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for the Seas of East Asia

**Proceedings of the  
First Meeting of the  
Multidisciplinary  
Expert Group**



9-10 May 2002  
Kuala Lumpur, Malaysia

**PROCEEDINGS OF THE FIRST MEETING OF THE  
MULTIDISCIPLINARY EXPERT GROUP**

**TABLE OF CONTENTS**

<b>Introduction</b>	1
<b>1.0. Terms of Reference for the MEG</b>	1
<b>2.0. PEMSEA Activities</b>	2
<b>3.0. Sustainable Development Strategy for the Seas of East Asia (SDS-SEA)</b>	3
3.1. Improving the SDS-SEA	3
<b>4.0. Assessing the Scientific Aspects of PEMSEA</b>	5
4.1. Integrated Information Management System (IIMS)	5
4.2. Water quality criteria	6
4.3. Risk assessment for management improvement	6
<b>5.0. Indigenous and Emerging Technologies</b>	7
5.1. Merits and limitations on the use of bioindicators	7
5.2. Application in the region	7
<b>6.0. The Role of MEG</b>	9
<b>7.0. Follow-up Activities</b>	9
7.1. Ensuring effective review of PEMSEA outputs	9
7.2. Secretariat support	10
<b>8.0. Closing</b>	10
<b>ANNEXES</b>	
Annex I: List of participants	11
Annex II: Provisional agenda	13
Annex III: Revised TOR for the MEG	14

# **PROCEEDINGS OF THE FIRST MEETING OF THE MULTIDISCIPLINARY EXPERT GROUP**

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## **INTRODUCTION**

The First Meeting of the Multidisciplinary Expert Group (MEG) was held in Hotel Istana, Kuala Lumpur, Malaysia from 9-10 May 2002. Attending the meeting were seven experts from Indonesia, Hong Kong, Japan, Malaysia, Philippines, Singapore, Thailand, and two from PEMSEA's Regional Programme Office (RPO). A list of participants is attached as Annex I.

Dr. Huming Yu, Senior Programme Officer, RPO, welcomed all the participants on behalf of PEMSEA and Dr. Chua Thia-Eng, Regional Programme Director. He informed the Meeting that Dr. Chua was unable to attend despite his efforts in the preparation of the meeting and his strong interest of participation, due to a family emergency.

According to Dr. Yu, the MEG should be instrumental for advancing PEMSEA's objective of promoting science-based management for the Seas of East Asia more effectively. The meeting was expected to conduct a critical review of the scientific and technical quality of major programme outcomes, catalyze the exchange of indigenous and emerging scientific and technological knowledge and explore ways for further development of the MEG as the scientific arm of more effective regional collaborative mechanisms. In doing so, the MEG would also play the role of providing scientific advice for the Programme Steering Committee.

Dr. Aprilani Soegiarto from Indonesia was acclaimed as Chairperson. In introducing the MEG members, he extended a special welcome to Japan for her recent decision to join PEMSEA. In opening the discussion on the agenda of the meeting, he reminded the participants that the agenda was meant as a guide for informal discussion, encouraging free flow of ideas and innovative interventions. The meeting adopted its agenda items as contained in Annex II.

### **1.0. TERMS OF REFERENCE FOR THE MEG**

The Chairperson introduced the draft Terms of Reference (TOR) for the MEG. Dr. Yu informed the Meeting that the draft TOR defines the MEG's role and functions in accordance with the requirements of the Project Document of the Regional Programme pertaining to the MEG, taking into account the need to improve the scientific components of programme implementation and to

strengthen scientific support for developing more effective regional collaborative mechanisms.

Some participants considered that the TOR should reflect what the MEG could deliver within its current capability. Others maintained that the TOR should be forward-looking, responsive to the increased demand for scientific support by the Regional Programme. It was the consensus of the meeting that the MEG should play a scientific advisory role for PEMSEA and the region. It may also commission working groups to produce scientific and technological information products if needed. As a multidisciplinary core group, it would be more appropriate for the MEG to promote the development of a regional fora for the exchange of scientific and technical knowledge and to facilitate consultation between the representatives and leaders of GEF bilateral and multilateral International Waters projects. To enable the members of the MEG to better perform their advisory role, it was suggested that the MEG members maintain close liaison with National Focal Points and field project staff and professionals to track project progress and impacts. Based on the comments made, the draft TOR was revised (see Annex III).

## **2.0. PEMSEA ACTIVITIES**

Ms. Nancy Bermas, Technical Officer, RPO, introduced PEMSEA activities, including the major achievements and constraints of the Regional Programme as outlined in the Annual Programme Report (APR). She discussed in particular the background, process, significance and features of the Sustainable Development Strategy for the Seas of East Asia (SDS-SEA). She stressed that the formulation of the Strategy was based on the scientific assessment of the region's common threats and impacts challenging sustainable development. The SDS-SEA is a result of stakeholder consultations, which projects a shared vision of participating countries for the Seas of East Asia and outlines the common mission and strategic actions of the countries to address the threats. She informed the participants that the draft of the Strategy would be further refined, taking into account the feedback of the governments and other stakeholders, including the feedback from the MEG.

Upon the request of some participants for more information on PEMSEA's scientific component, Dr. Yu brought to the attention of the Meeting the detailed information given in the APR. He explained that science is an essential component of all the programme activities. Specifically, the Regional Programme has made special efforts to strengthen the scientific components at the regional, subregional and local levels.

Dr. Yu informed the Meeting that working groups of experts and scientists have been organized at the regional level to: (a) advise the Programme Management concerning the application of indigenous and emerging technologies as the present meeting of the MEG is expected to do; and (b) address the cutting-edge scientific issues of priority environmental and resource concerns e.g., the determination of ecosystem carrying capacity, tradeoffs between economic development and ecological benefits, impacts of maritime trade on endangered species, transboundary impacts of national economic activities and socioeconomic benefits of integrated coastal management (ICM).

Dr. Yu further explained that, at the subregional and local levels, management-oriented research activities have been packaged within the framework of the demonstration projects for integrated management. These activities are related to environmental profiling, integrated information management systems, environmental monitoring, environmental risk assessment and multiple use zonation. The outputs of these activities serve as inputs in the formation of sustainable development strategies, policies and implementation programmes.

### **3.0. SUSTAINABLE DEVELOPMENT STRATEGY FOR THE SEAS OF EAST ASIA (SDS-SEA)**

#### **3.1. Improving the SDS-SEA**

All participants highly appreciated the efforts made by PEMSEA in developing the SDS-SEA and considered the draft SDS-SEA a well thought-out document. Some participants made the following suggestions for refining the draft:

- As the title of the Strategy has been changed to “sustainable development,” the meaning or approach to sustainable development should be elaborated and the contents adjusted accordingly, that is, more emphasis on proper resource use strategies. The front cover picture should also depict the development in the coastal and marine environment of the East Asian Seas (EAS).
- The interconnections of the Large Marine Ecosystems (LMEs) composing the Seas of East Asia should be illustrated, e.g., the prevailing monsoon systems and their effects, the occurrence of El Niño and La Niña, the Kuroshio Current and its extension, the pattern of coral reef and mangrove distribution, the migratory species of marine mammals, turtles and fish, and some

topographic features such as back-arch basins and trenches. This type of information is important for the justification of shared environmental concerns of the region.

- The long-term impact of global change particularly on the major ocean currents and biological resources should be illustrated.
- In addition to their importance to biodiversity, the migratory species should also be viewed for their economic importance.
- To put emphasis on the EAS as the global center of marine biodiversity, a short description of the important coastal ecosystems such as mangroves, seagrasses and coral reefs including their distribution should be added.
- The assessment of impacts of land- and sea-based pollution should capture best available information, e.g., Global Ocean Observation System (GOOS) data and Land and Ocean Interaction in Coastal Zone (LOICZ) data on environmental monitoring and material flux.
- Country profile statistics (population, poverty, livelihood, length of coastline, etc.) should be updated. Valuation of important resources and environmental services should be incorporated, if available and accessible.
- Check the Annual Statistics on Economic Development that each country in the region publishes for recent information on economic development.
- “The Environment of the Seas of East Asia” on Page 12 should briefly characterize each sea area in addition to the important sub-regional seas such as the Malacca Straits, Gulf of Thailand, South China Sea, etc. comprising “the Seas of the East Asia.” This would help in understanding how and where the issues occur.
- The scientific name for the Chinese dolphin on Page 63 should be *Sousa chinensis* instead of *Sausa chinensis*.

In commenting on the draft SDS-SEA, some participants cautioned that the text of the SDS-SEA should be brief, cogent and easily understood, avoiding lengthy description of technical details that would dilute its meanings.

The Meeting requested the participants to send their detailed comments before the end of July 2002.

#### **4.0. ASSESSING THE SCIENTIFIC ASPECTS OF PEMSEA**

The Meeting recognized the importance of PEMSEA's initiative in addressing scientific aspects of coastal and marine management, particularly with regard to the assessment and quantification of ecosystem carrying capacity, trade-offs between economic development and ecological benefits, impacts of maritime trade on endangered species, transboundary impacts of national economic activities and socioeconomic benefits of integrated coastal management (ICM). The Meeting considered that these were cutting-edge issues and the results from the concerned studies would contribute to the improvement of management approaches.

The Meeting noted with appreciation that management-oriented scientific and technical activities were essential elements of PEMSEA's demonstration project framework for ICM and pollution hot-spot management. As such, the project activities have provided valuable experience in institutionalizing scientific and technical inputs in decision-making mechanisms and processes.

In connection with MEG's role in providing scientific assessment and advice, some participants observed that PEMSEA might benefit more from the MEG if it could focus on certain critical issues that require scientific guidance rather than a general review of scientific aspects of the whole programme.

Special attention was devoted to scientific and technical activities of PEMSEA's demonstration sites, notably the integrated information management system (IIMS), environmental monitoring and risk assessment.

#### **4.1. Integrated Information Management System (IIMS)**

The merits and advantages of IIMS in servicing ICM and pollution hot spot management, particularly in comparison with other data management systems, were noted. Concern was expressed about the compatibility of IIMS with existing data management systems in some countries. Although efforts are made during the project implementation to build up IIMS application capacity, chances are that the sites would revert to their own software after the project terminates if the compatibility issue remains. Translation of IIMS into local language was considered another issue. The Meeting believed that more efforts are needed to demonstrate the anticipated merits and advantages of the IIMS. Successful application would increase the chances of its sustainability and extension.

## **4.2. Water quality criteria**

The development and improvement of water quality criteria are considered critical elements in implementing an effective environmental monitoring and assessment program. Some participants suggested that different sets of water quality criteria be developed for water areas designated for different “beneficial uses,” e.g., aquaculture, recreation, navigation and mooring, as costs involved in compliance varies with the level of criteria. In this connection, there might not be a need to pursue common water quality criteria among the countries of the region.

However, it was cautioned that the application of the “beneficial use” approach in developing water quality might not work where exchanges among different water columns are good or in the same water area where several “beneficial uses” are occurring simultaneously. Common water quality criteria are considered needed by the countries sharing the same water body and collaborating with one another in pollution reduction and other programmes. The Meeting considered that the approach to developing water quality criteria should be determined on a case-by-case basis, depending on site-specific management priorities and contaminants to be monitored.

## **4.3. Risk assessment for management improvement**

The environmental risk assessment approach and its role in management improvement were discussed at length. The Meeting commended PEMSEA for its efforts in the further development and application of the risk assessment approach, creating a pool of regional expertise and incorporating it as an essential element of the integrated coastal and ocean management framework being operated at its various demonstration sites.

According to some participants, the risk (represented by the Risk Quotient – RQ) can be estimated by comparing the predicted or measured environmental concentration to the predicted “no effect” concentration. Both parameters are represented by statistical distribution of temporal and spatial variations of environmental concentration, statistical distribution of tolerance and responses of different species, etc.

The Meeting noted that risk assessment and management had become a powerful tool for environmental management. If RQ is high, management/mitigatory measures should be introduced to reduce the risk to acceptable levels. Different alternatives of management/mitigatory measures will reduce RQ to a different extent. The cost-effectiveness of various management/mitigatory options can be compared on a scientific and rational basis. Moreover, risk assessment and management is a transparent process



and can be easily understood by the managers and general public. Thus the risk assessment and management approach provides a flexible and practical approach to environmental management, ranging from setting water quality criteria to environmental impact assessment.

The dependence of reliable risk assessment on proper sampling design and data quality was noted. The need to improve and strengthen environmental monitoring program was stressed.

Experiences and lessons learned from past efforts at the national and regional levels to develop and apply monitoring programs and risk assessments for management improvement were examined. It was pointed out that some intergovernmental marine pollution monitoring network programmes pursued over the years failed to achieve their objectives, mainly because there was no regional environmental management program in place which would otherwise create a demand and encourage the development of a monitoring and assessment program. In this connection, the Meeting recognized that environmental monitoring and assessment would be meaningless unless it is pursued as part of the package for management interventions and improvements.

## **5.0. INDIGENOUS AND EMERGING TECHNOLOGIES**

### **5.1. Merits and limitations on the use of bioindicators**

Dr. Rudolf Wu, Director, Centre for Coastal Pollution and Conservation, City University of Hong Kong, presented a proposal on the use of bioindicators. He described 17 bioindicators, including their merits and limitations and applicability in marine pollution monitoring in the region. In his analysis, the use of bioindicators have certain advantages over chemical and physical monitoring, particularly as they are related to significant ecological effects and directly address the ultimate environmental concern. He considered it a worldwide trend to supplement chemical and physical parameters with biological and ecological data in pollution monitoring.

### **5.2. Application in the region**

The Meeting recognized the increased importance of using bioindicators in marine environmental monitoring. It was agreed that bioindicators could be promoted to complement but not replace conventional monitoring parameters in the design and improvement of a monitoring program. It was noted that the identified bioindicators reflected different levels of ecosystem changes. Some can serve as an “early warning system” that calls for more in-depth monitoring; some signal changes in ecosystem functions and structures; and some are

indicators of specific pollutants. In designing a monitoring strategy, the advantages and limitation of these bioindicators should be taken into account.

The Meeting considered the following bioindicators applicable in the region:

- Body burden of trace metals and trace organics in mussels and barnacles
- Body burden of nitrogen and phosphorus in macroalgae
- Imposex of gastropods
- Diversity indices
- Species Abundance and Biomass (SAB) curves
- Abundance and Biomass Cumulative (ABC) plots
- Multivariate statistics

The Meeting considered that the usefulness of the following bioindicators in the region needs further validation and testing:

- MFO enzymes (EROD) in fish liver
- Sediment Oxygen Demand (SOD)
- Condition factor (CF) of fish
- Hepato-somatic Index (HIS) of fish
- Gonado-somatic Index (GSI) of fish
- Fin erosion of fish
- Skeletal deformities of fish
- Epidermal hyperplasia / papilloma of fish
- Liver tumor of fish

The Meeting recognized the need to enhance the regional capacity to test and apply bioindicators in marine environmental monitoring. In this connection, Dr. Rudolf Wu offered to tap the expertise and faculties in the City University of Hong Kong for training purposes if funding for travel and accommodation of international trainees can be sourced elsewhere. The Meeting thanked Dr. Wu for his offer and requested PEMSEA to take the proposal into account when developing new initiatives.

The Meeting also noted with appreciation the presentation made by Dr. Tong Soo Loong, President, Enviro Lift Services Sdn Bhd, Malaysia, on the use of ships of opportunities as a promising area for marine environmental monitoring.

## **6.0. THE ROLE OF MEG**

The Meeting evaluated the role of MEG in the light of PEMSEA's needs for scientific guidance in project development, implementation and management, the need to provide scientific support on emerging environmental management regime after the exit of the Regional Programme and how the MEG differs from other existing scientific advisory mechanisms in the region.

The Meeting recognized that the sustainability of the MEG lay in the process of turning itself into a clientele-demand-driven group, which is capable of generating needed outcomes. It can act or form working groups – like a “regional GESAMP,” and produce updated regional synthesis of available information on science and management focusing in particular on regional critical issues such as transboundary impact assessment. While other existing scientific advisory groups are governmental, the MEG should be independent and non-governmental, thus broadening its basis for inputs.

The Meeting noted that a self-sustained MEG, working together with the Regional Network of Local Governments Practicing ICM, the Regional Network of Coastal and Ocean Governance and regional sustainable financing mechanisms that are being developed, would play a positive role in facilitating the implementation of the Sustainable Development Strategy for the Seas of East Asia.

## **7.0. FOLLOW-UP ACTIVITIES**

Follow-up activities were identified, including:

- a) Reviewing the scientific aspects of the SDS-SEA;
- b) Exploring the possibility of conducting a workshop on monitoring strategies using bioindicators;
- c) Reviewing the outputs of the science and policy component of PEMSEA including the technical outputs of other components,
- d) Exploring the ways and means of establishing a working group for the synthesis report on transboundary issues, and
- e) Strengthening interaction of MEG members with the focal points and site officers/staff.

### **7.1. Ensuring effective review of PEMSEA outputs**

To facilitate the review of scientific aspects of the Regional Programme by the MEG, it was suggested that a matrix be prepared to illustrate different project sites or programme components with corresponding activities/outputs.

This way, the matrix can serve as the summary of programme activities and the detailed reports can serve as attachments to the matrix.

## **7.2. Secretariat support**

It is proposed that, during the intersessional period, the science and policy component of PEMSEA act as the Secretariat for the MEG and the Secretariat should consult with the MEG's incumbent Chairperson concerning issues to be addressed by the group. In addition, a discussion forum will be established through e-mail to update the group members of new developments and also to keep communication lines open.

The Meeting urged those members of the MEG who have not yet provided lists of experts from their respective countries to do so, in order to allow early preparation of the roster of experts. The roster will help mobilize experts to provide needed services.

## **8.0. CLOSING**

Dr. Yu gave a summary of the two-day discussion focusing on the salient points of the discussions. He ended with a word of thanks to the Chairperson and the participants for their time, effort and valuable contributions and reminded them that the proceedings of the meeting will be sent to them for their comments before finalization.

Dr. Soegiarto enumerated the actions to be undertaken during the intersessional period and urged the participants to make an effort to provide PEMSEA their inputs particularly to the SDS-SEA. He commended the active participation of his fellow participants during the discussions, which generated valuable ideas and opinions. On behalf of the participants, he thanked PEMSEA for efficiently organizing the meeting.

**First Meeting of the Multidisciplinary Expert Group (MEG)  
Kuala Lumpur, Malaysia  
9-10 May 2002**

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## Annex II

### **First Meeting of the Multidisciplinary Expert Group (MEG) Kuala Lumpur, Malaysia 9-10 May 2002**

#### **Provisional Agenda**

1. Introduction of members
2. Terms of Reference
3. Election of chairperson
4. Presentation of PEMSEA activities
  - Annual Progress Report
5. Document(s) for review
  - Sustainable Development Strategy for the Seas of East Asia
6. Indigenous and emerging technologies
  - Use of bioindicators in pollution monitoring
  - Others
7. Policy support
  - Environmental carrying capacity
  - Impacts of trade on endangered species
  - Transboundary impacts of national economic activities
  - Trade offs between economic development and ecological benefits
  - Socioeconomic benefits of integrated coastal management
8. List of regional experts
9. Recommendations for future work program
10. Other matters
11. Date and place of second annual meeting
12. Interim activities

**Revised TOR for MEG**

1. To provide scientific and technical advice to the Programme and Programme Steering Committee as required;
2. For this purpose, to interact with national focal points and project staff particularly at the Programme demonstration sites in ICM and subregional sea areas/pollution hotspots management in order to better understand the issues that require scientific support and enable timely scientific and technological interventions;
3. To foster the further development of a regional scientific forum in East Asia for better exchange of scientific and technical knowledge on coastal and marine environmental management issues;
4. To strengthen working linkages and cross participation with other similar international fora, e.g., the GESAMP and ICES;
5. To facilitate the formation of a forum for consultation between representatives and leaders of GEF bilateral and multilateral International Waters projects in the region, and promote strategic and complementary approaches to resolve environmental and resource management problems in International Waters;
6. To participate and assist in further development and implementation of the project, including project identification, formulation and improvement of methodology, monitoring and dissemination of results for Programme activities, and
7. To develop a general framework for assessment, evaluation and application of indigenous and emerging technologies in the region.