

# **Toward the Establishment of the Regular Process for Regional and Global Marine Assessments**

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## **1. Introduction**

Marine and coastal ecosystems are amongst the most productive ecosystems in the world, providing a rich array of goods and services to human society. Their health and effective functioning are essential for human well-being and broad planetary life-support systems. Yet many of these ecosystems have become increasingly degraded. There is, though, a great deal of concern across the world as to how the goods and services that we depend on can be utilized in a sustainable manner. In light of this, the United Nations (UN) General Assembly in 2005 endorsed the need for a regular process for global reporting and assessment of the state of the marine environment, including socio-economic aspects, both current and foreseeable, and that the Regular Process should be built on existing regional mechanisms.

In November 2005, the UN General Assembly at the 60<sup>th</sup> session on Oceans and the Law of the Sea [Resolution60/30] further decided to launch the start-up phase, the Assessment of Assessments, to be completed within two years, as a preparatory stage toward the establishment of the Regular Process. It also established an organizational arrangement, including an Ad Hoc Steering Group (AHSO) to oversee its execution, two UN agencies, UNEP and UNESCO-IOC, to jointly lead the process, and a Group of Experts to undertake the Assessment of Assessments.

The first meeting of the AHSO was held in June 2006, reviewed the report of the updated survey on regional and global marine assessments prepared by UNEP-WCMC, and considered the nature, aims and expected accomplishments of the Assessment of Assessments. It recommended that the Group of Experts should undertake a critical analysis of the existing assessments in order to assess their scientific credibility, and their policy relevance, legitimacy and usefulness, in particular by identifying: (a) Best practices and approaches; (b) Thematic and geographic assessment gaps and needs; (c) Uncertainties in scientific knowledge, data gaps and research needs; (d) Networking and capacity-building needs in developing countries and countries with economies in transition; and (e) A framework and options for the Regular Process, based upon current relevant assessment process and practices.

The Group of Experts approved by the AHSB held the first meeting in March 2007, and discussed and developed the overall working approach of the Assessment of Assessments. They also agreed on a schedule of activities from 2007 up to the completion of the start-up phase in mid-2009. At the end of its work, the Group of Experts intended to be produced a report to be structured around: (a) A state-of-the assessment landscape for oceans and coasts; (b) An evaluation of existing assessments; and (c) A possible institutional framework, capacity-building, cost analysis etc. for the Regular Process. In accordance with its terms of reference, the Group of Experts is aiming to develop guidelines and methodologies and to identify best practices as to how a regular assessment should be conducted.

Although the Assessment of Assessments is still in progress, I would like to review some reports of the preliminary survey conducted in the Assessment and Assessments, and consider the elements of effective assessment of marine environment at a regional and global level. Looking at the recognized gaps in geographic and thematic coverage, etc. and newly emerging issues, future perspectives on the regional and global marine assessment are also discussed in relation to the procedure for the establishment of marine environmental assessment in the NOWPAP region.

## **2. Elements of effective assessment of the marine environment**

An assessment of marine environment is generally taken to be a scientific evaluation of an aspect of the marine ecosystem/environment. It could also include socio-economic aspects such as interactions between stakeholders and the marine environment through such as activities as tourism, diving and fisheries. An assessment with a regular process is characterized by repeating the assessment methodology through time to detect changes.

Effective provision for the following considerations is necessary to ensure the scientific credibility, usefulness, legitimacy and policy relevance of the assessment. First, in the pre-assessment stage, it is necessary to agree clearly on (a) objectives and scope, (b) geographic coverage, (c) target audience, (d) outputs/products, (e) organization, (f) budget and funding, and (g) review and evaluation of the effectiveness. The objectives of the assessment may be structured, for example, to provide an overview of the current condition of marine ecosystems and resources, identifying any apparent patterns and trends, to identify the nature, extent and severity of marine environmental degradation, its causes and its implications for human health and socio-economic welfare, and to advise policy makers and stakeholders on response options that may reduce or reverse marine environmental degradation.

In the post-assessment stage, on the other hand, the following should be undertaken: (a) communications with target audience, (b) Ensuring the availability of reports/data, (c) Follow-up review and evaluation of the effectiveness, and (d) Evaluation of the effectiveness of

any response measures subsequently adopted by decision makers.

In addition, the effective assessment on a regular basis will require adequate information to assess the current status of ecosystems regionally and globally, and also to detect, assess and evaluate trends in important environmental features. However, information deficiencies have been the major constraints particularly on global marine assessments undertaken to date. Points that will need consideration with regard to this are: (a) Geographic and thematic gaps in the information base, (b) Degree of confidence in the available data (quality requirements), (c) Methodology used for data collection and analysis. In order to accurately measure and predict trends, data needed have to have been collected over a reasonable time frame using a consistent, standardized, repeatable methodology, in a program designed to allow appropriate statistical analysis. The nature and extent of natural variability also need to be properly identified in relation to the trends.

Regarding the geographic and thematic coverage, it is important at the regional level to take into account trans-boundary issues and problems and to reflect the relative importance of particular threats and impacts at that level. At the global level, the design of the assessment can promote a framework for regional assessments that facilitates comparability and a global synthesis. A broad global assessment can encompass an overview of regional conditions, threats, impacts and response measures, and the assessment of global phenomena like the effects of climate change.

It is also critical that the actual procedures used in the assessments are clearly described in the documentation to allow for future evaluation and to facilitate comparison between assessments. The use of established assessment methodologies for sampling, data collection, statistical analysis and modeling procedures, data storage and reporting, should be subject to regular updating and quality control as best assessment practices evolve.

Sustainable funding is another critical issue for the repeatability and therefore sustainability of the assessment implementation. Outreach activities and capacity-building initiatives must be funded as well for a successful regional and global marine assessment. Participation in such assessment processes is in itself a form of capacity-building, which contributes to broader international understanding and consensus-building on problem definition and responses.

### **3. Recognized gaps in the existing assessments and newly emerging issues**

(1) Geographic coverage gaps: Recent reports on the existing regional and global assessments and related activities of the marine environment, prepared by UNEP, UNESCO-IOC and UNEP-WCMC (hereafter UNEP reports), have pointed out that the seas within and around Europe (Mediterranean, East Atlantic, Baltic and North Sea) as well as the Northern Atlantic and the polar regions (Arctic and Antarctic Ocean) exhibit the highest abundance of assessments

undertaken, while the high seas and seas beyond national jurisdiction, deep/open oceans, and the oceans of the southern hemisphere (except the Antarctic Ocean) still exhibit a low abundance of environmental monitoring and assessments. The interactions between marine and freshwater systems are an area of growing discussion in the international community. It would be expected that increased awareness of these issues will stimulate the request for continued assessment and understanding of these linkages. Less is known about the impacts of groundwater and aquifers, and these remain as a gap in assessments.

(2) Thematic coverage gaps: Assessments can be broad-based, covering a range of issues, or can be more limited (thematic). Relatively few of the world's marine areas have been subject to broad-based assessment, while a range of thematic assessments either completed, underway or planned are apparently limited in both temporal and spatial coverage. The thematic assessments focus, for example, on particular features such as fisheries, biodiversity or specialized habitats. It is of vital importance to draw attention to the links between issues, e.g. sewage inputs and biodiversity changes, or coastal erosion and habitat destruction. Existing activities included in the UNEP reports do not appear to cover assessment of benthic habitats at the global level. Further, most of the existing activities considered the status of the marine environment, while it seemed to be difficult to obtain the data with appropriate quality to identify long-term trends. Recognizing the needs to detect and predict trends in environmental conditions, and the fact that trends are seldom detectable without time-series datasets, it is of urgent requirement to initiate trend-monitoring of key parameters such as loss of critical habitats, sediment quality, incidence of harmful algal blooms and land-based inputs of contaminants. Clearly, the sooner time-series measurements are initiated, the sooner trends will become discernible.

(3) Methodological gaps: According to the UNEP reports, consideration of the units of assessment for the marine environment is of critical importance. There is wide variation in the assessment units, and research into new methods for devising assessment units through the use of adaptive algorithms is necessary. It should also be noted that just 8 per cent of the activities included in the reports produced spatial data in the form of maps, and that only a few per cent undertook modeling to consider future scenarios. Experts were widely used in assessment processes, particularly where data/information was limited, and were engaged in different ways, whether as a peer-review mechanism, in interpretation of secondary data, or through working groups, scientific committees or advisory boards.

(4) Emerging issues: The latest years have led to massive developments in understanding deep-sea environments and habitat diversity, leading to an urgent call for conservation and sustainable use of these ecosystems. The need to look at ecosystem-wide interactions, and interactions between the land, ocean and atmosphere to better understanding the marine

environment is another emerging issue identified in the UNEP reports. Further, the impact of lowering pH of the oceans as a result of increasing atmospheric CO<sub>2</sub> and the additional impact of carbon sequestration in the oceans both require action initiation on the part of the global community. Taking into account the actual and potential effects of climate change on marine environment, there is a growing realization that trend-monitoring programs should include climate change indicators such as sea surface temperature, current patterns, sea level and shifts in the ranges of marine species. The difficulties of trend-monitoring may be greatly increased by shifting baselines driven by climatic factors.

The Assessment of Assessments will need to consider ways in which critical information gaps might be filled. It must be, therefore, a key question: how will the Regular Process deal with the recognized existing knowledge gaps and especially with emerging issues mentioned above, so that the international community can address these concerns in a timely and effective manner?

#### **4. Future perspectives**

Referring to the suggestions from the UNEP reports, the followings should be considered in the future for developing the appropriate procedure of marine environmental assessment in the NOWPAP region.

(1) Precise questions about the condition of marine features and processes in the NOWPAP region to promote the generation of relevant data and information.

(2) A way to promote the application of the ecosystem approach in marine environmental assessments. From this viewpoint, consideration could be given to investigating processes identifying assessment units delimited by natural processes in the NOWPAP region.

(3) Establishment of the database/meta-database as an ongoing tool for assessment and development of a data quality-control mechanism. The database should be updated on a regular basis to ensure that accurate and timely information is available for the assessment. There will be a need for improved data availability in the future, and to achieve this, a greater mobilization of effort by all sectors of the NOWPAP community interested in the marine environment will be required.

(4) Internationally accepted procedures and methodologies used in the assessment. Outreach activities such as published reports/newsletters, website and international conferences, and activities for capacity-building such as fostering collaboration, training workshops and educational cruises, will be effective for filling the methodological gaps.

Further, for developing the assessment procedure in the NOWPAP region, it may be useful to consider the following questions in more depth: (a) How data that is routinely collected by

international bodies could contribute to the reporting and assessment of the state of marine environment in the NOWPAP region on a regular basis; (b) How existing datasets in the NOWPAP region might be better utilized in the regional assessment; (c) How existing assessments of varying geographical coverage and thematic scope in the NOWPAP region can be integrated into the regional assessment, and how to identify linkages between issues and regions; (d) How to identify priority themes and issues that represent common, serious problems around the NOWPAP region, requiring further data collection and assessment on the status and trends; (e) How specific needs for capacity-building to support the areas of severely limited capacity to generate data for assessments can be met, with human and financial resources, including training and the provision of essential equipment and facilities.

In the second part of the Assessment of Assessments, the Group of Experts will discuss in more detail how to identify the best practices and approaches from the existing assessments in the 21 tentatively selected regions for the Assessment of Assessments. Several considerations in establishing an assessment process, such as defining objectives, organization, outputs and provision for review and evaluation, will be given. The outcomes of the Group of Experts may greatly contribute to the development of the appropriate procedure for marine environmental assessment in the NOWPAP region.