End Year: 2025*

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1. Ongoing activities, in line with the IMBeR Grand and Innovation Challenges

(Among other uses, information will be used to update the IMBeR Annual Report to SCOR)

1.a. Grand Challenge I

Understanding and quantifying the state and variability of marine ecosystems - with focus on Research Objectives 1 to 3:

***Research Objective 1**. Evaluate and predict the cumulative effect of multiple stressors*
***Research Objective 2**. Integration of climate change and climate variability*
***Research Objective 3**. Impacts on society – preparation for a changed future*

See text in Grand Challenge III.

1.c. Grand Challenge III

Improving and achieving sustainable ocean governance - with focus on Research Objectives 7 to 9:

***Research Objective 7**. Develop knowledge on best practices for multilevel governance approaches to ocean climate adaptation and mitigation*
***Research Objective 8**. Develop understanding on key ingredients for transformation towards more sustainable, equitable and inclusive governance approaches to fisheries and aquaculture*
***Research Objective 9**. Support implementation of post-2020 biodiversity targets for marine spatial planning and marine protected areas*

The MEBM-PEG project hosted a theme session at the ICES Annual Science Conference 2024. Session L: Evaluating ecosystem-based management performance: examples of success was convened by Alida Bundy (Canada), Janne Haugen (USA), Mark Dickey-Collas (UK/Netherlands). The sessions built on work done under the auspices of MEBM-PEG and the publication by Haugen et al. 2024 (see 2b. below)

Ecosystem-based management (EBM) is globally recognized as the best practice for managing multiple ocean-use sectors. By facilitating sustainable and resilient ecosystems, EBM accounts

for both good environmental health and human wellbeing. This is all well in theory, but how well are we doing in practice? How do we evaluate success of EBM?

One way to evaluate if we are achieving our objectives in EBM is through the use of performance measures, metrics used to quantify the effectiveness or progress of a management action. While there are performance measures for individual ocean-use sectors and marine ecosystem status, there is a need for performance measures that integrate across sectors, and that include human wellbeing, to evaluate performance of EBM. While we acknowledge that performance measures for EBM are not well developed, identifying which ones could be developed and what data needs to be collected should be considered progress.

The current state of the world's ecosystems underscores the urgency of EBM. Recent work has shown that increasing numbers of stakeholders are participating and investing in EBM. Knowing when we are doing successful EBM is not just valuable to decision-makers, but also to regions where EBM has yet to be implemented. This session explored the multiple ways that EBM can be implemented, how to evaluate the performance of that EBM implementation, success in process and in outcomes, and showcased examples of the benefits and success of EBM to move us further along the EBM journey.

Session L was a great success, to the extent that there was standing room only. This speaks to the broad interest in EBM across the ICES community and beyond, the importance of the topic and the need to continue to make progress on EBM in ICES.

Four key themes emerged from the session presentations and the ensuing discussions.

1. Scale: the spatial and temporal scale at which EBM is assessed matters. Spatially, EBM can take place at multiple scales (small bay to large ecoregions), but there can be a mismatch between the scale of governance and implementation and scale of assessment. One example is inshore coastal activities and offshore activities. Some activities and there impacts only occur in one spatial areas, while others can occur in both. The temporal scale at which indicators are measured also matters. Some indictors, eg total landings, we can expect to change annually and it is important to assess there trend. Other indicators, eg, perception of place, will operate on a longer spatial scale, perhaps decadally. EBM assessment requires indicators at multiple spatial and temporal scales and this needs to be taken into account in the evaluation process. Thus the likelihood of the projected change over the temporal scale interacts with the scoring of performance measures and how they must be integrated.

2. History – Do look back! In a fascinating study, Camilla Sguotti and colleagues from WGHIST explored examples of EBM in the past to inform current EBM processes. Using 11 case-studies and the IEA loop, they were able to demonstrate that EBM was practised in the past, including adaptive management, involving stakeholders, but noted that success was often in distinct locations. Several other papers also used a retrospective analysis to inform future practise, underscoring the value in exploring the past for insights into how to manage for the future. A key theme that arose during the session was that EBM has and is occurring without being labelled as EBM.

3. Straight-jackets and box-ticking: several concerns were discussed regarding the dangers of developing criteria for EBM that morph, over time, into a pass/fail mode (unintended consequences). The concept then becomes straight-jacketed into the indicators used in the assessment framework. This does not allow for flexibility or dynamism in EBM in practice. A

parallel danger is that EBM assessment could become a simple box-ticking exercise, especially when performance measures are binary, e.g. do we have legislation, or a plan in place?

4. EBM indicators, objectives and weighting: some objectives are clear and explicit for everyone; others may be more implicit and the evidence used to measure these objectives can range from empirical quantitative data to more "fluffy" information. Should these be given equal weight?

1.d. Innovation Challenge 3

To advance understanding of ecological feedbacks in the Earth System

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1.e. Innovation Challenge 4

To advance and improve the use of social science data for ocean management, decision making and policy development

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1.f. Innovation Challenge 5

Interventions to change the course of climate impacts

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1.g. Innovation Challenge 6

Sustainable management of Blue Carbon ecosystems

The current state of the world's ecosystems underscores the urgency of EBM. From the beginning of the session, it was acknowledged that EBM is a journey, with multiple paths and multiple endpoints. There is no "model" EBM, but key principles have been identified. What EBM looks like with vary with the context in which it is practised and the key EBM principles that it embodies. One key principle is adaptive management. Assessing progress in EBM, as proposed in this session, enables learning, adaptation and progress on the EBM journey. The three evaluation frameworks described in this session provide a basis for evaluation and learning, the FEISA framework outlines a possible path forwards for ICES, but we must be aware that there can be implicit priorities among objectives and differences in the evidence basis for EBM.

2. Selected highlights

2.a. Selected scientific highlights since last report (1-5)

Last report was submitted to SCOR, August 2024

Development of a framework to evaluate ecosystem-based management performance and success

2.b. Publications since last report

Please add all publications since last report to the table below (see notes for details on "Class" and "Activity" fields).

Publication *with DOI*	***Class 1, 2, 3***	***Activity****
Haugen, J.B., Link, J.S., Fulton, E.A., Dickey-Collas, M., Brainard, R.E. and Bundy, A., 2025. A performance measure framework for ecosystem-based management. *ICES Journal of Marine Science*, Volume 82, Issue 6, June 2025, https://doi.org/10.1093/icesjms/fsae164	2	*IMBeR Future Oceans, past and present SSC members*
Haugen, J.B., Link, J.S., Cribari, K., Bundy, A., Dickey-Collas, M., Leslie, H.M., Hall, J., Fulton, E.A., Levenson, J.J., Parsons, D.M. and Hassellöv, I.M., 2024. Marine ecosystem-based management: challenges remain, yet solutions exist, and progress is occurring. *NPJ Ocean Sustainability*, *3*(1), p.7.	2	*IMBeR Future Oceans, past and present SSC members*
[Add more rows if needed]		

**If appropriate, please list the IMBeR activity through / by / from / during which the publication arose*

****Notes on publications****

Publications are logged in the IMBeR Zotero library which is publicly accessible online –

Publications since 2016 | Publications prior to 2016

Publications are categorised by "Class" and linked to "Activities":

Class 1 publications are specifically generated through/by/from/during ***IMBeR activities*** - for example, arising from IMBIZOs and IMBeR conferences such as the IMBeR open science meeting and the IMBeR West Pacific symposia and from the activities of the working groups, regional programmes and the SPIS scoping teams.

Class 2 publications are on topics relevant to the IMBeR Science Plan that benefitted from some interaction with IMBeR or ***IMBeR activities***, for example by IMBeR symposium attendees, past and present SSC members, working group, regional programme and endorsed project members, or national contacts.

Class 3 publications are on topics relevant to the IMBeR Science Plan but for which there is no direct link to or benefit from an IMBeR activity. These might include publications by SSC members, working group, regional programme or endorsed project members or members of the IMBeR international community that were written as part of the normal scientific activity of the authors and would have occurred irrespective of IMBeR's existence. You can report Class 3 publications, but they will no longer be logged in the IMBeR database.

[See "What is an IMBeR publication?" for further information]

Why list 'Class' and 'Activity'? This helps us to declare authentically which publications IMBeR has helped to generate, and it makes it easier for us to demonstrate the value of the Regional Programmes, the Working Groups, and IMBeR in general, and it helps us to justify support for IMBeR activities when we can list tangible outputs.

2.c. Events, Meetings, and Workshops

List all international and national events, meetings and workshops. Describe the level of participation: e.g. chairing session/workshop, organising meeting. Include Endorsed Projects committee meetings and workshops.

Format: Title of event. Date. Location. Description of participation. Any other pertinent details.

Add text…

3. International collaboration and links

Add text…

4. Input to management, policy and SOCIETY* over the last year

Add anything that is not covered under "1.c. Grand Challenge III"
**As previous reporting forms requested 'input to management and policy' only, please add any 'input to society' not captured in previous reports*
Add text…

5. Education, outreach and Capacity Development

Add text…

6. Planned activities

6.a. **Activities and Outreach and how they link to the Challenges** (including, but not limited to convening sessions, meetings, summer schools, workshops, etc)

Add text…

6.b. **Upcoming papers** (Community-Position-Review-etc)

Add text…

7. Funding

7.a. Funding from external sources

Add text…

7.b. Funding proposals in progress or planned

Add text…

Do you want this to be released in the online version of this report? ☐ Yes ☐ No

8. Changes to Organisational Structure

The Marine Ecosystem-based Management Progress Evaluation Group: tracking the global progress of EBM (MEBM-PEG) project has come to an end in its current form. We achieved our aims of tracking the progress of EBM with the workshops, ICES session and papers.

9. Images / Figures

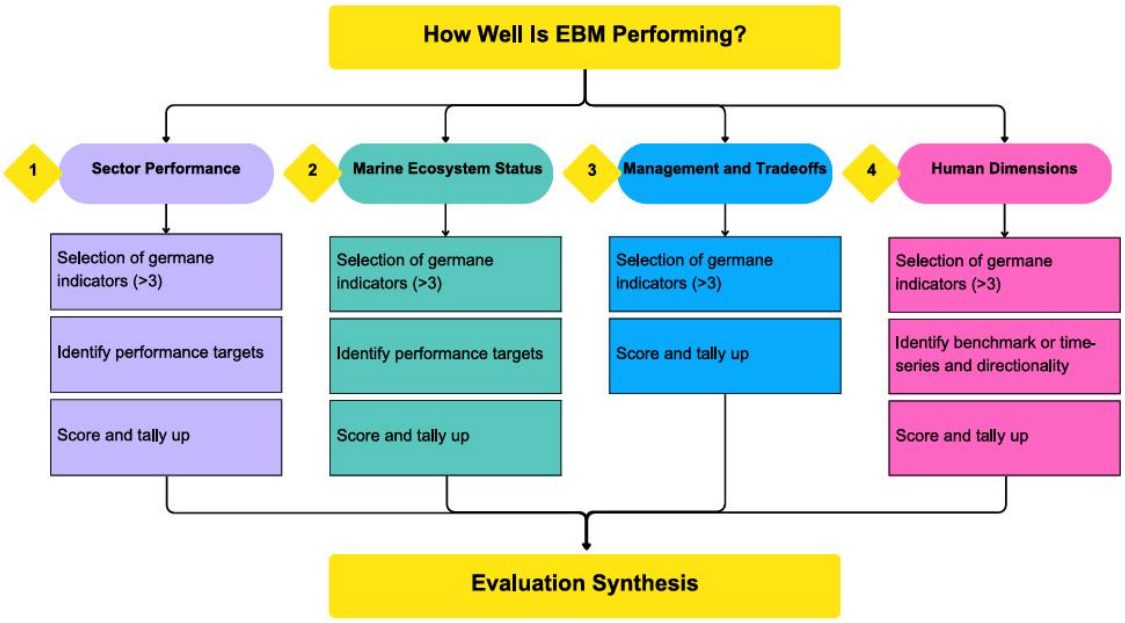

Figure 1. Schematic of the performance measures framework. Step 1 is to select a minimum of three or more appropriate indicators for each of the main categories: sectoral performance, marine ecosystem status, management and tradeoffs, and human dimensions. Step 2 is to identify performance targets for each indicator. Step 3 is to evaluate if the performance target has been met and assign a score to each indicator used. Finally, step 4 is to tally up the scores in each main category based on how many performance targets were met. Lastly, the scores are used in an expert opinion synthesis to evaluate how well EBM is performing overall. C.f., Tables 2–5 for indicators and Methods for more details on the framework.

Haugen et al. 2025

10. Notable achievements over the IMBeR decade (2016-2025)

10.1…

10.2…

10.3…

10.4…

10.5…

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10.x…

11. A list of Synthesis Products

Add text…

11. Reflections

Add text…

12. Recommendation for future work

Add text…

13. Anything not covered above

Add text…

14. Appendices

Add appropriate meeting / workshop reports and include URLs (this helps to track where online content is missing)

Add text…