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Joint Nordic Request to the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES): assessment of marine ecosystems

Photo: Nina Vik

In reply to IPBES notification EM/2022/38:
"Call for further requests, inputs and suggestions regarding the rolling work programme of IPBES up to 2030"

INTRODUCTION

The ocean is the Earth's major life support system, covering over 70% of the planet and holding 95% of the biosphere. Marine ecosystems provide essential contributions to people and ecosystem services such as seafood, habitats for species, genetic resources, transportation and renewable energy. Billions of people depend on the ocean for their subsistence. Furthermore, the ocean plays a key role in regulating the climate and in slowing global warming, through absorption of excess heat and carbon dioxide. In some regions, such as Arctic marine ecosystems, climate change is advancing faster than in other regions and the ecological impacts of climate change are obvious and expected to worsen.

The Intergovernmental Panel on Climate Change (IPCC) (1, 2) and The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) (2, 3) have, through previous reports, concluded that biodiversity loss and climate change are interrelated crises and management of human activities impacting the marine ecosystems must consider these together.


Photo: Nina Vik

Ecosystem-based management of oceans must address the consequences of all main drivers of change, including climate change and have the ability to adapt quickly when changes in environmental conditions occur. Furthermore, as climate change and ocean acidification increase, interacting with other drivers, it will become increasingly challenging to ensure that overall use and resource utilization is sustainable.

Synthesizing scientific knowledge and policy options, while recognizing and respecting the contribution of indigenous and local knowledge, in order to support integrated and sustainable ecosystem-based management of the marine environment in a changing climate is essential in order to achieve and maintain resilient marine ecosystems. Important policy instruments include the use of marine protected areas (MPAs) and other effective area-based conservation measures (OECMs), effective fisheries management and significant reduction or elimination of chemical and excess nutrient discharge.

Parties to the Convention on Biological Diversity (CBD) recognized the importance of marine and coastal biodiversity as one of the key cross-cutting elements of the new Kunming-Montreal Global Biodiversity Framework and critical to achieving the 2050 Vision for Biodiversity. Countries are encouraged to take IPBES assessments into account for reporting and in assessment of the state of the marine environment.

The Nordic countries, Finland, Sweden, Iceland, Denmark and Norway, emphasize the need to increase and strengthen the inclusion of marine ecosystems in the IPBES work programme. The regional assessments (2018) and global assessment (2019) did include marine ecosystems to a certain extent (Assessing knowledge | IPBES secretariat). However, marine ecosystems, have not been subject of a special regional or thematic assessment, emphasizing important aspects such as drivers affecting ecosystem functions and priority sites to conserve or restore as carbon sinks. At the third and fourth Plenary meetings IPBES member states considered having open oceans as a standalone regional assessment, but decided to await the results of other relevant knowledge assessments, such as the first World Ocean Assessment (4), before concluding.

A standalone comprehensive thematic assessment by IPBES on marine ecosystems and Nature's contributions to people, including ecosystem services, considering climate change together with other anthropogenic drivers , would complement the Intergovernmental Panel on Climate Change (IPCC) Special Report on the Ocean and Cryosphere in a Changing Climate (2019)(5) and should also address increasing and emerging impacts and threats to marine and coastal biodiversity identified by CBD. IPBES would be particularly suited to

perform such a thorough assessment from the "perspective" of marine and coastal biodiversity.

Emphasizing the importance of Biodiversity, Oceans and Climate, the Nordic Ministers of Environment and Climate at their meeting in Copenhagen 12 May 2021 decided to: Encourage the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) to consider the need for synthesizing the scientific knowledge and strengthening the knowledge foundations for the most effective means of reinforcing marine ecosystems by conservation or restoration measures, to ensure good environmental status, resilience and maintenance of key ecosystem services under a changing climate.

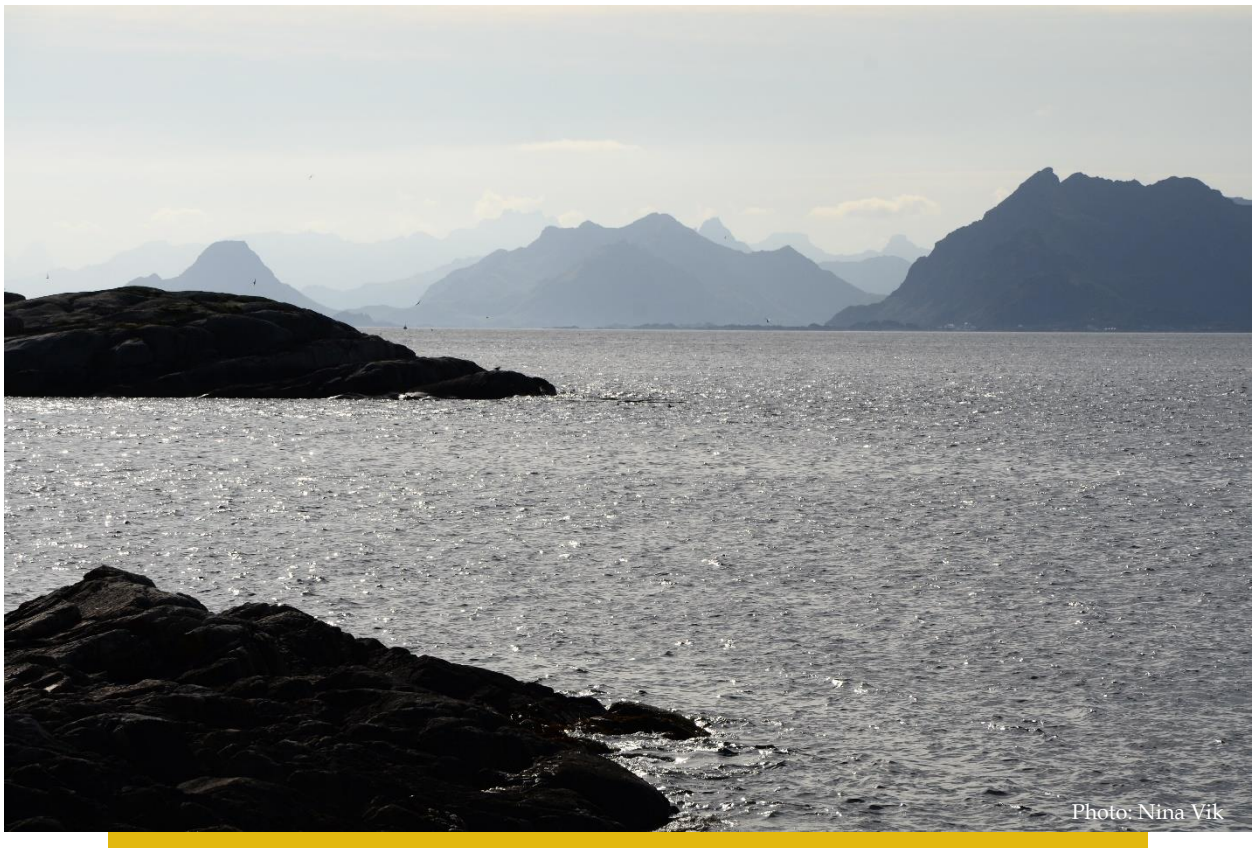


Photo: Nina Vik

Request to the IPBES Rolling Work Programme

The Nordic countries, Finland, Sweden, Iceland, Denmark and Norway, request IPBES to conduct an assessment covering the full range of marine ecosystems. This could be conducted as a general ecosystem assessment, or a thematic assessment focusing on a set of specific issues.

Issues of specific relevance to this request are:

Knowledge based management

- Strengthen the scientific basis for identifying the most effective means of reinforcing marine ecosystems by conservation and restoration measures, to ensure good environmental status, resilience and maintenance of key ecosystem services under a changing climate.
- Identify how mitigation of climate change impacts, including nature-based solutions, can be applied in the marine environments while safeguarding benefits for biodiversity and ecosystem services.
- Effects of coastal protection, including increased protection measures due to climate change and sea level rise. Dikes and other coastal protection measures often lead to significant changes in the coastal habitat, including issues with coastal squeeze.

Marine biodiversity, marine ecosystems and Nature's contributions to people/ecosystem services

- Synthesize scientific knowledge about trends of marine biodiversity and ecosystem services and identify critical knowledge gaps.
- Assess the role of marine ecosystems in carbon sequestration, and approaches for safeguarding important areas for carbon storage.
- Identify how to ensure the sustainability of the use of biological resources in a changing climate.

Drivers of change

- Synthesize the scientific knowledge about the trends of the main impacting drivers and suggest management options for reversing the loss of biodiversity.
- Assess the interactions and cumulative effects of the main drivers of marine biodiversity loss (direct exploitation, sea use change, climate change, pollution, invasive alien species) and how they vary on a local and global scale.
- Some specific anthropogenic impacts of concern to assess would be from e.g. fisheries, aquaculture, seafloor exploitation/deep sea mining (for sand, oil, minerals), pollution (including eutrophication, marine litter and noise), shipping and the impact on coastal biodiversity from increasing urbanization.
- The impacts on marine biodiversity from oceanographic changes driven by CO2 emissions and climate change, affecting sea temperature (including marine heatwaves), ocean currents, ice cover, salinity, sea level and acidification.

Information requested by the IPBES procedures for receiving and prioritizing requests put to the platform

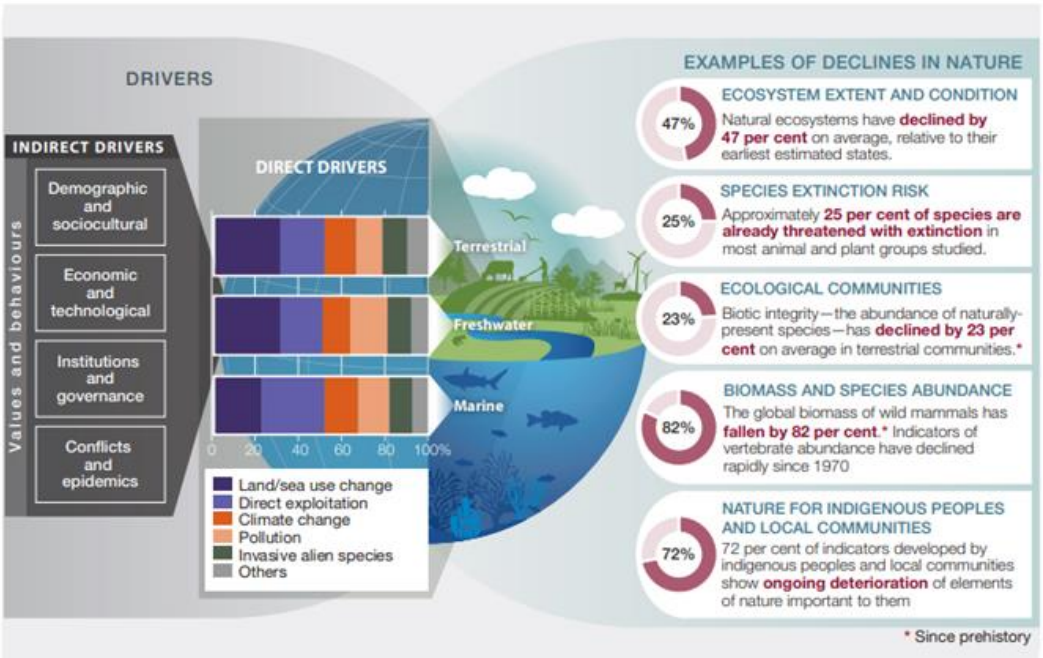
(a) Relevance to the objective, functions and work programme of the Platform;

The request is highly relevant for the overall objective, functions and operational principles of the Platform.

(b) Urgency of action by the Platform in the light of the imminence of the risks caused by the issues to be addressed by such action;

According to the IPBES global assessment on biodiversity and ecosystem services (IPBES 2019) marine ecosystems, from coastal to deep sea, now show the influence of human activities, with coastal marine ecosystems showing both large historical losses, in terms of extent and condition as well as rapid ongoing declines. Over 40 per cent of the ocean area was strongly affected by multiple drivers in 2008, and 66 per cent was experiencing increasing cumulative impacts in 2014. The main direct drivers for biodiversity loss in marine ecosystems are: 1) direct exploitation; 2) sea use change; 3) climate change; 4) pollution; and 5) invasive alien species.

Fig SPM 2, IPBES global assessment (2019)



Among the several recent calls for urgency, Georgian et al. 2019 (6) published a paper entitled 'Scientist's warning of an imperiled ocean', with an accompanying long list of global scientist signatories.

(c) Relevance of the requested action in addressing specific policies or processes;

The list below is not an exhaustive list, but includes important examples, both global and from other regions that should be included in a scoping document

Examples of global policies or processes

- UN Decade of Ocean Science for Sustainable Development (2021-2030)
- UN Decade on "Ecosystem Restoration" 2021-2030
- Convention on Biological Diversity (CBD) – the new Kunming-Montreal Global Biodiversity Framework, including biodiversity goals and targets
- Sustainable development goals – particularly SDG 14
- Ongoing work on a new international agreement on Biodiversity Beyond National Jurisdiction (BBNJ)
- IWC, CMS and CITES

Examples of regional processes for Europe and other regions

- HELCOM, OSPAR and regional fisheries management organisations (RFMOs)
- EU biodiversity strategy
- The EU Marine Strategy Framework Directive
- CCAMLR, Arctic Council and relevant working groups e.g. (AMAP, CAFF and PAME)
- ASCOBANS, ACCOBAMS, NAMMCO

(d) Geographic scope of the requested action, as well as issues to be covered by such action;

An assessment on marine ecosystems should cover the open ocean, coastal areas, tidal zones and seabed (ocean sediments). The assessment should be global, however where possible also include considerations on a regional/sub-regional level to be relevant for national management, for example of coastal zones.

The assessment will be based on existing global and regional assessments, scientific literature and other relevant knowledge sources, in line with IPBES "Procedures for the preparation of Platform deliverables" and "Functions, operating principles and institutional arrangements of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services" to be found here.

(e) Anticipated level of complexity of the issues to be addressed by the requested action;

The interaction between drivers of change of marine biodiversity and the ecological complexity means that management should be based on an ecosystem approach, involving many different stakeholders, knowledge systems and cultures. IPBES'

interdisciplinary and inclusive assessment methods will provide an important knowledge base for support of such policies.

(f) Previous work and existing initiatives of a similar nature and evidence of remaining gaps, such as the absence or limited availability of information and tools to address the issues, and reasons why the Platform is best suited to take action;

Several knowledge assessments on these issues exist (e.g. Global Biodiversity Outlook, World Ocean Assessment (WOA), IPCC, IUCN Red List). In addition, Coastal biodiversity assessments are available for several countries.

Most of the assessments above identify knowledge gaps relevant to this request, such as:

- The global extent and distribution of degraded marine ecosystems in need of restoration
- The global distribution of marine ecosystems important for carbon sequestration

There is also available scientific literature (see point e) for comment on coverage), both data and metadata, and other knowledge sources such as mapping, surveillance, reports etc.

(g) Availability of scientific literature and expertise for the Platform to undertake the requested action;

There is a rich body of scientific publications in the field, reports from regional and global multilateral environmental agreements, fishery management bodies, etc. We refer, amongst other to point c) and f)

(h) Scale of the potential impacts, and potential beneficiaries of the requested action;

The assessment will strengthen the knowledge base relevant for several of the sustainable development goals, i.a. SGD 2 (food security), SDG 13 (climate action) and SDG 14 (life below water) and have global, regional and national impact.
It will contribute important information for implementing the conservation goals and targets of the Kunming-Montreal Global Biodiversity Framework of the CBD in marine ecosystems, as well as many multilateral and regional agreements for oceans, national marine biodiversity management authorities and numerous stakeholders and IPLCs in marine regions.

(i) Requirements for financial and human resources, and potential duration of the requested action.

There are several options for an IPBES assessment on marine ecosystems. The topic could be considered for a fast-track assessment, which would be conducted according to section 3.2 of the IPBES Procedures for the preparation of Platform deliverables. This would allow for the completion of the assessment in time for inclusion in the next global IPBES assessment report.

(j) An identification of priorities within multiple requests submitted.

NA

References:

(1) IPCC, 2022: Summary for Policymakers [H.-O. Pörtner, D.C. Roberts, E.S. Poloczanska, K. Mintenbeck, M. Tignor, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem (eds.)]. In: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 3–33, doi:10.1017/9781009325844.001

(2) Pörtner, H.O., Scholes, R.J., Agard, J., Archer, E., Arneth, A., Bai, X., Barnes, D., Burrows, M., Chan, L., Cheung, W.L., Diamond, S., Donatti, C., Duarte, C., Eisenhauer, N., Foden, W., Gasalla, M. A., Handa, C., Hickler, T., Hoegh-Guldberg, O., Ichii, K., Jacob, U., Insarov, G., Kiessling, W., Leadley, P., Leemans, R., Levin, L., Lim, M., Maharaj, S., Managi, S., Marquet, P. A., McElwee, P., Midgley, G., Oberdorff, T., Obura, D., Osman, E., Pandit, R., Pascual, U., Pires, A. P. F., Popp, A., Reyes-García, V., Sankaran, M., Settele, J., Shin, Y. J., Sintayehu, D. W., Smith, P., Steiner, N., Strassburg, B., Sukumar, R., Trisos, C., Val, A.L., Wu, J., Aldrian, E., Parmesan, C., Pichs-Madruga, R., Roberts, D.C., Rogers, A.D., Díaz, S., Fischer, M., Hashimoto, S., Lavorel, S., Wu, N., Ngo, H.T. 2021. IPBES-IPCC co-sponsored workshop report on biodiversity and climate change; IPBES and IPCC, DOI:10.5281/zenodo.4782538

(3) IPBES (2019): Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. S. Díaz, J. Settele, E. S. Brondízio E.S., H. T. Ngo, M. Guèze, J. Agard, A. Arneth, P. Balvanera, K. A. Brauman, S. H. M. Butchart, K. M. A. Chan, L. A. Garibaldi, K. Ichii, J. Liu, S. M. Subramanian, G. F. Midgley, P. Miloslavich, Z. Molnár, D. Obura, A. Pfaff, S. Polasky, A. Purvis, J. Razzaque, B. Reyers, R. Roy Chowdhury, Y. J. Shin, I. J. Visseren-Hamakers, K. J. Willis, and C. N. Zayas (eds.). IPBES secretariat, Bonn, Germany. 56 pages.

(4) World Ocean Assessment II. Vol. I and II. United Nations 2021. woa2launch | Division for Ocean Affairs and the Law of the Sea

(5) IPCC, 2019: Summary for Policymakers. In: IPCC Special Report on the Ocean and Cryosphere in a Changing Climate [H.-O. Pörtner, D.C. Roberts, V. Masson-Delmotte, P. Zhai, M. Tignor, E. Poloczanska, K. Mintenbeck, A. Alegría, M. Nicolai, A. Okem, J. Petzold, B. Rama, N.M. Weyer (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 3–35. https://doi.org/10.1017/9781009157964.001.

(6) Georgian, S., Hameed, S., Morgan, L., Amon, DJ, Sumaila, UR, Johns, D., Ripple, WJ. 2022 Scientist's warning of an imperiled ocean. Biological conservation **272**, 109595. https://doi.org/10.1016/j.biocon.2022.109595.

Equipment previously used to produce cod liver oil, Vestvågøy, Lofoten (photo: Nina Vik)