



# Bay of Bengal Large Marine Ecosystem Project



## Report of the BOBLME Pollution working group meeting 2-3 June 2010 • Male, Maldives

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# Bay of Bengal Large Marine Ecosystem (BOBLME) Project

## Final report of the Regional coastal pollution workshop

Co organized by



2-3 June 2010

Male

Republic of the Maldives

**Bay of Bengal Large Marine Ecosystem (BOBLME) Project**  
**Regional coastal pollution workshop**  
**2-3 June 2010, Male, Republic of the Maldives**

The workshop was held as part of the GEF and FAO Bay of Bengal LME Project, in collaboration with UNEP-GPA and the Environmental Protection Agency, Ministry of Environment, Maldives.

A full list of participants is at **Appendix I**, the prospectus at **Appendix II**, the agenda at **Appendix IV** and background papers circulated by UNEP-GPA at **Appendix V**. Copies of the country and other presentations are at [www.boblme.org](http://www.boblme.org)

**Meeting objectives:**

- To obtain an understanding of what information is available among countries, what relevant activities are currently underway in the region and identify pollution hot-spots
- To devise an initial plan of work for countries with a view to putting in place a regional collaborative approach to identifying important coastal water pollution issues and remedial strategies

**Summary:**

A very productive first meeting in relation to the marine pollution component of the BOBLME Project was held involving experts from seven of the eight project countries (Bangladesh, India, Indonesia, Maldives, Malaysia, Sri Lanka, and Thailand; Myanmar was unable to participate) supported by representatives of FAO, UNEP/GPA and IAEA. The information generation and sharing needs and crosscutting capacity building priorities were identified in order to develop a common understanding of the state of the Bay of Bengal's coastal water quality and the main sources of the pollution impacting on it. There was consensus on the structure and focus of an action plan for 2010/2011 designed to foster a linked regional and national approach to strengthen collaboration among the countries and help harmonize pollution monitoring and management capability.

On process, a regional meeting of senior policy makers from the eight countries, supported by experts, is proposed for the end of the year. This would endorse the marine pollution component of the Transboundary Diagnostic Analysis (TDA), foster stakeholder and partner engagement and finalise and endorse the work plan, including the establishment of national level operational working groups, an agreement on information sharing and monitoring and associated practical interventions on training, communication, outreach and partnerships.

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## Acronyms used

|         |  |
|---------|--|
| BIMSTEC | Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation |
| BOBLME  | Bay of Bengal Large Marine Ecosystem project                                   |
| COMAP   | Coastal Ocean Monitoring and Prediction  |
| CORRI   | Coastal Resources Risk Index   |
| FAO     | Food and Agriculture Organisation  |
| GEF     | Global Environmental Facility  |
| GESAMP  | Group of Experts on the Scientific Aspects of Marine Environmental Protection  |
| GPA     | Global Programme of Action   |
| IAEA    | International Atomic Energy Agency   |
| IMO     | International Maritime Organization  |
| IOC     | Intergovernmental Oceanographic Commission                                     |
| LME     | Large Marine Ecosystem   |
| LOICZ   | Land Ocean Interactions in the Coastal Zone                                    |
| MARIS   | Marine Information System  |
| POP     | Persistent Organic Pollutants  |
| TDA     | Transboundary Diagnostic Analysis  |
| UNEP    | United Nations Environment Programme   |
| UNESCO  | United Nations Organization for Education, Science and Culture                 |

## 1. Context

Over 400 million people in the Bay of Bengal area are dependent on coastal and marine resources for their food, livelihood and security. Rapid population growth, high dependence on marine resources and increased coastal land use has resulted in over exploitation of fish-stocks and habitat degradation and has led to considerable uncertainty whether the ecosystem will be able to support the livelihoods of the coastal populations in the future. The likely impact of climate change accentuates the risk.

The Maldives, India, Sri Lanka, Bangladesh, Myanmar, Thailand, Indonesia and Malaysia have agreed to work together through the Bay of Bengal Large Marine Ecosystem (BOBLME) Project and lay the foundations for a coordinated programme of action designed to improve the lives of the coastal populations through improved regional management of the Bay of Bengal environment and its fisheries.

## 2. Part I - Opening of workshop and overview presentations

His Excellency, Dr Mohamed Ali, Minister of State for Fisheries and Agriculture Maldives provided the key note address. He underlined the importance of the marine resources in the region and their vulnerability to the impacts of marine pollution. National governments must take responsibility, but in the face of transboundary pressures and drivers and their impacts on resources regional collaboration was increasingly important and necessary. He would work with colleagues in the Maldives and in other countries to provide political momentum for the BOBLME process. The importance of sustainable management of marine resources needed to be mainstreamed into the way countries took policy and investment decisions and national and regional efforts should complement each other. BOBLME had great potential to help improve the livelihoods of people in the region.

### Overview of BOBLME and the marine pollution component

Dr Rudolf Hermes, FAO-BOBLME, outlined the project operational structure and aims. Over the next five years, expected to be the first phase of the BOBLME Project, work will focus on gaining a better understanding of the issues, strengthening and harmonising the management capability in each country and strengthening the regional management capacity. A Transboundary Diagnostic Analysis will identify and prioritise the major regional environmental concerns and their root causes, followed by a Strategic Action Plan to address and remediate them. The project will also create an institutional arrangement that will serve as a vehicle for the countries to continue their collaborative work.

Three operative project components would underpin these processes: **(a) Coastal/marine natural resources management and sustainable use** (regional and sub regional collaborative approaches to fishery and critical habitat assessments and management), **(b) Improved understanding and predictability of the BOBLME ecological functions and processes** (improved regional collaboration/partnerships with other regional and global environmental assessment and monitoring programmes and **(c) Maintenance of ecosystem health and management of pollution**.

It was in relation to this third component that the workshop was being held. The objective of this component was (i) development of an agreed set of environmental indicators to measure the overall health of the BOBLME, (ii) development of a regional collaborative approach to identifying important coastal water pollution issues and remedial strategies, using relevant coastal pollution loading and water quality criteria.

The Male workshop was the first step in meeting (ii) the development of a regional collaborative and remedial approach. Relevant indicators would include water and sediment quality, harmful algal blooms and fish-tissue and bivalve contaminants. The aim of the Male workshop was for a set of conclusions and recommendations to participating countries for the identification, strengthening and harmonising of water quality standards. These would help form an action plan for 2010/2011 and beyond focused on identifying a regional approach to addressing marine pollution in the BOBLME.

**An ecosystem-based framework for addressing land based sources of marine pollution – the 1995 Global Programme of Action (GPA) for the protection of the marine environment from land-based activities.**

Dr Anjan Datta, UNEP/GPA, Nairobi outlined the relevance and potential offered by the inter-governmental Global Programme of Action. The strength of the GPA is that it represents a multilateral commitment to protect coastal and marine ecosystems through comprehensive, continuing and adaptive management action at the scale of entire ecosystems – ecosystem-based management.

Through the GPA, States are committed to protect and preserve the marine environment from the impacts of land-based activities, notably those resulting from sewage, persistent organic pollutants, radioactive substances, heavy metals, oils (hydrocarbons), nutrients, sediment mobilization, litter and physical alteration and destruction of habitat. The GPA also provides an explicit multilateral programme on which UNEP and other bodies, including the regional seas programmes, mandated to address coastal and marine environment can align and deliver their activities. The GPA office would be happy to offer its support to efforts to foster and embed regional co-operation on marine pollution and linkage to broader development goals.

**Global partnership on nutrient management:** in a separate, later, presentation Dr Datta illustrated the partnership approach which the GPA fostered. He highlighted the global partnership on nutrient management, which had been launched at the UN Commission on Sustainable Development in 2009 involving governments such as the US, the Netherlands, the European Commission, India and Indonesia, leading scientific bodies, the private sector and a range of UN agencies. The partnership was particularly relevant both in terms of helping to focus cost-effective remedial action on leading causes - eutrophication and sewage - of declining coastal water quality, and in terms of fostering supportive capacity building through sectoral and other stakeholder engagement.

### **3. Part II - National presentations**

Representatives from Bangladesh, Indonesia, India, Maldives, Sri Lanka, Malaysia and Thailand gave a series of comprehensive and highly informative presentations on their national experiences and circumstances in relation to marine pollution, using the format requested. They set out the main national and trans-boundary marine pollution problems faced by their countries and the causal drivers behind them; the current state of their water quality monitoring, their country-level capacity for environmental resource management, research and monitoring and data collection; and the relevant environmental legislation and associated institutional and management structures and approaches.

The presentations prompted lively and productive discussion among country representatives, reflecting a desire to tease out areas of potential collaboration, where there was information on water quality criteria and where there were gaps. This process was facilitated by very helpful and focused interventions from Dr Mike Huber, GESAMP, and Dr Jae Oh, IAEA, acting as resource persons. Dr Huber gave a short overview following the national presentations. There was also a presentation by the Indian representative on the work of the Land Ocean Interactions in the Coastal

Zone (LOICZ) programme, including the potential of quantifying costs and benefits for policy development within an overall ecosystem-based approach, linking watersheds and coasts.

A number of themes and findings emerged from the national presentations. First, it was clear that the current focus and capacity in countries in relation to marine pollution and water quality was at the national level - there were no current regional approaches or capacity. This said, there was sub -regional co-operation on specific issues for example between Indonesia and Malaysia in relation to shipping in the Malacca Straits and between these countries and Thailand on shipping pollution in relation to the Andaman Sea.

National coastal water quality research and monitoring capacities varied substantially among the countries. In Bangladesh there was currently little hard data collection, analysis and established criteria. The position was similar in the Maldives. Both lacked research and laboratory capacity, including for straightforward pollution hot spot recognition, though the island character of the Maldives allowed for informal observation, e.g., fish kills and red tides.

On the other hand, India, Thailand, Indonesia, and Malaysia had much greater and more sophisticated capacity, reflected in detailed and high intensity mapping of pollutants and application of water quality standards and monitoring, though approaches varied. Sri Lanka had potentially significant research capacity but would benefit from improved training and laboratory capacity. The variation in monitoring capability within the region creates opportunities for sub-regional co-operation among countries within the region.

Of note in terms of potential collaboration was the capacity and networking of Universities and other centres; the availability of research vessel time (India); forward looking systems such as the Malaysian CORRI (Coastal Resources Risk Index) for assessing impact of water pollution on the productivity of coastal resources, the Indian COMAP (Coastal Ocean Monitoring and Prediction) system for coastal water quality monitoring and the effectiveness of water quality standards, sea water quality indices, sediment monitoring and environmental impact assessments applied in Thailand and Indonesia.

All countries drew attention to the cross-cutting problem of enforcement and implementation of current legislation, as opposed to the need for new legislation. There was a need for additional capacity, including through training and availability of courses, and political engagement to highlight the importance and value of enforcing and implementing environmental legislation. Coordination among different agencies with environmental responsibilities often needs improvement. Solutions might lie with raising awareness of environmental legislation and the importance of environmental protection, not only in the community but also with policy makers and the judicial system. This might involve networking with interested parliamentarians, for example through existing mechanisms such as BIMSTEC, or in some countries establishing specialist environmental courts. In this regard, there was also a general need to engage more effectively with key sectors and other stakeholders and there was considerable interest in outreach tools such as mapping and report cards drawing on the material set out in the presentations.

Oil pollution from shipping was a common and serious problem, both in terms of discharges at sea, in and around ports, and in urban runoff, manifested in tar balls in coastal areas. The relative contribution of land-based and sea-based sources of oil pollution was uncertain, although in Malaysia some 70-80% of oil input to the sea comes from land-based sources such as runoff of waste vehicle oil. Waste management was a common priority, with countries differing on whether sewage or solid waste was the greater problem, e.g., in Maldives solid waste was the major problem. Eutrophication due to excessive nutrient inputs from sewage and agriculture was a common problem, though varied in sources and intensity. Malaysian monitoring efforts on nutrient sources appeared to be proving successful. Heavy metals were also commonly identified as a problem in some areas, depending on industry type, e.g., ship re-cycling in Bangladesh and tanneries in Sri Lanka. The question was posed whether an apparent lower priority assigned to heavy metals and



also POPs in the region was due to a lack of data on these contaminants rather than reflecting the true situation.

#### **IAEA – Building regional laboratory and monitoring capacity**

Dr Jae Oh from the International Atomic Energy Agency (IAEA), Marine Environment Laboratory, Monaco. Picking up on the points made in the national presentations, Dr Oh set out the work of the marine division of the IAEA laboratory and the possibilities it offered for assisting the marine pollution component of the BOBLME. Within the UN System, they co-ordinate the Inter-agency programme on marine pollution (IAEA, UNEP and UNESCO-IOC) and interact with the various Regional seas programmes covering the Mediterranean, Red Sea, Black Sea, Caspian Sea and Eastern and West African regions.

Of particular relevance was that the marine laboratory could help operate a regionally co-ordinated monitoring programme for pollutants in coastal waters. Sustainable capability could be built up through reliable measurements and assessment of pollutants such radionuclides, trace elements, organic pollutants, nutrients and overall data management based on the laboratory's experience in data collection and sampling of fish and bivalves and the methodology they applied. Some 245 laboratories worldwide participated in the IAEA's work and the programme offered training courses, fellowships, field studies (e.g. on tar balls) and contaminant surveys. Dr Oh highlighted the Marine Information System (MARIS) which provided a relational database, accessible through the internet and outlined potential assistance available from IAEA in calibration and standardization of analytical processes and measurements.

The work of the laboratory dovetailed with a number of concerns and proposals put forward in the country presentations, the emphasis on improving the capacity of research bodies in the region, the need to develop a regional approach and capacity for pollution monitoring based on shared parameters and data sharing, and training.

#### **4. Part III - Working groups and an outline work plan**

Three working groups were established to map out the key issues for the development of a work plan for 2010/2011, which could also form a basis for work in subsequent years, for example as countries prepare regional and national reports on marine pollution and input into the Strategic Action Plan.

The work of each group was structured around four themes: (i) current activities, information gaps and how to generate the needed information to fill gaps; (ii) institutional and policy issues relevant to putting in practice relevant information; (iii) concrete actions and interventions, such as training and capacity building, establishing partnerships etc.; (iv) the overall amount of resources likely to be available annually for the marine pollution component, which was seen as in the order of US\$ 160000 for working purposes.

**Outcomes and embryonic work plan:** substantial consensus emerged from the working group discussions and subsequent plenary. Conclusions and recommendations fell into the following main themes, which were seen as key components of an initial work plan:-

- a. **Priority contaminants/Issues:** there was agreement on a number of priority issues - oil pollution, sewage and solid waste/marine litter, nutrients, heavy metals and POPs - which the BOBLME process could usefully address and which would help form a policy framework for collaboration in water quality monitoring.

Country representatives recognised that in some circumstances, depending on country approaches and positions, some issues may not necessarily fall into a transboundary category. In this context, countries also recognised that some issues such oil pollution from shipping and POPs fell formally within existing intergovernmental processes such as the work of the processes

to which countries were already committed. Nonetheless, it was recognised that such issues were relevant to overall water quality in the region and so needed to be factored in. One option might be for the BOBLME process to engage with such bodies to avoid overlap and clarify the sort of capacity building work they make available and how these might fit with regional capacity building efforts under BOBLME.

- b. **Information and monitoring programme:** there was a strong focus on establishing a water quality information and monitoring baseline for the region, which would in turn lead to collaboration on a monitoring approach. This was formalised in terms of the suggestion for countries to agree a 'Protocol for developing a water quality index', drawing on the current monitoring standards, approaches and criteria in the region and how they could be translated across the region. The emphasis of the protocol should be to develop a common framework within which countries can develop indices and monitoring programs appropriate to their individual situations, rather than developing a single, standard index across the region.

A first step would be an inventory of current monitoring approaches/criteria etc. as well as research and laboratory capacities. Early outcomes from this 'protocol' concept could be collaboration among laboratories, including support from IAEA; the development of a region-wide mussel watch and the mapping out of pollution hot spots across the region.

- c. **Communication/awareness raising:** the national presentations had shown the potential in some countries of information presentation, including mapping of hot spots and report cards, including straightforward 'traffic light' approaches to pollution status based on the protocol for developing water quality indices. These could be used to publicise the BOBLME work and engage stakeholders from school children to parliamentarians who could provide useful political momentum and networking. There was a need across to work on information and monitoring such as mussel watch.
- d. **Enforcement and implementation of environmental legislation:** discussion focused on how the BOBLME process might help. Training (see below) and outreach to other agencies and stakeholders through the communication tools (above) were recognised as part of this. A specific area of focus was in identifying and reviewing the available tools in the region, such as environmental impact assessment, risk assessment, valuing ecosystem services etc. One option might be to use this to assemble an initial tool box of what was available and potentially useful. There was a clear need across to work on priority issues: for example, implementation could be a theme of any capacity building process on one of the issues such as sewage management.
- e. **Training/partnerships/fellowships:** this theme also linked to implementation and indeed other themes in that training needed to be focused and add value. In particular, training and capacity building should be linked directly to the development and implementation of the protocol for water quality indices. Training of trainers was seen as a value for money approach which lent itself. This needed to be carried out in a systematic way and a first step would be to identify what was already on offer among UN agencies and other stakeholders. UNEP/GPA could facilitate training on wastewater.

Fellowships and educational courses, e.g., in marine pollution, were also seen as a useful part of the work plan, which would help embed the BOBLME process and promote sustainability of the project, including regional self-generating trainers. Partnership initiatives, focused on priority issues such as nutrient and waste management, were seen as a way of getting to grips with issues but also bringing in capacity building themes and outreach.

- f. **Operational working groups:** finally, countries saw a need for a process at national level to take forward the more practical steps outlined above under an overall theme of strengthening of institutional co-ordination and integration. Each country could establish an operational working group: in effect a focal point on marine pollution issues (to complement the broader national BOBLME processes), which would focus on carrying out the work plan, commissioning work and providing a platform for discussion and outreach to stakeholders. As the project developed they

would be able to assemble material for national consultations and reports, subject to the overall role of national co-ordinators.

Country representatives favoured the establishment of such groups as soon as practicable with a view to them holding focused meetings in 2010. It was recognised that such a process in each country would promote regional commonalities but that it would also allow for some flexibilities to reflect different national emphases. For example, one country might take the lead on an issue of particular importance to its stakeholders though of wider trans-boundary relevance to all countries, which would also benefit.

#### **Next steps and outline of a work plan 2010-2011**

The meeting tasked the facilitator to produce a report of the meeting and to reflect the six themes set out above in an outline work plan, specifically for 2010/2011, but applicable for subsequent years. A draft is provided below.

## **5. Part IV - Outline work plan for 2010/2011**

**Overall theme:** Strengthening institutional co-ordination and integration

### **5.1. Year 1 - 2010**

#### Objective:

Initiating regional monitoring, management and communication capacity through co-ordination of national approaches

#### Process:

Holding of regional meeting of all countries at senior policy level with expert support to be held end 2010. Preparatory work to be carried out by countries in advance of meeting with BOBLME support.

#### Regional meeting aims:

- To endorse and so secure high level official and stakeholder support for marine component of TDA
- Finalise and agree work plan for 2011 [and beyond], including (i) modalities of establishing operational working groups; (ii) initiating protocol on information and monitoring; (iii) preparation and dissemination of communication tools
- Agree on allocation of available resources for 2011

#### Preparatory work for regional meeting:

- I. Countries to undertake
  - Outreach to national and regional stakeholders/partners
  - Preparation of communication/awareness raising tools – mapping and report cards.
  - Inventory of laboratories and research bodies
  - Inventory and initial consolidation of available material and approaches on water quality monitoring
- II. FAO/ BOBLME in partnership with UNEP/GPA
  - Approach to IMO and POPs Convention
  - Support to countries on preparatory materials
  - Background paper on suggested modalities of operational working groups

Commentary - 2010 work leading to 2011:

There is a need for prior senior level engagement and stakeholder engagement within countries in relation to the marine pollution component before substantial work is undertaken by countries. A regional meeting, held in advance of the next BOBLME steering committee meeting, would allow for this enabling the work of the marine pollution component, including the TDA work, to be fully reflected within the steering committee process and national co-ordinators. This will also help promote synergies between related areas of work within the overall project, e.g. how the work on water quality indicators fits into work on ecosystem health indicators for the BOBLME region.

Specific products of the meeting would be agreement on communication tools and approaches based on the preparatory work, and crucially how to establish an information and monitoring programme. The establishment of 'marine pollution' operational working groups would then provide a focus within countries for work to be carried out in these areas.

Holding meetings of the operational working groups in 2011 would also provide a platform for the holding of training and enforcement seminars and stakeholder partnership meetings, e.g. on nutrient and sewage management. In this way, over the 2010/11 period all of the key themes identified by country representatives at the Male meeting can be reflected in concrete activities and processes. FAO, UNEP/GPA and others under the BOBLME process, such as BIMSTEC would be available to support the groups and foster a regional focus.

**5.2. Year 2 - 2011**

Objective:

Strengthening and harmonising the management capability in each country to build regional capacity

Operational focus:

Establishment of operational working groups in each country and holding of meetings in some/all countries allowing for concrete steps such as work on water quality criteria, training, communication and partnerships to be carried forward in a consistent and regionally beneficial way

Modalities and sequencing of operational working group meetings:

Possible modalities for the working groups would be set out in a paper for discussion at the end 2010 regional meeting. Preferably, one meeting of each country's working group would be held within 2011, though groups would also work virtually. However, countries might wish to focus on particular issues and hold joint meetings. A further option would be to hold a number of meetings in 2011 and a number in 2012.

While meetings will need to carry out national capacity building efforts, each meeting would need to be constructed in a way that it would help promote regional collaboration efforts. For example, a key theme would need to be on implementing the information and monitoring programme. At the same time, a meeting of an operational working group would provide an opportunity to hold training on a marine pollution issue(s), or a partnership initiative, e.g. on nutrient management as outlined during the Male workshop. UN agencies would be available to facilitate. Over a period of time and through a coherent approach to the meetings and a consolidation of their outcomes, regional partnership networks on priority issues and training could for example emerge.

Over 2011 and through the holding of a number of operational working group meetings significant progress can be made in building national capacity within an overall regional collaborative approach. By end 2011 an information and monitoring programme could be initiated, communication tools established and in use, some training carried out on priority issues, a fellowship process agreed on and partnership meetings held. These activities can be strengthened and deepened in 2012 as required.

Around these activities, marine pollution experts would be engaged in regular contact, including with supportive resources such as the IAEA and UNEP/GPA. Subject to progress, the operational working groups, including through stakeholder engagement, could also be a focal point for assisting with national level consultations and reporting on BOBLME marine pollution issues, as the overall project moves forward.

### **5.3. Year 3 - 2012 and beyond**

It is too early to go into detail about activities for 2012 and beyond. However, a further regional workshop at senior policy plus expert's level, either at the end of 2011 or the start of 2012 could be helpful in consolidating progress and developing further momentum.

As the overall BOBLME Project moves forward, there will probably be moves towards national consultations, reports and action plans on BOBLME, LME indicators and related issues. The work identified at the Male workshop and encapsulated in the outline work programme for 2010/2011 would also be consistent with such moves.

## Appendix I List of participants



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## **Appendix II The prospectus**

### **BOBLME Coastal pollution workshop**

#### **Background**

The objective of the BOBLME Project Component 4 (Maintenance of Ecosystem Health and Management of Pollution) is to support activities leading to an agreed on set of environmental indicators to measure the health of the BOBLME, and – under the Subcomponent 4.2, which deals with coastal pollution loading and water quality criteria – the development of a regional collaborative approach to identifying important coastal water pollution issues and to develop remedial strategies. The indicators, water quality criteria, including hotspots identified, and other key information that will result from this component will feed directly into the TDA/SAP process.

In line with the annual regional work plan, adopted by the Project Steering Committee in March 2010, the following activities will be undertaken under Subcomponent 4.2: A technical workshop will be held in June comprising (BOBLME Project) country experts and experts from potential partner organisations such as International Atomic Energy Agency (IAEA), Asian Environmental Compliance and Enforcement Network (AECEN), Global Environment and Technology Foundation (GETF) and others. The aims of the workshop will be to obtain an understanding of what information is available on coastal pollution loading and water quality criteria and on related activities currently underway in the Bay of Bengal (country reports and partner reports), identify pollution hot-spots and to jointly design a plan of work for the future.

The workshop activities will be the major milestone for project activities on the topic of coastal pollution loading and water quality criteria and at the same time a key requisite for developing and implementing a work plan addressing pollution issues.

The BOBLME Project has decided to join forces with the United Nations Environment Programme as the Secretariat of the Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities. The GPA is the only global intergovernmental initiative directly addressing the link between watersheds, coastal waters and the open ocean. The GPA is designed to be a source of conceptual and practical guidance to be drawn upon by national and/or regional authorities for devising and implementing sustained action to prevent, reduce, control and/or eliminate marine degradation from land-based activities. The GPA aims at preventing the degradation of the marine environment from land-based activities by facilitating the duty of States to preserve and protect the marine environment.

#### **Workshop purpose and objectives**

The workshop will develop recommendations and a work plan to ensure proper monitoring and reporting on coastal pollution and water quality issues. It will bring together selected environment and pollution experts from the BOBLME partner countries, including resource persons, with the aim to discuss country reports on coastal pollution and provide advice on the development of a regional collaborative approach to identifying important coastal water pollution issues and to develop remedial strategies.

As input for the deliberations and in order to reach these objectives, country pollution papers will be presented and discussed, as well as background or overview papers on GPA recommended actions and approaches, including on the Global Partnership on Nutrient Management (GPNM) and the WIO-LaB project: "Addressing Land Based Activities in the Western Indian Ocean".

#### **Workshop outputs**

The main outputs of this workshop will be a work plan and a workshop report outlining its conclusions and recommendations.



**Date and venue**

The workshop will take place from 02-03 June 2010, in Male, Maldives (meeting venue to be communicated).

**Workshop programme**

The workshop will consist of an opening session and several technical sessions for substantive issues, followed by a closing session.

**For further information**

Contact [rudolf.hermes@fao.org](mailto:rudolf.hermes@fao.org)

## **Appendix III Template for pollution country report**

### **Template for drafting of national report on Coastal pollution loading and water quality criteria**

- 1 The Bay of Bengal coast of .....**
  - 1.1 Bio-geographical features
  - 1.2 Coastal activities of
    - high economic value in terms of GDP
    - important for livelihoods and human wellbeing
- 2 Overview of sources of pollution**
  - 2.1 Land-based (Both point and non-point sources of pollution)
  - 2.2 Sea/marine-based
  - 2.3 Priority categories of parameters
- 3 Existing water and sediment quality objectives and targets**
- 4 The national program - Coastal ocean monitoring and prediction system**
  - 4.1 Mapping hotspots along the coast
  - 4.2 Time series analysis and significant findings
  - 4.3 Role of Ministry of Environment and Ministry of Fisheries
  - 4.4 National laboratories
- 5 Present status of marine pollution: contaminant levels in water, sediments, fish and other biological resources**
  - 5.1 Eutrophication and nutrient dynamics; Chlorophyll; Chemical oxygen demand; Suspended substances
  - 5.2 Oil pollution and oil spill, refinery waste water and offshore operations; ecological impacts of oil pollution
  - 5.3 Heavy metals and persistent organic pollutants (POPs)
  - 5.4 General status and trends of marine pollution: trend of harmful algal blooms (HABs); Toxin-producing and shellfish poisoning; Pathogenic microorganisms – viruses and bacteria; the health of coastal organisms
- 6 Trans-boundary coastal pollution issues and concerns**
- 7. International instruments, conventions, protocols and programs adopted and relevant to coastal and marine pollution and the current status of their implementation in the country (including projects and programs supported by bilateral and multilateral agencies/institutions)**
  - 7.1 The Agenda 21 (Chapter 17) of the UN Conference on Environment and Development calling for “the protection of the oceans, all kinds of seas, including enclosed and semi-enclosed seas, and coastal areas and the protection, rational use and development of their living resources”, 1992
  - 7.2 Global Programme of Action for the Protection of Marine Environment from land based Activities (GPA), 1995
  - 7.3 Stockholm Convention on Persistent Organic Pollutants, 2001

- 7.4 London Conventions 1972 and its 1996 Protocol
- 7.5 MARPOL (International Convention for the Prevention of Pollution from Ships, 1973 and the Protocol of 1978)
- 8 Policy, economic instruments and Legal Mechanisms for pollution control**
  - 8.1 The Water (Prevention and Control of Pollution) Act and rules
  - 8.2 The Environment (Protection) Act and rules
  - 8.3 Water quality standards
  - 8.4 EIA/SEA for clearance and approval of projects that have potential impacts on the water quality and coastal and marine environment in general
  - 8.5 Other instruments and key sectoral policies (e.g., Agricultural policy dealing with fertilizer and pesticide use and/or integrated pest management/ organic farming, ICZM)
  - 8.6 Market-based instrument - environmental levies, taxes, subsidies, incentives etc.
- 9 Institutional mechanisms for pollution control and enforcement of existing policies and legislations**
  - 9.1 Pollution control board – at central, regional/state and local levels their mandates, operational structures and inter-linkages
  - 9.2 Who does quality control and who ensures enforcement of policies and legislations
- 10 Gaps**
  - 10.1 Information/data
  - 10.2 Policies and legislation
  - 10.3 Implementation issues (capacity constraints both human and technical/infrastructure)
  - 10.4 Report card of pollution status to public
- 11 Priority actions and remedial measures required at**
  - 11.1 National level
  - 11.2 Regional/State level
  - 11.3 Local level
- 12 Summary and conclusions**

## Appendix IV The meeting agenda



### BOBLME Regional coastal pollution workshop

(In collaboration with UNEP-GPA and EPA, MoE, Maldives)

Coastal pollution loading and water quality criteria:

Development of a regional collaborative approach to identifying important coastal water pollution issues and to develop remedial strategies coastal pollution loading and water quality criteria:

02-03 June 2010

Marble Hotel, Male, Rep. of Maldives

#### Goal of the meeting:

**To build a common understanding on the state of the coastal water quality, the sources of pollution impacting the coastal water quality and developing a regional remedial collaborative approach to address the important coastal water pollution issues.**

#### Provisional agenda

##### Evening of 1<sup>st</sup> June (before start of day 1)

1900 – 2100 Informal welcome and socialization

| Day 1       | 2 June 2010   |
|-------------|---|
| 0815 - 0900 | Registration  |
| 0900        | Recitation of the Holy Quran  |
| 0900 - 0920 | Welcome and opening remarks <ul style="list-style-type: none"> <li>- Host (Environmental Protection Agency, Ministry of Environment, Government of Maldives)</li> <li>- Representative of UNEP (Dr. Anjan Datta)</li> <li>- Representative of BOBLME (Dr. Rudolf Hermes)</li> <li>- Representative of FAO (Dr. Patrick Evans)</li> <li>- Representative of Ministry of Environment, Government of Maldives (Deputy Minister of Environment, Mr. Akram)</li> </ul> |
| 0920 – 0950 | Aims of the meeting, introduction and adoption of the Agenda (Mr Chris Tompkins, Workshop Facilitator)  |
| 0950 - 1010 | Overview of the BOBLME Project, Ecosystem Health Component, and the TDA-SAP Process (Dr Rudolf Hermes)  |
| 1010 – 1030 | The GPA and its relevance for addressing coastal water issues (Dr Anjan Datta)  |
| 1030 – 1100 | Coffee  |

|             |  |
|-------------|--|
| 1100 – 1300 | Presentation of the country reports (Chair: Delegate from Sri Lanka; Facilitator Mr Chris Tompkins)  |
| 1100 - 1120 | Presentation by Bangladesh   |
| 1120 - 1140 | Presentation by Indonesia  |
| 1140 – 1200 | Presentation by India  |
| 1200 – 1220 | Presentation by Maldives   |
| 1220 – 1240 | Comments by the Resource Persons (Dr Jae Oh, IAEA Laboratory , Monaco and Dr Mike Huber, FAO Consultant)   |
| 1240 – 1300 | Comments/question from the floor   |
| 1300 – 1400 | Lunch  |
| 1400 – 1600 | Presentation of the country reports continued (Chair: Delegate from Indonesia; Facilitator Mr Chris Tompkins)  |
| 1400 - 1420 | Presentation by Malaysia   |
| 1420 - 1440 | Presentation by Myanmar  |
| 1440 – 1500 | Presentation by Sri Lanka  |
| 1500 – 1520 | Presentation by Thailand   |
| 1520 – 1540 | Comments by the Resource Persons (Dr Jae Oh, IAEA Laboratory , Monaco and Dr Mike Huber, FAO Consultant)   |
| 1540 – 1600 | Comments/question from the floor   |
| 1600 – 1615 | Coffee   |
| 1615 – 1715 | Synthesis and summing up of key issues (Interactive session; Facilitator Mr Chris Tompkins)  |
| 1715 – 1730 | Establishing of working groups (2-3 depending on the no of participants) to map out the key issues for the development of a work plan/action program taking into account <ul style="list-style-type: none"> <li>i. Current activities, monitoring protocol, overall information gap and how to generate the needed information to fill the gaps</li> <li>ii. Institutional and policy issues to put in practice the existing knowledge and addressing national and trans-boundary issues</li> <li>iii. On the ground interventions – training and capacity building, establishing partnerships etc. - and next steps: (sub) regional cooperation.</li> </ul> |
| 1730 – 1800 | Meet the PRESS (Host, BOBLME Project, FAO and UNEP)  |
| 1900 – 2100 | Group dinner   |

| <b>Day 2</b> | <b>2 June 2010</b>  |
|--------------|---|
| 0900 – 0915  | Recap of the day 1, issues for further clarifications etc. (Facilitator Mr Chris Tompkins)  |
| 0915 – 0930  | Questions, comments and discussion  |
| 0930 - 1300  | Working group sessions and preparation for presentation in plenary  |
| 1300 - 1400  | Lunch   |
| 1400 – 1530  | Plenary – report by the working groups<br>Questions and comments from the floor<br>Comments by the resource persons<br>Facilitator synthesizes the key issues for drafting the work plan, recommendations, and road map |

|             |  |
|-------------|--|
| 1530 – 1600 | Presentation on the Global Partnership on Nutrient Management(GPNM)<br>(Dr Anjan Datta)                                    |
| 1600 – 1615 | Presentation on the IAEA role on pollution issues in international waters and Large Marine Ecosystems projects (Dr Jae Oh) |
| 1615 – 1630 | Questions, comments and discussion   |
| 1630 – 1700 | Closure of the workshop<br>Host<br>UNEP<br>BOBLME  |
| 1700 – 1730 | Coffee and socialization   |

## Appendix V The Information paper of UNEP/GPA



# United Nations Environment Programme

برنامج الأمم المتحدة للبيئة • 联合国环境规划署  
 PROGRAMME DES NATIONS UNIES POUR L'ENVIRONNEMENT • PROGRAMA DE LAS NACIONES UNIDAS PARA EL MEDIO AMBIENTE  
 ПРОГРАММА ОРГАНИЗАЦИИ ОБЪЕДИНЕННЫХ НАЦИЙ ПО ОКРУЖАЮЩЕЙ СРЕДЕ

**Coordination Office of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA)**

**An Information paper for the BOBLME regional technical workshop on coastal pollution, Male, Maldives**

### Introduction

The major threats to the health, productivity and biodiversity of the world's oceans result from human activities on land - in coastal areas and further inland. Some 80 percent of the pollution in the oceans originates from land-based activities. Oceans have become the final destination for municipal sewage and solid waste, chemical discharges from factories upstream, oil spills, fertilizer run-off and other pollution from farms. Once let loose, such pollution can seldom be controlled; it must be stopped at source.

Pollution from the land affects the marine and coastal environment, including estuaries and inshore coastal waters, which are the most productive areas. The environment is also threatened by physical alterations of the coastal zone and activities such as dam construction and water diversion further upstream. These are destroying habitats of vital importance for ecosystem health.

Some 1 billion people live in coastal urban centres. Almost 50 percent of the world's coasts are threatened by development-related activities. The health, well-being and, in some cases, the very survival of coastal populations depend upon the condition of coastal systems such as estuaries, wetlands, mangrove forests and coral reefs. The intense pressures put on these coastal systems require serious commitment and preventive action at all levels - local, national and global.

In response to these problems, the global community has committed to protect and preserve the marine environment from the adverse environmental impacts of landbased activities. Numerous regional protocols and action plans have been negotiated and in 1995 the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA) was adopted through the Washington Declaration.

Through the GPA and related Washington Declaration, States declared "their commitment to protect and preserve the marine environment from the impacts of land-based activities .... Setting as their common goal sustained and effective action to deal with all land-based impacts upon the marine environment, specifically those resulting from sewage, Persistent Organic Pollutants, radioactive substances, heavy metals, oils (hydrocarbons), nutrients, sediment mobilization, litter and physical alteration and destruction of habitat."

The United Nations Environment Programme (UNEP) was charged with providing the Secretariat of the GPA, and facilitating and catalyzing its implementation. The UNEP GPA Coordination Office was set up to carry out UNEP's role as the Secretariat.

Through the GPA, States commit "To develop *comprehensive, continuing and adaptive programmes of action* within a framework of integrated coastal area management [emphasis added]". Specifically, the GPA recommends that states undertake the activities recognising the effect on food security and poverty alleviation, public health, coastal and marine resources, ecosystem health and economic and social benefits and uses. This commitment has been renewed through the Montreal Declaration (2001) and Beijing Declaration (2006).

The GPA is also a commitment by governments, regional and international organisations to cooperate at regional and global scales to support national action aimed at protecting the marine environment according to below figure. In this regard, governments envisaged the GPA facilitating a global knowledge network focussed on collaboration around issues such as capacity building and technology transfer. When negotiating the GPA, governments advised “Its implementation will require new approaches by, and new forms of collaboration among, Governments, organisations and institutions with responsibilities and expertise relevant to marine and coastal areas, at all levels national, regional and global. These include the promotion of innovative financial mechanisms to generate needed resources.”



Consistent with the emphasis on regional cooperation, the respective Regional seas organisations play a fundamental role in supporting and coordinating action to implement the GPA at national and sub-national scales. As mentioned above, the respective governments of some of the Regional seas have negotiated legally binding conventions/protocols that contribute to achieving the objectives of the GPA, while others have negotiated action plans that also contribute to the GPA. In some regions, projects funded by the Global Environment Facility (GEF) have resulted in Strategic Action Plans for specific ecosystems. These too contribute to the GPA and are examples of the regional collaboration envisaged by the drafters of the GPA.

Perhaps the greatest strength of the GPA is that it represents a multilateral commitment to protect coastal and marine ecosystems through **comprehensive, continuing and adaptive action** at the scale of entire ecosystems, e.g. Ecosystem-Based Management (EBM). It is unique in that it is the only global environment initiative directly addressing the connectivity between terrestrial, freshwater, coastal and marine ecosystems and the implications for management. The GPA focuses on actions and reforms at the national level. It outlines a simple, universally applicable management framework that embodies the principles of adaptive management. It is designed to assist governments develop national frameworks for action that meet the objectives of the GPA and reflect their respective circumstances.

#### **Principles, approach and focus of the GPA**

The GPA aims to address the negative effects of land-based activities upon the coastal environment that cause or exacerbate poverty, poor human health, economic losses and food insecurity. As mentioned, the GPA is intended to assist national actions and facilitate regional cooperation in the



identification of problem areas and issues, setting of priorities, and developing measures to prevent, reduce and control degradation in an integrated manner.

The governments during the last two Intergovernmental review meetings held in 2001 and 2006 agreed that business as usual is no longer an option. Therefore, major emphasis was given to developing and demonstrating **alternative approaches** with regard to financing, partnerships (with the private sector and civil society organisations), appropriate technologies, regulation and legislation, and institutional and managerial arrangements. Thus, the GPA Coordination Office bases its programmes and activities on **six practical principles**:

1. Focus on action building on the achievements of national level programmes;
2. Facilitating the mobilisation of financial resources;
3. Building partnerships with the private sector and civil society;
4. Linking the marine and coastal issues with concerns of the freshwater community;
5. Cooperation and coordination with other international organisations;
6. Replication and up-scaling of best and innovative practices at local, national, regional and global levels.

**GPA targets include:**

- Measurable reduction of pollutant loads
- Protection and/or restoration of habitats
- Enhanced capacity of local and national authorities in assessing how the conservation of marine and coastal ecosystems contributes to poverty alleviation and the achievement of the Millennium Development Goals (MDGs) and developing management plan/strategy
- Use of alternative approaches
- Mainstreaming GPA objectives into national planning and budgetary processes

**Innovative Partnerships – for addressing GPA relevant issues at various levels**

The nature and scale of the coastal and marine environmental management problems continue to grow and at times become complex or even get reinforced by absence of coordination among the various government departments, funding agencies and the NGOs. In the South and South East Asia region, environment or similar ministries are not always the sole implementing agencies of environmental management programmes including watersheds and coastal resources management. A pertinent need is to identify other relevant role players. Efforts in implementing projects and programmes for poverty alleviation, biodiversity conservation or other aspects need to be harmonized within a coordinated framework.

This calls for partnerships and investments. Environmental problems may be resolved or controlled using a cocktail of policies such as enacting relevant legislation or framing regulations, endorsing regional and international treaties or conventions, applying economic instruments including investment, negotiating voluntary agreements and educating stakeholders on sustainable practices. So far the progress in environmental management seems to be associated primarily with a regulatory approach, while the other approaches are gradually being added. The success of the broader approach is dependent to a large extent on building correct partnerships between and among various stakeholders.

A well-defined partnership may not only provide a sound framework of action to build an institutional base, but it will also provide opportunities for designing incentive structures and instruments of enforcement to scale down pollution and to ensure that polluters pay for their acts.

**Possible areas of action**

Appropriate protocols and programmes must be in place to monitor the impacts of inland policies on marine environment. Correct partnerships among government agencies, NGOs, civil society organisations and the private sector, within a democratic participatory framework appears to be the only way to go forward in resolving inland sources of pollution as well as management of coastal

habitats. The GPA, being the outcome of inter-governmental commitment, is well placed to initiate and facilitate a process of building partnerships. This process requires:

- **Awareness raising.** A major awareness campaign is required in the region about the existing scale of problems and measures to prevent/alleviate further pollution of the fresh and coastal water environment. The pollution awareness should reach the community and individual level - how much each individual is responsible for or affected by pollution. The level of awareness among the people and political leaders will have a direct impact on their commitment to the cause of protecting the environment.
- **Capacity building.** Capacities need to be developed at all-levels across various sectors to promote and ensure integrated resource management. Management of different industries need to be oriented to ensure cleaner production. It is necessary to develop capacity at the grassroots level with regard to coastal resources management and to provide community organisations with the ability to become autonomous. Capacity needs to be built in local government bodies, including municipalities, to improve sanitation and sewage management.

Capacity building may be ensured through initiation of Pilot projects (training „on the spot“) and training courses. Training of the stakeholders to access new financing mechanisms to become able to implement local solutions without sole dependence upon government agencies should be a priority need.

Furthermore, technical capacity of relevant agencies for continuous and long term monitoring of resource management practices and enforcement of legislation and legal provisions also needs to be enhanced.

- **Establishing funds** to support community partnership building with industry and local authorities to implement solutions (e.g. wastewater treatment systems) for which the full cost will be appropriately shared.
- **Bridging knowledge gaps** is an important area of action. Implementing projects on a pilot basis and research in the form of case studies may serve as a vehicle to generate new knowledge and draw lessons from ongoing and/or newly initiated activities. Up-scaling and replication of good practices requires specific attention.

### Global Partnership on Nutrient Management (GPNM)

**A partnership of scientists, policy makers, private sector, NGOs and international organisations to address the growing problem of nutrient over-enrichment. The partnership was launched in 2009 during the meeting of the UN Commission on Sustainable Development (UN-CSD).**

Nutrients, such as nitrogen, are a key part of delivering food security and sustainable development. But excess use and inefficient practices leads to nutrient over-enrichment, causing soil acidification and groundwater pollution, harmful algal blooms and dead zones in the sea and loss of coral and sea grass cover. As a result, marine and coastal ecosystems and the services and livelihoods they support are undermined and the resilience of ecosystems to climate change weakened.

For the benefits of nutrients to be realised effectively, including their contribution to food security, countries need access to improved information and assessment of the multiple and linked impacts of nutrients. Countries also need access to more integrated management approaches, tools and training which address the root causes of over-enrichment and help prevent the release of excess nutrients. *A global partnership, the GNMP, can help mobilise these changes.*

The partnership aims to raise awareness among policy makers about the causes and harmful impacts of over-enrichment and the benefits of taking action. It will foster engagement by all stakeholders and exchange information and good practice with a view to assisting the delivery of knowledge based, remedial action and training, tailored to the circumstances of developing countries and countries in transition and their associated watersheds and coastal areas. In this way, the Partnership can help countries to engage actively in identifying and implementing cost effective and workable solutions.

*Modalities:* The GPNM operates as a voluntary network of organisations and individuals, who are willing to take opportunities and work together on nutrient related activities. Drawing on the work of previous initiatives, the partnership will provide a web based platform, presenting information on major emission sources and impacts, cross-media transfer of nutrients, environmental costs of over enrichment and an identification and analysis of impacts in coastal areas and Large Marine Ecosystems. Lessons and practices developed under Global Environment Facility projects as well as nutrient management initiatives by countries and other organizations will be made available through the partnership platform. The aim is to provide stakeholders with a consolidated source of causal impacts, their costs and future trends and access to effective tools, approaches and training.

A key focus will be on facilitating implementation partnerships between and within countries. Using the web based information provided by the GPNM, such partnerships involving stakeholders from different countries and disciplines, will be able to identify the necessary research, policies, partners, tools and training to make informed on the ground interventions. In turn, information, approaches and lessons learned from these interventions would be made available for all partners for future use.

The GPNM will be a key initiative to help implement the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA), a non-binding multi-lateral environmental agreement addressing the links between watersheds and coastal systems using an ecosystem management approach.

The UNEP/GPA Co-ordination Office ([www.gpa.unep.org](http://www.gpa.unep.org)) consistent with its role as a facilitator and catalyst for action by countries in relation to implementing the global programme, will set in hand initial actions and co-operation, establish an information and activity sharing system, organise meetings and facilitate implementation partnerships and activities.





Bangladesh, India, Indonesia, Malaysia, Maldives, Myanmar, Sri Lanka and Thailand are working together through the Bay of Bengal Large Marine Ecosystem (BOBLME) Project to lay the foundations for a coordinated programme of action designed to better the lives of the coastal populations through improved regional management of the Bay of Bengal environment and its fisheries.

The Food and Agriculture Organization (FAO) is the implementing agency for the BOBLME Project.

The Project is funded principally by the Global Environment Facility (GEF), Norway, the Swedish International Development Cooperation Agency, the FAO, and the National Oceanic and Atmospheric Administration of the USA.

For more information, please visit [www.boblme.org](http://www.boblme.org)



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